Addressing Ecological Uncertainty and Nature Conservation Conflicts: Adaptive Management Models for English Nature Conservation Law and Policy and Practice

A Case Study of the Humberhead Levels Nature Improvement Area

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Abstract

This thesis aims to contribute to the understanding of the complexity of nature conservation within a regulatory context by exploring the capacity of English nature conservation law and policy to support the adaptation of decisions to constantly changing ecological conditions and competing interests. The researcher undertook a case study in the Humberhead Levels Nature Improvement Area in order to explore how conservation management operates in practice within the legal framework for nature conservation and how different nature conservation is on the ground.

Law's traditionally adversarial, linear and reductionist approach makes it ill-equipped to respond to these manifestations of social-ecological complexity. Adaptive management is proposed in this thesis as capable of responding to the challenges of uncertainty and conflict. Two models are identified: one that highlights the need for evolving scientific knowledge and another that provides a framework for conflict resolution, stressing the need for collaboration.

The thesis suggests that within the English nature conservation legal framework adaptive management, albeit not prescribed, can apply. The thesis also suggests that law primarily sets a framework that delineates action. There are only a few cases where administrative action is prescribed by law. Even within designated areas, the approach taken is one of 'regulated flexibility'. Wide administrative discretion, underpinned by judicial deference, allows for variable implementation, nevertheless against a set of firm rules to prevent abuse by all parties involved.

Within this framework, it lies with the administration to set thresholds of flexibility and choose which of an array of available instruments to implement. The end result can be anywhere across a continuum from technocratic to collaborative, from static to adaptive decision making.

The empirical study in the HHL NIA suggests that the scale is tipped in favour of the latter. Both models of adaptive management were evident, each being more prominent in certain stages of decision making.

Finally, the thesis proposes that amendments such as a statutory requirement of proactive coherent management planning and the introduction of multilateral and collective agreements are some of the ways that the regime can "adapt" in order to become "adaptive."

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Declaration

I declare that

this thesis is a presentation of original work and I am the sole author. This work has not previously been presented for an award at this, or any other, University. All sources are acknowledged as References.

1 Introduction

1.1 Thesis focus

This thesis focuses on the concept of adaptive management, as a flexible mechanism to address the socio-ecological complexity that makes the conservation of biodiversity a highly challenging task. Although there is a large body of scientific literature on adaptive management as a model for *inter alia* management aiming to promote the interests of biodiversity, there is less literature for its interaction with the legal system within which it will ultimately operate. Additionally, the majority of the literature on adaptive management is to be found within US scholarship. The term is not as widely used in Europe, although this does not necessarily imply that it is not implemented in practice.

Building on the existing literature, this thesis argues that two different but intertwined models of adaptive management, one as a science-driven process based on experimentation and iterative decision-making and one based on collaboration, can provide us with a management logic that is able to address two major impediments to effective nature conservation management: ecological complexity and conservation conflicts respectively. Furthermore, I seek to explore how adaptive management interacts with law and more specifically, the law of nature conservation in England; is the legal and regulatory framework within which adaptive management is to operate, flexible enough to accommodate – if not enable - adaptive decision-making? And finally, when looking at the actual management that takes place on the ground, the day to day decision making how adaptive the day-to-day management is or can be, when operating within that legal and regulatory framework. Sections 1.6 and 1.7 will discuss the research aims, methodology and finally the structure of the thesis in more detail.

1.2 An overview of the nature conservation legal framework in England

Legislation on wildlife in England dates back as far as the 19th century and the introduction of hunting regulations. [1] Since then and following increasing concerns over the alarming loss of biodiversity, a significant amount of legislation has been enacted in national, European and international level, usually preceded by broad declarations of ambitious goals and far reaching targets included in biodiversity policies and strategies.[2]

A careful consideration of the development and evolution of nature conservation law and policy frameworks in England reveals that neither the European nor the English legislator has been remote and indifferent to the decline of biodiversity. On the contrary, under the strong influence of European legislation, [3] there has been a growing volume of legislation, which has changed considerably over the last decades.[4]

Besides the increase in the volume of legislation, the last few decades have seen an evolution in the legal approaches employed to provide for biodiversity that correspond to the different needs and different perceptions of nature over the years. These approaches range from merely voluntary to direct state control through compulsory legislation which is nevertheless

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[1] See Colin T. Reid, *Nature conservation law* (3rd edn, Thomson/W. Green 2009), 145-147 (Reid notes that although hunting laws are designed to 'allow the killing and taking of wildlife, in may be of considerable benefit to nature conservation'); See also L. Dudley Stamp and James Fisher, *Nature conservation in Britain* (Collins 1969) as referenced in D. Evans, *A History of Nature Conservation in Britain* (Taylor & Francis 2002) 32, for an assertion that 'modern conservation begins with the famous Game Act of 1831'.

[2] Reid (n1) 1-11; The current biodiversity policy in England is enshrined in the 'Biodiversity 2020: A strategy for England's wildlife and ecosystem services' that was published by DEFRA on 19 August 2011 to underpin the *UK Post-2010 Biodiversity Framework* published in July 2012. The UK Post-2010 Biodiversity Framework was developed in response to the Convention on Biological Diversity (CBD) *Strategic Plan for Biodiversity 2011-2020* and the *EU Biodiversity Strategy to 2020*.

[3] Reid (n1) 5, 8 referring to the impact of the EU Birds and Habitats Directives on shaping the enactment and further amendment of the 1981 Wildlife and Countryside Act.

[4] For English law development and evolution see in general Reid (n1).
For a historical account of nature conservation in Britain see Evans (n1); D.L. Hawksworth, *The Changing Wildlife of Great Britain and Ireland* (Taylor & Francis 2003); John Sheail, *Nature in trust: the history of nature conservation in Britain* (Blackie 1976).

underlined by strong reliance on partnership and cooperation between the state and private interests;[5] from the indirect use of common law and property rights to statutory intervention [6] complemented by market based mechanisms[7] and contractual agreements;[8] from preventive measures and species focused legislation to sophisticated schemes of natural networks, positive management and the integration of nature conservation considerations and objectives within a considerable number of policies and procedures. The result is a constantly growing, complex system of laws. Nature conservation in the 21st century is grounded on a patchwork of legal provisions, schemes and plans, directly or indirectly seeking to 'protect', 'conserve' and 'manage' biodiversity.[9] Providing a detailed analysis of the historical evolution of nature conservation legislation in England goes beyond the scope of this introduction and thesis. However, I consider it necessary to present a short overview of English instruments that are directly or indirectly linked to the conservation of biodiversity and reflect the different approaches.

Although concerns for nature were enshrined in legislation as early as the 19th century, the current form of nature conservation law in the UK is a relatively recent development, heavily shaped and influenced by international treaties and European Union law. Historically, wildlife in England had been treated as an economic or recreational resource, to be controlled for human benefit rather than protected for its inherent value.[10] Accordingly, early

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[5] Reid (n1) 39-42.

[6] C. P. Rodgers, *The law of nature conservation: property, environment and the limits of the law* (Oxford University Press 2013) 3-4.

[7] Ingo Bräuer and others, *The Use of Market Incentives to Preserve Biodiversity* (EcoLogic, 2006) available at <http://ec.europa.eu/environment/enveco/biodiversity/pdf/mbi.pdf> last accessed 10 Dec 2015.

eftec, IEEP and et al, *The use of market-based instruments for biodiversity protection – The case of habitat banking* (eftec, 2010) available at: <http://ec.europa.eu/environment/enveco/pdf/eftec_habitat_technical_report.pdf> accessed 10 Dec 2016.

[8] Reid (n1) 47-48.

[9] A search at the http://eur-lex.europa.eu website (EU legislation portal) for 'biodiversity' reveals more than two thousand documents (including legally binding regulations, directives and decisions, court judgments and soft law documents such as communications, resolutions and policy declarations).

[10] Law Commission, *Wildlife Law* (Consultation Paper no 206, 2012) para 1.3; Reid (n1) 2.

legislation was deeply anthropocentric in nature, aiming to regulate the exploitation of biodiversity on the one hand and protect rights associated with land on the other. Thus, the first acts were enacted in order to regulate activities of traditionally major economic and recreational significance such as hunting and fishing. However towards the second half of the 19th century, and as a response to the work of protectionist societies and public reactions to the emerged issues of animal cruelty and over-exploitation, the idea of wildlife protection was making its way into legislation.[11] Gradually and under the influence of international and European legislation, the scope of law expanded to the point that it now confers direct protection to species and – in its most sophisticated version - to their habitats. Thereupon, we could argue that the historical development of the law on nature conservation in England was the combined result of the need to secure economic resources and an effort made on behalf of societies, organisations and individuals to promote nature conservation and raise public awareness, which in turn, prompted public pressures for better consideration of nature conservation related issues within political agendas.

Hence, from the mid-20th century onwards, the conservation of nature has become increasingly important and has found its place within policy statements and proclamations in national and international level. Nature conservation is now a desirable – but not necessarily non-controversial - policy and a legitimate state concern that entails legislative intervention. The rationale behind the need for conservation varies from moral and religious justifications to merely anthropocentric arguments and much of the discussion and even decision making will always revolve around and be influenced by the crucial issue of 'why we protect nature?' and how we intend to answer this question.[12] Despite being very important and compelling, affording an in-depth analysis falls into the challenging field of environmental

[11] Law Commission (n10) para 1.4; Evans (n1) 34-35.
[12] Reid (n1) 51.

ethics and far beyond the scope of this thesis.[13] In the context of this discussion, it suffices to say that modern nature conservation policy sits at the intersection of anthropocentric and an ecocentric approaches.[14] Modern nature conservation law reflects the ecocentric and anthropocentric ideas that have influenced and shaped its development. Within the Convention of Biological Diversity,[15] the former are evident when the CBD acknowledges *'the intrinsic value of biodiversity'*[16] and the latter when it continues to refer to the *'social, economic, educational, cultural, recreational and aesthetic values of biodiversity and its components,'*[17] all of which are closely interwoven with human existence. In terms of national legislation, ecocentric ideas underpin the duty to designate sites on the basis of scientific criteria;[18] anthropocentric ideas are on the other hand, the basis for the introduction of exemptions that allow damage on designated sites when mandated by social and economic needs.[19] Whichever the justification, the fact remains that issues relating to nature conservation are taking ever-increasing dimensions and nature conservation claims emerge in most political agendas triggering wide-ranging proposals and regulatory measures towards biodiversity objectives.[20]

The history of modern nature conservation law begins right after the WWII with the introduction of the National Park and Access to the Countryside Act 1949, a statute passed by the first post WWII Government.[21] The 1949 act

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[13] For an excellent introduction to the issue see Joseph R. DesJardins, *Environmental ethics: an introduction to environmental philosophy (Wadsworth Cengage Learning 2013)*.

[14] Reid (n1) 52.

[15] Convention on Biological Diversity (adopted 5 June 1992, entered into force 29 December 1993) 1760 UNTS 79 (Biodiversity Convention).

[16] ibid preamble.

[17] ibid.

[18] Reid (n1) 52; Both European sites and the domestic Sites of Special Scientific Interests (SSSIs) are designated on the basis of purely scientific criteria see discussion in s.4.2.1.

[19] ibid; European legislation lays down a tiered decision-making process to approve damaging activities on designated sites in cases of overriding public interest. In terms of domestic designations, planning authorities although they have a duty to have regard to biodiversity conservation, they can nevertheless consent to damaging activities.

[20] This is reflected on the large number of soft-law documents added to that of statutory legislation and the increasing introduction of biodiversity objectives in other policies such as agricultural policy and town-planning.

[21] See Evans (n1) 60ff for the historical background of its enactment.

introduced the National Nature Reserves (NNRs) as wildlife sanctuaries and places for scientific research[22] and National Parks[23] and Areas of Outstanding Natural Beauty (AONBs)[24] to allow people to enjoy and get closer to nature.[25] The 1949 act was also the one to introduce Sites of Special Scientific Interest (SSSIs) which together with NNRs came to form the backbone of wildlife designations in England. In the 30 years that followed, a number of sites were designated. However, the original provisions were weak, unable to secure adequate protection or proper management.[26] On the other hand there was no systematic designation to the extent that it was often unbeknown to landowners and managers.[27] The lax legislation, combined with the gradual intensification of agriculture, resulted in many of these sites being lost or severely damaged.[28] Hence, in 1981 a new system was introduced by the Wildlife and Countryside Act (WCA) 1981 which strengthened the SSSI regime by laying down a notification system and provisions to prevent damage.[29] Nevertheless, adequate protection was still to be secured and deterioration of SSSIs continued. There were many reports of landowners circumventing and abusing the voluntary system largely established by the original 1981 Act, ruining valuable sites.[30] Additionally, the provisions of the 1981 Act were aimed to address impacts from positive agricultural activities, which were considered as the primary habitats threat at the time.[31] However, it was gradually becoming apparent that neglect was a major contributory factor for

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[22] National Park and Access to the Countryside Act (NPAC) 1949 (as enacted) pt III.
[23] ibid pt II.
[24] ibid s.87.
[25] ibid s.23 (referred to as Areas of Special Scientific Interest).
[26] Reid (n1) 214.
[27] Rodgers (n6) 68.
[28] Kaley Hart and Geoff A. Wilson, 'United Kingdom: From agri-environmental policy shaper to policy receiver' in H. Buller, G.A. Wilson and A. Hill (eds), *Agri-environmental Policy in the European Union* (Taylor & Francis 2017) 97-98; ibid 94-95.
[29] Wildlife and Countryside Act 1981 (as enacted) s.28; Christopher P. Rodgers, *Nature Conservation and Countryside Law* (University of Wales Press 1996) (n27) 6-7.
[30] D Withrington and W Jones, 'The Enforcement of Conservation Legislation: Protecting Sites of Special Scientific Interest' in Howarth W and Rodgers CP (eds), *Agriculture, Conservation and Land Use: Law and Policy Issues for Rural Areas* (University of Wales Press 1995) 93.
[31] KV Last, 'Habitat protection: has the Wildlife and Countryside Act 1981 made a difference?' (1999) 11 Journal of Environmental Law 15, 33.

much of the damage caused to the SSSIs.[32]

In the meanwhile, two European Directives were introduced, the Birds Directive[33] in 1979 and the Habitats and Species Directive[34] in 1992, adding a further tier of protected sites: Special Protection Areas and Special Areas of Conservation respectively with significantly stricter controls than the WCA 1981 SSSIs, applying therein. In 2000, in order to rectify these weaknesses and at the same time align the SSSI regime with EC legislation and the stronger, stricter protection it conferred on European habitats, the Countryside and Rights of Way Act (CROWA) 2000 was introduced. CROWA 2000 brought fundamental changes to the operation of the SSSI system and dealt a blow to the voluntary principle by introducing legislation to prevent damage and promote or even enforce proper management.[35] In this sense, the 2000 Act shifted the protectionist philosophy of the previous regime to one of encouraging positive management for the enhancement and restoration of SSSIs. Since then, SSSIs have seen a significant improvement – from 50% to 93% favourable or recovering condition – as a result of intensive government campaigning and the cooperation of government agencies, voluntary organizations, and thousands of landowners and farmers.[36]

Finally, the English legal framework on biodiversity is complemented by laws aimed at the direct protection of birds and certain species of animals and plants, the earliest and most traditional form of protection. Wildlife legislation is equally or even more fragmented than that providing for site designations and what can be classified as such depends on the approach we choose to take, as well as the reasons we choose to protect birds, animals, and

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[32] ibid.

[33] Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds [1979] OJ L103/1 (currently repealed by the Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds [2009] OJ L20/7).

[34] Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora [1992] OJ L206/7.

[35] Reid (n1) 215.

[36] J.H. Lawton and others, *Making Space for Nature: a review of England's wildlife sites and ecological network* (Report to Defra, 2010) 13.

plants.[37] The Law Commission in their report on Wildlife Law[38] took a wide approach and identified four coexisting principal strands that currently comprise the complex set of legal provisions: Hence, there are *stricto sensu* nature conservation statutes such the Part I of WCA 1981, provisions of the Birds[39] and Habitats[40] directives and some pieces of legislation conferring protection to specific species such as badgers,[41] dears[42] and seals.[43] Then there are laws that allow exploitation of certain wild animals as economic or leisure resources (e.g game legislation) and finally laws on pest control and animal welfare legislation.[44]

1.3 Biodiversity loss: a complex issue with social-ecological dimensions

The proliferation of legislation is not necessarily effective. Without overlooking or undervaluing the positive impacts,[45] scientific data seem to confirm the qualms of those criticizing nature conservation regimes.[46] The biodiversity strategies continue to succeed one another, recognizing their failure to meet their objectives while setting new end dates into the future.[47]

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[37] *See* Law Commission, *Wildlife Law* (Final Report no 362, 2015) para 1.2 stressing that 'there is no homogenous purpose or theme to the vast array of wildlife legislation in England'.

[38] The Law Commission, at Defra's request, initiated a project for the reform of the Wildlife Law in England and Wales, due to its being overly complex and fragmented. The project begun with a consultation paper (*see* at n10) and concluded with the publication of the Report (*see* at n37) and a draft Bill on 10 November 2015.

[39] Birds Directive (2009) (n33).

[40] Habitats Directive (n34) art 12-14.

[41] Protection of Badgers Act 1996.

[42] Deer Act 1991.

[43] Conservation of Seals Act 1970.

[44] Law Commission, *Wildlife Law* (Final Report) (n37) para. 1.3-1.6.

[45] Last (n31).

[46] European Environment Agency, *EU 2010 Biodiversity Baseline* (EEA. Copenhagen, 2010) available at < http://www.eea.europa.eu/publications/eu-2010-biodiversity-baseline> last accessed November 2016; For global biodiversity trends *see*: Secretariat of the Convention on Biological Diversity, *Global Biodiversity Outlook 3* (2010) available at < http://www.cbd.int/gbo3/> accessed November 2016.

[47] *See* for instance the succession of EU biodiversity policies at <https://www.eea.europa.eu/themes/biodiversity/policy-context>, accessed November 2017.

Despite the abundance of legislation, there is a general feeling that our otherwise worthy efforts often go astray.

Thence, the question that emerges is this: why despite our devoted efforts, does the problem of biodiversity loss persist? What is so special about nature conservation that law, which is traditionally employed to address problems emerging in human societies, fails to rise to the challenge? To begin with, nature conservation legislation has been faced with issues common to all legal frameworks, such as lack of appropriate implementation and enforcement.[48] These have been acknowledged and over the years major steps have been taken to strengthen the regime and secure compliance.[49]

However, a closer look will reveal that these, albeit non-marginal, issues are just the 'tip of the iceberg'; instead there are deeper issues rooted in the nature of the problem of biodiversity loss and the linear and reductionist way in which law seeks to address it.[50] What is becoming apparent is that the traditional, reactive approaches used to address social problems in the past are unlikely to be able to address complex, multi-faceted environmental problems such as biodiversity loss.[51] Until recently, the primary tools for nature conservation followed the traditional reactive way in which states would intervene with legal means in order to resolve an already occurring problem. Like the majority of environmental legislation, nature conservation

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[48] Reid (n1) 8.

[49] ibid (n1) 214-226 discusses the changes brought to the 1981 Wildlife and Countryside Act by the 2000 Countryside and Rights of Way Act. The latter fundamentally changed and strengthened the original 'toothless regime' governing habitats conservation. (Lord Mustill criticized the original 1981 Act provisions referring to them as 'toothless' in *Southern Water Authority* v *Nature Conservancy Council* [1992] 3 All E.R 481 at 484. One of the most recent developments has been the introduction of the Regulatory Enforcement Sanctions Act 2008 (RES), the Environmental Civil Sanctions (England) Order 2010 and the Environmental Civil Sanctions (Miscellaneous Amendments) Regulations 2010, which enable the statutory agency to make use of a wide range of civil sanctions in response to violation of the conservation legislation.

[50] J.B. Ruhl, 'Thinking of Environmental Law as a Complex Adaptive System: How to Clean Up the Environment by Making a Mess of Environmental Law' (1997-1998) 34 Hous L Rev 933.

[51] J. B. Ruhl, 'Regulation by Adaptive Management - Is It Possible' (2005) 7 Minn J L Sci & Tech 21; J.B. Ruhl, 'The Disconnect Between Environmental Assessment and Adaptive Management' (2005) 36 ABA Trends 1, 1.

law 'has picked the low hanging fruit': [52] it addressed the problem somewhat superficially; a problem arises, e.g population of species A declines, a law is enacted to address it, e.g list the species and ban its persecution. Hence, the traditional conservation law is built around the twin approach of listing endangered species and designating habitats (protected sites) within which certain activities are banned or restricted.[53]

However, addressing biodiversity decline is a multi-dimensional and hence much more complex issue.[54] Biodiversity loss is not merely a social problem: it sits at the interface of two worlds, the human and the natural; it occurs within what Berkes and Folke refer to as 'social-ecological systems'.[55] Berkes and Folke introduced the term 'social-ecological' system in order to emphasize 'the integrated concept of humans in nature and to stress that the delineation between the social and ecological systems is artificial and arbitrary';[56] Berkes' and Folkes' concept is adding social complexity to the theories of scientific literature that already recognized ecosystems as complex, dynamic and adaptive systems.[57] Hence, ecosystems are complex, adaptive

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[52] Ruhl, 'Regulation by Adaptive Management - Is It Possible' (n51) 21 referring to pollution control regulation targeting emissions from smokestacks and discharge pipes and disposal of wastes in landfills; *See* also Richard B. Stewart, 'A New Generation of Environmental Regulation?' (2001-2002) 29 Cap U L Rev 21 discussing the shortcoming of traditional top-down regulation in the context of US environmental legislation.

[53] This is the primary approach taken in the 1981 Act (*see* discussion above). However, it needs to be noted and especially when compared to other legal systems, English legislation following the CROWA 2000 amendments does go a step further seeking to secure positive management of wildlife sites to address the problem of neglect.

[54] Bradley C. Karkkainen, 'Collaborative Ecosystem Governance: Scale, Complexity, and Dynamism' (2002-2003) 21 Va Envtl LJ 189.

[55] F. Berkes and C. Folke, 'Linking Social and Ecological Systems for Resilience and Sustainability' in F. Berkes, C. Folke and J. Colding (eds), *Linking Social and Ecological Systems: Management Practices and Social Mechanisms for Building Resilience* (Cambridge University Press, 1998) 4.

[56] ibid.

[57] F. Berkes, J. Colding and C. Folke (eds), *Navigating Social-Ecological Systems: Building Resilience for Complexity and Change* (Cambridge University Press, 2008); Simon A. Levin, 'Ecosystems and the Biosphere as Complex Adaptive Systems' (1998) 1 Ecosystems 431 on ecological complexity.

social-ecological systems, characterized by nonlinearity, uncertainty, emergence, and reciprocal feedbacks.[58]

As a result, calls for implementing effective nature conservation management fall foul *inter alia* on two substantial obstacles, which are manifestations of ecological and social complexity respectively: ecological uncertainty and conservation conflicts. Such problems cannot be overcome by traditional management practices and legal approaches. More specifically, on the one hand, linear models of reactive legislation like the one briefly described above, are incompatible, and thus ineffective for addressing ecological complexity: [59] ecological complexity leads to ecological unpredictability, which in turns means that given the multiple interactions across ecosystem components, we can never be certain of how the system will react to a given intervention. On the other hand, traditionally the law attempts to resolve conflict on a 'right answer' basis,[60] an approach which is itself, ill-suited to deal with polycentric disputes between multiple parties and multiple interests, as conservation conflicts are.[61]

1.4 Adaptive (co-) management

Originally a response to ecological complexity, the concept of adaptive management was developed in USA scientific literature. [62] Adaptive management traces its origins to C.S. Holling' s seminal work, Adaptive Environmental Assessment and Management [63] and stems from the recognition that knowledge of ecological systems is not only incomplete also

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[58] Berkes, Colding and Folke, 'Introduction' in F. Berkes, J. Colding and C. Folke (eds), *Navigating Social-Ecological Systems: Building Resilience for Complexity and Change* (n57).
[59] Ruhl 'Thinking of Environmental Law as a Complex Adaptive System: How to Clean Up the Environment by Making a Mess of Environmental Law' (n50).
[60] Mark S. Reed and Julian Sidoli Del Ceno, 'Mediation and conservation conflicts: from top-down to bottom-up' in Stephen M. Redpath and others (eds), *Conflicts in Conservation: Navigating Towards Solutions* (Cambridge University Press, 2015), 226.
[61] ibid, 229.
[62] C.S. Holling, *Adaptive environmental assessment and management* (International Institute for Applied Systems Analysis 1978); Carl J. Walters, *Adaptive management of renewable resources* (Macmillan; Collier Macmillan 1986).
[63] Holling (n62).

but elusive.[64] So, it is essential that we 'learn' about the system. Adaptive management theory views natural resources management as an iterative learning process, which links knowledge to action.[65] Learning is a central concept to adaptive management with a double role: it is both a driver and a product of management; it occurs and informs the decision-making process in a continuous, cyclic, adaptive process.[66]

Defining adaptive management is no easy task. The plethora of definitions in the literature leads one to conclude that adaptive management means different things to different people.[67] Over the years it has been defined in a variety of different ways that range from highly detailed to rather vacuous.[68] However there seems to be a consensus within the literature on a basic general level that recognises the need for continuous monitoring, assessment and readjustment of original decisions:[69]

> Adaptive Management consists of managing according to a plan by which decisions are made and modified as a function of what is known and learned about the system, including information about the effect of previous management actions.[70]

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[64] Carl J. Walters and C. S. Holling, 'Large-Scale Management Experiments and Learning by Doing' (1990) 71 Ecology 2060.

[65] George H Stankey, Roger N Clark and Bernard T Bormann, *Adaptive Management of Natural Resources: Theory Concepts and Management Institutions* (Gen Tech Rep PNW-GTR-654 Portland, OR: US Department of Agriculture, Forest Service, Pacific Northwest Research Station, 2005) 8.

[66] ibid 14; *See also* B.T. Bormann, J.R. Martin, F.H. Wagner, G. Wood, J. Alegria, P.G. Cunningham, and P. Friesema M.H. Brookes, J. Berg, and J. Henshaw, 'Adaptive Management' in A.J. Malk N.C. Johnson, W. Sexton, and R. Szaro (ed), *Ecological Stewardship: A common reference for ecosystem management* (Elsevier 1999) 513 referring to adaptive management as 'learning to manage by managing to learn'.

[67] On a practical level, as Bormann notes in Bernard T. Bormann, Richard W. Haynes and Jon R. Martin, 'Adaptive Management of Forest Ecosystems: Did Some Rubber Hit the Road?' (2007) 57 BioScience 186, 187 'agreement on a common definition of adaptive management is rarely found inside or among agencies, and scientists typically define it quite differently from managers.

[68] Holly Doremus, 'Adaptive Management, the Endangered Species Act, and the Institutional Challenges of New Age Environmental Protection' (2001-2002) 41 Washburn LJ 50, 52.

[69] ibid.

[70] Ana M. Parma, 'What can adaptive management do for our fish, forests, food, and biodiversity?' (1999) 1 Integrative Biology: Issues, News, and Reviews 16 as referenced in Doremus (n68) 52; However, I would like to point out that the lack of a consistent definition

Originally a scientific construction founded on experimentation, the adaptive management concept was expanded to encompass theories on collaboration, stakeholder participation and social learning as a result of the initial model's failure to account for the social complexity in natural resources management. In this respect, a major influence was Kai Lee's *Compass and Gyroscope: Integrating Science and Politics for the Environment.*[71] Lee takes natural resources management beyond the realm of science-based public policy and explores the social element of nature conservation:

> I am writing as a social scientist and erstwhile decision-maker who sought to use adaptive management; I am an outsider to the technical practice, and my observations are meant to complement those of Walters and Holling (1990) by emphasizing the organization and human dimensions of learning while doing.[72]

This expanded model of adaptive management emerges in literature as adaptive collaborative management or adaptive co-management and emphasizes collaboration rather than experimentation.[73] What is crucial is the participation of stakeholders, who hold a key role in the decision-making and offer a range of different views and perspectives.[74] In this way, management can be adapted not only to changing ecological conditions and the unpredictable responses of nature but also to the changing social conditions that interfere with ecosystem dynamics, as well as the different needs and priorities of local people. It can thus be seen as a framework to bridge competing interests, thereby preventing or resolving biodiversity conflicts.

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is not necessarily a bad thing. On the contrary, it provides the flexibility needed for adaptive management to be applied within different contexts and adjust to the different needs arising under different circumstances.

[71] Kai N. Lee, *Compass and gyroscope: integrating science and politics for the environment* (Island Press 1993).

[72] Kai N. Lee, 'Appraising Adaptive Management' (1999) 3 Conservation Ecology art.3. p.2.

[73] C. Jacobson and others, 'Toward More Reflexive Use of Adaptive Management' (2009) 22 Society and Natural Resources 484.

[74] Bradley C. Karkkainen, 'Adaptive Ecosystem Management and Regulatory Penalty Defaults: Toward a Bounded Pragmatism' (2002-2003) 87 Minn L Rev 943, 951-952.

1.5 Changing perspectives in English nature conservation: The Lawton Report, the Natural Environment White Paper and the Nature Improvement Areas Scheme

Law and policy makers in England did not remain indifferent to the shortcomings of conservation legislation, or to changes in the understanding of how ecosystems function. In 2010, the Secretary of Environment commissioned Sir John Lawton, a biology professor, to carry out an independent review of the England's statutory and non-statutory wildlife sites and assess whether they are capable of responding and adapting to the growing challenges of climate change and other demands on English land.[75] Lawton's evaluation was carried out on the premise that resiliency and adaptability were directly linked to the wildlife sites in England collectively representing a coherent and resilient network.[76]

The report of Professor Lawton and his team was published in September 2010 and concluded that despite the important contribution designated areas have made, English wildlife sites comprise do not collectively comprise a coherent and resilient ecological network;[77] on the contrary, they are rather too small and isolated, leading to declines in many of England's characteristic species. [78] In his report, Professor Lawton referred to the concepts discussed and which triggered the development of theories of adaptive (co-)management: that of complexity, dynamics of ecosystem processes,[79] but also social pressures and conflicting demands on land-use which place considerable and increasing pressure on biodiversity. [80] He concluded that for biodiversity to thrive under so many and such diverse pressures, wildlife needs corridors and links to be able to freely move from one protected site (where most of wildlife has been restricted) to another.[81]

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[75] Lawton and others (n36) foreword.
[76] ibid v.
[77] ibid vii-viii.
[78] Ibid.
[79] ibid 48, 78.
[80] ibid 21.
[81] ibid 14.

Essentially what Lawton was suggesting could be summarised in four words: *more, better, bigger and joined*.[82] He put forward the need for a 'step-change'[83] in conservation and laid down 'a long-term strategy, a desired "direction of travel", and a set of general principles 'to guide conservation action in England over the next 40 years'.[84]

In 2011 and in response to the Lawton Report, the Government published the Natural Environment White Paper (NEWP), *The Natural Choice: Securing the Value of Nature* ensuring its commitment to implement Lawton's recommendations. [85] The NEWP was welcomed by the conservation community that had been lobbying for its publication for years.[86] It provided *inter alia* for the establishment of Nature Improvement Areas (NIAs) in order to create joined up and resilient ecological networks based on the model of 'Ecological Restoration Zones' suggested by Lawton.[87] They were to be run by partnerships of local authorities, local communities and landowners, the private sector and conservation organisations with funding provided by the Department for the Environment, Food and Rural Affairs (Defra) and Natural England (NE).[88] The NIA scheme would not only provide for biodiversity but also for local communities by supporting food production, reducing flood risk and increasing access to nature.[89] Hence, it was to be a scheme operating at the interface of the natural and human world, reflecting the natural environment in all its complex and intricate variety; the value of nature in all its form; and provide a framework for decision making to reflect this.

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[82] ibid viii.
[83] ibid v.
[84] ibid 3.
[85] Department of Environment, Food and Rural Affairs (DEFRA), *The Natural Choice: securing the value of nature* (DEFRA CM8082, 2011) henceforth NEWP.
[86] *See* the Wildlife Trusts' response at <http://www.wildlifetrusts.org/living-landscape/policy-and-legislation/natural-environment-white-paper> accessed November 2017.
[87] Lawton and others (n36) 68 on recommending the establishment of Ecological Restoration Zones; NEWP (n85) para 2.27ff.
[88] *See* Natural England 'Nature Improvement Areas: about the programme' at https://www.gov.uk/government/publications/nature-improvement-areas-improved-ecological-networks/nature-improvement-areas-about-the-programme.
[89] ibid.

As the discussion in the following sections will clearly demonstrate, the NIA initiative embraces the social and ecological dimension of ecosystems. It provides a framework for management that will benefit wildlife as well as people and local economies. This is reflected in the aims of the NIA programme:

The Overall aims of an NIA are to:[90]

- Become much better places for wildlife – creating more and better habitats over large areas which provide the space for wildlife to thrive and adapt to climate change
- Deliver for people as well as wildlife – enhancing a wide range of benefits that nature provides such as recreation, flood protection, clean water, carbon storage
- Unite local communities, land managers and business through a shared vision for better future for people and wildlife. The hope is that they will become places of inspiration loved by current and future generations.

The NIA programme ran for three years, from 2012-2015 with funding (£7.2 million) provided by DEFRA and Natural England. This funding was awarded to 12 NIAs through a national competition that attracted 76 bids.[91] To assist potential applicants with the process of application, Natural England and Defra shortly after the White Paper came out, published the NIA General Guidance Notes and Criteria that provided with information on who and how

[90] Collingwood Environmental Planning *Monitoring and Evaluation of Nature Improvement Areas: Year 1 (2012-13) Progress Report*. (Defra Research Project WC 1061, 2013) (henceforth Monitoring and Evaluation of Nature Improvement Areas: Year 1 Report) 5-6.
[91] ibid 1.

they could apply. The Government expected potential NIAs to be places where:[92]

- Opportunities to deliver ecological networks, both in terms of large area and scale and valuable benefits to wildlife and people, where particularly high;
- A shared vision for the natural environment existed among a wide partnership of local people, including statutory and voluntary sectors;
- Significant improvements to the ecological network can be achieved over large areas by enlarging and enhancing existing wildlife sites, improving ecological connectivity and creating new sites;
- The surrounding land - use could be better integrated with valued landscapes and action to restore wildlife habits and underpinning natural processes, helping to adapt to climate change impacts.
- Benefits to urban area and communities could be achieved and, where appropriate, NIAs may contain urban areas as part of an enhanced ecological network;
- 'Win-win' opportunities were identified and had the potential to be exploited to the full to derive multiple benefits, for example with benefits for the water environment and Water Framework Directive objectives, flood and coastal erosion risk management and the low-carbon economy;
- There were opportunities to inspire people through an enhanced experience of the outside world.

The NIA programme was not the first-time landscape conservation attempted or implemented in England. The Wildlife Trusts' (WT) *Living*

[92] Natural England 'Nature Improvement Areas: about the programme' (n88).

Landscapes, [93] the RSPB *Futurescapes* [94] are large-scale conservation management programmes that extent beyond statutory protected areas and/or nature reserves to the wider countryside. Moreover, since the late 1990's there have been efforts to divide English land into areas based on natural rather than administrative features. Such areas, currently known as National Character Areas are defined by combined features of landscape, biodiversity, geodiversity and cultural and economic activity.[95] However, in contrast to the NIAs scheme, the NCAs was not a delivery programme. Their purpose was nevertheless more informative; the NCA profiles, constantly updated, provide with the best available information to guide policy and decision-making on land use development and management.

There are several reasons that make the NIA programme a distinctive approach to conservation management, including but not limited to the following:[96]

1. Although non-statutory, NIAs are officially acknowledged as land designation in the 2012 White Paper.
2. The land itself is bottom-up designated in the sense that boundaries were suggested by the partnerships who put forward an application.
3. Funding was specifically allocated for work to be undertaken in each NIA to promote large scale ecosystem management and restoration.
4. A necessary requirement is the existence of a well-designed business plan that sets out certain aims and objectives against which success would be evaluated.

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[93] For the Wildlife Trusts' Living Landscapes programme *see* at <http://www.wildlifetrusts.org/living-landscape/our-vision> accessed January 2018.

[94] For the RSPC Futurescapes programme *see* at < https://www.rspb.org.uk/our-work/conservation/landscape-scale-conservation/futurescapes/> accessed January 2018

[95] Natural England *National Character Area profiles: data for local decision making* at <https://www.gov.uk/government/publications/national-character-area-profiles-data-for-local-decision-making> accessed January 2018.

[96] Natural England, *Nature Improvement Areas: Competitive Grant Scheme General Guidance Notes* (2011)
available at:
<http://webarchive.nationalarchives.gov.uk/20140605135647/http://www.naturalengland.org.uk/Images/NIA-guidance-notes_tcm6-26959.pdf> accessed January 2018.

5. DEFRA and Natural England imposed very strict requirements on monitoring and evaluation (quarterly reports), based on a Monitoring and Evaluation Framework which was as much a project itself as it was part of the NIA programme.
6. NIAs is a pilot, an experimental programme for large scale conservation and restoration intended to 'trial and test innovative, integrated and coordinated approaches to provide better places for wildlife, to improve the natural environment for people, and to unite local communities, land managers and businesses through a shared vision'.[97] The need to test different approaches at programme level also is behind the great variety in the size, organisation, partnerships, aims and objectives of the 12 original NIAs.[98]

The NIA scheme reflects a shift in conservation from 'gardening' isolated sites to wider land management based on partnership and collaboration. It also introduces into the conservation mentality, experimentation, monitoring, assessment and knowledge enhancement. These are all features that theorists attribute to adaptive management, the approach discussed above as the only one capable of addressing social-ecological complexity, which indicates that English conservation is changing.

1.6 Research Aims and Questions

The overarching aim of this research is to contribute to the understanding of the complexity of nature conservation within a regulatory context, specifically, whether English nature conservation law and policy is resilient enough to allow for decision-making to adapt to constantly changing ecological and social conditions and to competing biodiversity, social and

[97] Collingwood Environmental Planning, *Monitoring and Evaluation of Nature Improvement Areas: Final Report (2012-15)* (Defra Research Project WC1061 2015) (henceforth Monitoring and Evaluation of Nature Improvement Areas: Final Report) viii.
[98] ibid.

private interests as a result of the complex nature of social-ecological systems. This thesis is an interdisciplinary study, which besides examining the scientific dimension of biodiversity loss also explores biodiversity conservation as an equally social problem that society seeks to address through law, policy and regulation.

A. This thesis takes a socio-legal approach, combining doctrinal and literature-based analysis with analysis of original empirical data, as part of a case study in Humberhead Levels NIA to provide a critical analysis and evaluation of the implementation of English nature conservation law and policy, as shaped by EU nature conservation schemes in the context of adaptive ecosystem management. The thesis suggests that when considering the pathway from theory to practice, core elements of adaptive management emerge and are implemented with varying degrees of success.

B. This thesis explores whether, despite the lack of explicit references to the term, nature conservation law and practice seeking to address the multi-faceted complexity of natural systems tend to rely to a great extent on a model of adaptive management, which is conceived through two interlocking theoretical lenses corresponding to different sources of complexity: adaptive management as a scientific process and adaptive co-management as a framework for conflict resolution. The thesis then proceeds to explore the extent to which such an approach bears out in practice and provides a critical analysis and evaluation of the overlaps and divergence between conceptual models of adaptive management and their practical implementation using as a reference the Humberhead Levels NIA

In line with the primary research aim and question(s), there are a number of issues that need careful consideration:

a. What are the challenges that policy makers face when drafting regulation to reverse the continue loss of biodiversity?
b. What are the current approaches used by nature conservation regimes in England, as part of EU nature conservation schemes, and how effective have they been in reaching their objectives?
c. What is the nature and role of Adaptive Management within nature conservation schemes?
d. What are the core elements that underpin the theoretical development of adaptive management models and their application in practice, and how do they relate to existing nature conservation schemes?
e. To what extent does the practical implementation of nature conservation objectives through innovative large-scale ecosystem management reflect the elements identified as primary drivers of Adaptive Management models?
f. How could existing legal and institutional frameworks be amended to facilitate a coherent implementation of adaptive ecosystem management?

1.7 Methodology and structure

This thesis combines qualitative doctrinal[99] and socio-legal research and uses a synthesis of secondary and primary qualitative data. More specifically, the thesis is divided into three parts and uses literature-based analysis, study of primary and secondary legal sources and original empirical data acquired from a case study of the Humberhead Levels NIA, one of the 12 Nature Improvements Areas established following the publication of the NEWP.

[99] Michael McConville and Wing Hong Chui, *Research Methods for Law* (Edinburgh University Press 2007), 22 argue that doctrinal research is qualitative 'on the basis that such research is a process of selecting and weighting materials taking into account hierarchy and authority as well as understanding social context and interpretation'. However other scholars see it as quantitative or as neither quantitative nor qualitative. ibid, 21, 41.

In order to answer the research questions, the thesis through doctrinal and literature-based analysis, seeks to provide a theoretical framework and background and more specifically:

a. Explore the changing perceptions of nature from 'nature in balance' to 'nature in flux' while examining the concept of 'ecosystems' as complex socio-ecological systems, where nature and humans' interests compete and intersect.
b. Analyse the dynamics between ecosystem complexity, scientific uncertainty and nature conservation law and policy.
c. Evaluate how effective current methods have been both in terms of reaching their set objectives and addressing challenges surrounding nature conservation.
d. Identify the factors-drivers of complexity and extract the three core elements – science, conflict resolution and public participation - that form the building blocks of adaptive management models.
e. Through analysis of literature, policy, legislation and case law identify these elements within nature conservation frameworks in England.

An analysis and evaluation of policy documents, strategies and legal framework and the identification of their links and relevance to adaptive ecosystem management is of course of the greatest importance. However, nature conservation occurs on a practical level. The various components of the ecosystems do not interact on paper but in the field and often, theoretical aspects and aspirations are lost in the translation from theory to practice. Therefore, I consider it necessary to test the relevance and application of adaptive management models through the study of large-scale ecosystem management that takes place in Humberhead Levels NIA, in order to evaluate the implementation of adaptive management practices in England. Hence the thesis will:

a. On the basis of original empirical data that acquired though the study of management carried out in Humberhead Levels NIA, investigate the overlaps and divergences of between the conceptualised models of adaptive management and the practical implementation of management practices in Humberhead Levels as they apply within and without nature conservation legal schemes and regulation.

b. Make recommendations of amendments to the current legal and institutional frameworks that allow for more consistent application of adaptive management

1.7.1 Doctrinal and Literature Based Analysis

The first two parts of this thesis use doctrinal and literature-based analysis. Doctrinal research has historically been the primary approach of traditional legal scholarship.[100] The focus of doctrinal research is the law itself and is carried out 'through reading court judgements and statutes with little or no reference to the world outside the law'.[101] This so-called 'black-letter' approach is based on the assumption that the character of legal scholarship is derived from law itself'.[102] For the purposes of this research, a doctrinal approach is essential in order to identify the relevant legislation and legal principles governing nature conservation in England, together with any legal issues that may arise from their application. Combined with a literature-base analysis, doctrinal research on the one hand is used to build a theoretical framework and background and on the other, to address questions of a legal nature.

Due to the interdisciplinary nature of the subject and the links of nature conservation to science, the study analysed literature comprising of books and

[100] ibid.

[101] ibid 2.

[102] Edward L. Rubin, *Law and the Methodology of Law and Society &(and) Law and Economics: Common Ground, Irreconcilable Differences, New Directions*, vol 1997 (1997) as referenced in McConville and Chui (n99) 4.

journal articles in the fields of natural sciences in addition to law and social sciences resources. In line with the doctrinal tradition, the study also explored primary and secondary legal sources including laws, orders, regulations, decisions and domestic and European court judgements; legal scholarship publications but also government policy documents and reports

A literature search was carried out mainly through Westlaw and Heinonline databases and key natural science journals such as *Nature* and *Conservation Biology.* Book publications were found mainly through researching the online library catalogue WorldCat.org. Domestic legislation sources were found at legislation.gov.uk. Research was also carried out into the Houses of Parliament Hansard Archives, the House of Commons Committees Website, the Law Commission Website as well as the websites of DEFRA, Natural England and Environment Agency. Domestic case law was mainly found at bailii.org, while EU sources were found mainly though eur-lex.europa.eu and curia.europa.eu.

1.7.1.1 Structure

Part I (chapter 2) is based on the literature analysis and seeks to provide the background against which this research has been conducted. **Chapter 2** introduces the idea of adaptive management and how it relates to nature conservation. In doing so, it explores how different perceptions of nature have guided nature conservation decision making over the years, reviews their degree of effectiveness and provides an insight into how the developments in the understanding of ecosystems as complex socio-ecological entities requires policy makers to change their perspective from reductionist top-down species protection to coherent, integrated ecosystem conservation, from mere prohibitions to positive management, from rigid regimes to flexible approaches.

Part II (chapters 3-6) builds on the preceding discussion and seeks to identify elements of adaptive ecosystem management within nature conservation law and policy in England, in order to support the argument that by looking into nature conservation regimes, we can detect practices

consistent with the adaptive approach. These practices fall within two different theoretical conceptualisations of adaptive management as a response to the challenges rooted in the dual nature of ecosystems as socio-ecological systems and are structured around two interlocking ideas: the need for evolving scientific knowledge to serve as basis for designing policy and the need to resolve or even prevent conflicts that (may) arise due to competing interest over natural resources.

More specifically, the conceptualisations follow the distinction drawn by different strands of literature. Hence, **Chapter 3** discusses the *technocratic* apprehension of adaptive management; adaptive management is seen as a technical process of modelling complexity and experimenting. It is the original conception of adaptive management, which advocates a scientific-technocratic model of adaptive management. It does so, both in terms of focus – primarily the ecological dimension of the system - and in terms of process and methods – it uses quantitative methods of modelling, math and statistics combined with scientific input to guide decision making, viewing biodiversity loss as primarily scientific problem. However, the purpose of the chapter is not to construct a model of a well-articulated and structured form of experimental planning but rather to identify constituent elements or basic themes of the science-driven adaptive management logic that are later used to trace the philosophy of adaptive management within English nature conservation law. In this respect, by drawing elements from academic literature and adaptive management practices in other jurisdictions, where adaptive management has been well structured and institutionalised, I have been able to identify the following essential properties of science-based adaptive management: a) adherence to science as a primary driver of nature conservation decision making b) adherence to the non-equilibrium paradigm c) research, learning and experimentation d) flexibility and iterative decision making,

Chapter 4 employs a literature-based and doctrinal analysis to test the model of scientific adaptive management against the nature conservation framework, as well as assess the compatibility of scientific adaptive management with the way nature conservation is administered in England. In

doing so, the chapter looks at law, policy and their implementation as shaped by administrative decisions and guidance as well as court judgments to reveal patterns of such a conceptualisation – that is the features identified in the previous chapter - therein. Hence, it seeks to assess the weight of scientific judgments in shaping decisions related to biodiversity management against other considerations. It continues to examine whether the principles of the non-equilibrium paradigm are reflected in the legal and policy framework, the role of learning and experimentation, and the flexibility of the regime when it comes to amending previously made decisions.

Chapter 5 builds on a second strand of literature that originates in the writings of Kai Lee who expanded the concept of adaptive management and placed it within a socio-political context that recognizes the social aspects of nature conservation decision-making. This version of adaptive management, often found in the literature as adaptive collaborative or co-management, views nature conservation in its social context and highlights the need for collaboration. In particular, this chapter argues that by providing a platform for collaboration among stakeholders, this version of adaptive management can be seen as a framework for conflict resolution through dialogue, negotiations and trade-offs. Stakeholder participation and collaboration is the theme that runs through this management model and the one I seek to identify within the nature conservation regime in the next chapter.

Chapter 6 seeks to identify the role of collaboration between various actors within the nature conservation legal and regulatory framework. Similarly to Chapter 4, it uses a combined literature based and doctrinal analysis and attempts to assess the extent to which the English nature conservation legislative and regulatory framework is flexible enough to foster collaborative, bottom up decision-making as way to balance competing interests towards the shared common objective of nature conservation.

Before continuing to Part III, I would like to highlight a few salient points. It is particularly important to understand that the distinction between the two models is to some extent artificial and is used here for analysis purposes only. In reality, these adaptive management models are not

watertight; they often overlap and elements of both fade in and out on a case-by-case basis. They can be seen as equal stand-alone management models serving different management objectives (e.g science-driven objectives and socially-driven objectives- the latter in cases when resolving conflict and/or bringing interests together is for instance primary objective). It is often, however, the case, that the collaboration-based management is put into practice in order to resolve conflicts that ignite because of the need to implement science driven models of management. In these cases, adaptive co-management is used as framework to resolve conflict, as a means, to implement otherwise science-driven decisions for science-driven objectives.

1.7.2 Qualitative socio-legal research

Doctrinal research has been central to legal scholarship for years and is indeed an integral part of this thesis. However, nature conservation occurs in practice. The entire body of laws and regulations are established in order to promote and facilitate nature conservation on the ground. Biodiversity and the various ecosystem components do not interact on paper but in the field and often the theoretical aspects and aspirations are lost in the translation from theory to practice. Hence, as its critics have pointed out, a purely doctrinal approach will be too narrow in its scope to consider 'non-law solutions, including political and social re-arrangement […] [that] may indeed be preferred'.[103]

Therefore, a social-legal approach is needed to complement the doctrinal research within this thesis. A legal tradition that emerged in the late 1960's, this non-doctrinal approach seeks to examine 'law in context'. The socio-legal approach studies law 'in the broader social and political context with the use of a range of other methods taken from disciplines in the social sciences and humanities.'[104]

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[103] McConville and Chui (n99) 1.
[104] ibid 5.

Hence, the last part of this study (Chapters 7-9) focuses on a case study of the Humberhead Levels Nature Improvement Area. My aim is to investigate the overlaps and divergences between the conceptualized models of adaptive management as they apply on the ground and operate within the legal and regulatory nature conservation framework. The argument here is that within their limitations, the laws and regulations in England set up a framework that is resilient enough to allow such management to take place; that is often more effectively done in an informal way not directly provided for by substantial or procedural legislation.

The final part of this thesis tests and compares the adaptive management models against data acquired though the case study. Part III constitutes the last part of a modular insight into nature conservation management in England and the end of adaptive management's 'journey' from literature, to law, to practice. Hence, the thesis will have tested the extent to which the concept of adaptive management as conceived in literature is in accordance with the legal framework governing nature conservation and together in line with what is followed in practice.

As will be evident from the previous paragraphs, the case study is not the sole or primary research methodology, but a continuing exploration of the research questions begun in the literature based and doctrinal analysis that precede it. Case studies have become increasingly popular within qualitative research in political and social science as they allow investigators 'to retain the holistic and meaningful characteristics of real life events'. Yin defines a case study as

> an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context especially when the boundaries between the phenomenon and the context are not clearly evident [105]

Additionally, a case study is most suitable in situations where the researcher has little control over the events and where there is a need to understand complex, real-life social phenomena. Nature conservation

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[105] Robert K. Yin, *Case study research: design and methods* (4th edn, Sage 2009), 18.

management is representative of such a situation. As will be discussed in detail throughout the thesis, nature conservation is a multi-dimensional problem that exhibits a high degree of complexity, driven by conflicting values. Nature conservation management is a real-life event. It happens every day on the ground and involves an array of different actors. Legal provisions and policy documents have a crucial role to play in setting the framework within which this management takes place. For instance, the EC Birds Directive establishes a protective framework for birds. It provides for the protection of birds but also for the protection of their habitats. However, as this thesis argues, merely enlisting species and prohibiting persecution is not sufficient to secure their survival. Nature conservation needs active management in addition to negative regulation. The EC directive is silent on the specific management measures that need to be taken, which are to be found in the management plans that are implemented in practice through day-to-day decisions of the competent authorities; or they can include simple practices that are not part of any formal process e.g a landowner putting up a bird feeder on his land voluntarily.

Had this thesis been about exploring nature conservation from a scientific perspective, seeking for instance to identify the most effective way to increase the population number of a threatened species, then it is likely that it would have involved some form of experimentation manipulating certain variables to reach to a conclusion. This thesis however examines nature conservation in its socio-legal context through direct observation of how it is applied in theory and practice. The researcher has no control over the application of management and cannot influence decisions; she can only reach conclusions through observation.

1.7.2.1 Case study of the Humberhead Levels Nature Improvement Area (HHL NIA)

The focus area is the HHL NIA and the management that takes place therein. The HHL NIA was selected for reasons relating to the region's special features and the management approach that was taken. In fact, the HHL NIA

exemplifies a complex ecosystem for scientists, policy and decision makers, which makes it an ideal case study to test the findings of the doctrinal and literature-based part of the study.

More specifically, much like the theory of adaptive management that was developed in response to the inadequacies of traditional forms of management, the NIA scheme sprung up in response to the findings of the Lawton report, which suggest that the state of nature conservation in England is highly fragmented within the established wildlife sites,[106] being too small and isolated to form a coherent ecological network capable of adapting to the challenge of climate change and other pressures to biodiversity. Professor Lawton argued that we need to rebuild nature';[107] that there needs to be a shift from traditional site-based conservation to landscape integrated management, habitats restoration and recreation; a step-change from 'trying to hang-on to what we have' to the establishment of Ecological Restoration Zones (ERZs).[108] The ERZs – renamed 'Nature Improvement Areas' in the NEWP - would 'operat[e] over large, discrete areas within which significant enhancement of ecological networks is achieved by enhancing existing wildlife sites, improving ecological connections and restoring ecological processes'. More, bigger, better and joined became the guiding mantra of *Making Space for Nature*.[109]

The large-scale ecosystem management that Lawton advocates is however bound to be much more complex than managing a small nature reserve. As the focus broadens over larger geographical areas, management becomes more challenging with more variables to consider: greater variety in habitats and species, a number of different, often overlapping designations together with a multitude of rules and regulations extending beyond *stricto sensu* nature conservation legislation, a larger number of ongoing local activities that might implicate management; an increased need for financial

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[106] In addition to statutory sites, non-statutory designations such as the Local Wildlife Sites were also included within Professor Lawton's review. *See* Lawton and others (n36) vii.
[107] ibid viii.
[108] ibid ii, 68.
[109] ibid viii.

and human resources, and of course a larger number of competing interests involved.

Nevertheless, engagement with conservation management within NIAs was entirely voluntary. The NIA designation did not confer any new powers of coercion to the administration. As Professor Lawton stressed, the NIAs were 'consortia of the willing' where local authorities and communities, land-owners and managers, conservation NGOs, local businesses, statutory agencies, utility companies, National Parks, AONBs etc. would work together to realise a shared vision for an enhanced, resilient, natural environment.[110]

Hence, the NIA scheme is founded on the need for adaptation to change as well as the need for collaborative management, both building blocks of the theoretical models of management this thesis is looking at. Moving on to the justification for choosing the Humberhead Levels as the focus of the study, as I have already mentioned, it exemplifies a complex ecosystem where both models of adaptive management fit neatly. The area is part of the vast flatlands straddling the borders of Yorkshire, Lincolnshire and Nottinghamshire, therefore it finds itself under the administrative jurisdiction of three different local authorities. The aim of the HHL NIA was '**to create an internationally renowned, unique wetland landscape, supporting thriving communities, economy, ecosystem services and wildlife'.**[111] The programme would enhance and reconnect existing internationally important wetlands, the Humberhead Peatlands and other SSSIs and Local Wildlife Sites by restoring and recreating key habitats. One of the biggest challenges was that the majority of land in the HHL, is Grade 1 and 2 highly fertile and under fractured ownership, agricultural land; As a result, any management plan had to operate against an increased demand for food production and supply and the interests of the local

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[110] John Lawton, 'Making Even More Space for Nature' (GWCT & NE Farmer Clusters Conference, London, 12th October 2017) available at <https://www.gwct.org.uk/media/798814/03> accessed January 2018; Lawton and others (n36) 71; NEWP (n85) 21.

[111] http://webarchive.nationalarchives.gov.uk/20140605090108/http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/funding/nia/projects/humberhead.aspx <accessed on 9 August 2016>.

farming community. The approach taken was one of cooperation with local farmers and stakeholders through locally led projects. The idea was to find ways to bridge the interests of biodiversity and the agriculture industry[112] - and as this thesis will show, sometimes with good communication, trust relationship and good negotiation skills, these interests were easier to bridge than originally imagined.

On the one hand, its diverse landscape, need for hydrological connectivity, multiple administration and strong private interests, make the Humberhead Levels a complex socio-ecological system and fertile ground for the application of adaptive management. On the other, the NIA framework originating in the Lawton Report – a heavily scientific report - calls for adaptation and puts collaboration at the centre of management implementation. Looking at the HHL NIA will therefore allow conclusions to be drawn on how adaptive management is or can be applied in practice; and the extent to which the legal and regulatory framework in which management has to operate, is flexible and resilient enough to allow or even facilitate it.

1.7.2.2 Research Methods

The choice among different research methods was guided by the research aims of the case study. The case study is not intended to be a detailed description and mapping of the management activities that take place in the Humberhead Levels NIA. The aim is rather to gain an understanding of what is happening on a day-to-day basis on the field, to allow the identification of potential trends of the different adaptive management models and as such, to complement the doctrinal part of the study. Hence, the primary methods used were research in a range of documents and interviews with key individuals in combination to documentation research. There was also a certain degree of direct observation that took place through my participation at a workshop[113]

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[112] This would have nevertheless had some greater social implications, given the constantly increasing food demand.

[113] *Working Together for Nature's Value and Benefits Across the Humberhead Levels* Workshop held on Monday, 17th March at Defra, Foss House, York.

held in York in 2014 and at the nature reserves where some of the interviews took place. Using different sources of data collection allowed for triangulation and corroboration of the information acquired, which in turn led to more accurate findings. The research methods of this case study are discussed in more detail in Part III.

1.7.2.3 Structure

Part III comprises of Chapters 7-9 and is the last part of the thesis. These chapters trace and discuss the interaction of the two theoretical adaptive management models used in the Humberhead Levels NIA over a three-year period. In doing so and similarly to Chapters 4 and 6, they seek to trace the core elements that characterise the adaptive management models extracted earlier in the thesis. The structure of Part III is as follows:

Chapter 7 provides the background to the Nature Improvement Areas scheme and Humberhead Levels area. It gives information on the characteristic features of the Humberhead Levels landscape and follows the management developments in the area that led to the establishment of the HHL NIA. The chapter introduces the pre-existing National Characters Areas (NCAs) initiative that divided England into 159 distinct natural areas based on ecological rather than administrative criteria. The NCA programme laid down the specific ecological, social and economic features of each NCA, environmental opportunities and land uses and in general all pertinent information for the development of management plans. The chapter also introduces the Humberhead Levels Partnership (HLP), the coalition of statutory agencies, conservation NGOs, administrative authorities and internal drainage boards (IDBs) that submitted the successful HHL NIA management plan and oversaw the management implementation in the NIA.

Chapter 8 continues with a detailed analysis that heads from the Lawton Review to the Natural Environment White Paper and subsequent

guidance documents, which state the vision and set the objectives of the scheme and therefore set up the framework for management design and implementation in the NIA. The chapter seeks to trace how key features of the models are embedded in the NIA framework. Accordingly, it looks at the role of science, learning, experimentation and stakeholder engagement within the NIA as envisaged by Professor Lawton and the administration.

Chapter 9 uses information acquired through interviews with key individuals involved with the management of the HHL NIA and from a series of documents and reports, in order to assess whether adaptive management works on the ground; whether the management practices applied in the NIA amount to what the theory refers to as adaptive management. The discussion will again revolve around the themes identified as running through the adaptive management models. In this context, the chapter examines how ecological and/or social considerations guide management at the different stages from designation through to final application.

Particular attention is paid to a large-scale project seeking to link wildlife sites scattered across arable land. The project provides a very good example of how the two models of adaptive management interact, as well as how collaboration and landowner engagement allow for the seamless implementation of science-driven management decisions. The chapter ends with a discussion on the role of law and administrative decision-making seeking to confirm the conclusions of previous chapters in relation to the flexibility of the legal and regulatory regime. Differences between theory and practice are explored when it comes to the implementation of adaptive management mechanisms, for example, broad collaboration in all stages of management, and the chapter also makes some suggestions on how to provide the system with some restricted and clearly delimited legal and regulatory controls flexibility, in order for the management to be even more adaptive.

Chapter 10 is the final chapter of this thesis drawing conclusions from all chapters and suggest focus points for further research.

1.7.3 Limitations of Research

There are several limitations to the present research that need to be mentioned:

First, there are some conceptual limitations; the theoretical underpinnings of adaptive management and that of adaptive collaborative management combined with a lack of consensus in the literature on the exact definition of the terms, give rise to different models of adaptive management.[114] Hence, adaptive collaborative management could also be seen as a model for public participation seeking to increase the democratic legitimacy of an inherently science-driven policy field. Alternatively, it can be seen as a model to bring together different sources of knowledge e.g. local and traditional. Arguably, it can also be and in many cases works best as a combination of all three. However, due to time and length restrictions I chose to focus on a scientific model to address ecological uncertainty and a stakeholder collaboration model to seek conflict resolution or better management since these are two of the biggest challenges that decision-makers face when implementing nature conservation law and policy.

Second, there are geographical limitations. The spatial scope of the thesis is England within the legal jurisdiction of England and Wales. Nevertheless, there are references to the UK or Britain usually made in a historical context before the devolution. References to the UK are also made in the case of data (primarily reports) covering the whole state. Additionally, it can be the case that given the similarities of the regimes, case law of the Welsh and/or Scottish courts is discussed. A second geographical limitation is that of the HHL NIA. For the reasons exposed in the previous section, I chose to focus my research on the HHL NIA. However, the HHL NIA was just one of the 12 first winners of the competition and there were 11 more NIAs across the country,

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[114] *See* Ryan Plummer and others, 'Adaptive Comanagement: A Systematic Review and Analysis' [2012] 17 Ecology and Society art.11 for an extensive review of the literature on adaptive co-management.

whose structure and management approaches vary.[115] Hence, it has to be acknowledged that had the focus been on, for example, the farmer-led Marlborough Downs NIA the dynamic interaction between science-driven and collaborative decision making and the respective management models they give rise to are likely to have been slightly different. Nevertheless, given that all NIAs operate within the same legal framework and the same scheme framework, I consider that the conclusion drawn with regard to the flexibility of the legal and regulatory framework in relation to models of adaptive management would not change substantially.[116]

Third, writing about nature conservation law I am faced with the problem of defying nature conservation law. As Rodgers stresses 'the parameters of "nature conservation law" are potentially very wide and inherently difficult to define with precision. [117] Having said that, unless otherwise stated, 'nature conservation law' in this thesis is used to refer to legal instruments whose primary – if not sole - focus is the conservation of species and habitats. The focus will mainly lie on the Wildlife and Countryside Act 1981, [118] the statute including the majority of domestic nature conservation primary legislation providing for species protection and site designation, the Birds[119] and Habitats Directives[120] and the implementing Habitats Regulations 2010, as well as agri-environment agreements[121] that

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[115] This variation in structure and approaches was actually one of the aspirations of the programme that reflects inter alia the experimental nature of the scheme. See Monitoring and Evaluation Final Report (n97) viii.

[116] *See* Alan Bryman, *Quantity and Quality in Social Research* (Routledge, 2003) 87 discussing the issue of generalisation of results in case studies.

[117] Rodgers (n6) 32.

[118] The discussion is nevertheless focused primarily on the implementation of laws on site designation and management, rather than the more traditional approach of direct species protection. In this respect, 'nature conservation' is taking the meaning of Part II of the WCA 1981 referring to site designation and management while species protection is dealt in Part I entitled 'Wildlife'.

[119] Habitats Directive (n34).

[120]ibid.

[121] Regulation (EU) No 1305/2013 of the European Parliament and of the Council of 17 December 2013 on support for rural development by the European Agricultural Fund for Rural Development (EAFRD) and repealing Council Regulation (EC) No 1698/2005 OJ L 347/487 art.28.

support nature conservation management outside protected areas. However, the discussion takes place against the understanding that nature conservation is more than what is laid down in one or two statutes.[122] As with the components of ecosystems themselves, there is much interaction between laws and regulations targeting the various biotic and abiotic elements of the natural environment.

In addition, laws having implications for the conservation of biodiversity extend beyond those classified as 'environmental law', a typical example being the town and country planning system that controls development, which could have significant effects on the conservation value of an area. On the other hand, how nature conservation decision-making is carried out and applied will depend on the interpretation of 'nature conservation law' beyond a strict definition of 'law' as primary and delegated legislation to include the range of non-binding materials such as guidance notes, policy documents and codes of practice that define how *sensu stricto* nature conservation law operates at ground level. Therefore, the wider term nature conservation framework is often used to refer to the full set of laws, policy, guidance documents and guidelines that give effect to nature conservation management.

[122] Nevertheless, considering every piece of legislation that might have conservation implications would widen the scope of the research to such an extent that it would become unmanageable and, given that the analysis would be focused on general features of law, maybe even meaningless.

Part I

2 Adaptive management for socio-ecological complexity

This chapter introduces the concept of adaptive management as a mechanism capable of addressing two major challenges faced by those involved with nature conservation during management design, as well as day-to-day management implementation: these are ecological uncertainty and conflict, both manifestations of social-ecological complexity.

The chapter starts by introducing the idea of social-ecological complexity as an inherent feature of ecosystems. Then, it explores ecological complexity and its implications for nature conservation decision-making; it refers to the evolution of ecology and the transition from the equilibrium to the non-equilibrium paradigm. It argues that many of the legal approaches that are widely used to promote biodiversity objectives are largely premised on outdated ideas of static ecosystems and therefore a mismatch to changing dynamic systems and for that reason somewhat ineffective. In response to the shortcomings of traditional approaches to nature conservation, the chapter introduces the notion of adaptive management as a technocratic mechanism capable of addressing the ecological complexity, uncertainty and unpredictability of constantly evolving natural systems.

The chapter continues by discussing conservation conflicts as an expression of social complexity. It presents the different types of conflict that arise along the different stages of implementation of conservation policies and blight decision-making. In response, the chapter introduces the concept of adaptive collaborative management as a tool to bridge competing interests and mitigate or even prevent conflicts from arising.

2.1 Deconstructing socio-ecological complexity and scientific uncertainty

Following the revolution in ecological thinking that occurred in the late 1980's, the once preeminent concept of a 'nature in balance', which ought to be 'left alone' and undisturbed by external influences, gave way to the equilibrium paradigm which stressed that change, instability and unpredictability are inherent characteristics of ecosystems.[123] Ecosystems are now seen as complex, dynamic entities that are constantly changing and evolving. [124] This ecological complexity invigorates the scientific indeterminacy that is found inherent in any science-driven process.[125]

Furthermore, the 'New Ecology' abandons older romantic views of 'nature undisturbed' and assertions of a sharp distinction between the human and the natural environment. [126] Although their exact role is a hot topic for debate,[127] humans are now seen as an integral part of ecosystems that shape their processes and dynamic. [128] As Botkin wrote, 'life and the environment are one thing not two, and people, as all life are immersed in the one system'.[129]

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[123] Daniel B. Botkin, *Discordant harmonies: a new ecology for the twenty-first century* (Oxford University Press 1990); Botkin's work is considered a landmark towards this direction. Tarlock in A. Dan Tarlock, 'Nonequilibrium Paradigm in Ecology and the Partial Unravelling of Environmental Law' (1993-1994) 27 Loy L A L Rev 1121, 1129 notes in that '*in a path-breaking book Daniel Botkin has 'deconstructed the equilibrium paradigm as a misguided effort to match science to theological and scientific visions of a perfect universe'.*

[124] Botkin (n123); Judy L. Meyer, 'Dance of Nature: New Concepts in Ecology, The Symposium on the Ecology and the Law' (1993-1994) 69 Chi-Kent L Rev 875, 876-877.

[125] P.R. Ehrlich and A.H. Ehrlich, *Betrayal of Science and Reason: How Anti-Environmental Rhetoric Threatens Our Future* (Island Press 1998) 27; Richard A. Carpenter, 'Ecology in Court, and Other Disappointments of Environmental Science and Environmental Law' (1983) 15 Natural Resources Lawyer 573 considers ecology to be the most uncertain among all natural sciences *(see infra section 2.2.3).*

[126] Carl Folke and others, 'Adaptive Governance of Social-Ecological Systems' (2005) 40 Annual Review of Environment and Resources 441, 443.

[127] M.J. McDonnell and others, *Humans as Components of Ecosystems: The Ecology of Subtle Human Effects and Populated Areas* (Springer New York 2012).

[128] Berkes and Folke (n55) 9.

[129] Botkin (n123) 188.

It is now recognised that beyond the ecological, ecosystems also have a social dimension.[130] Berkes and Folke introduced the term 'social-ecological' system in order to emphasize 'the integrated concept of humans in nature and to stress that the delineation between the social and the ecological systems is artificial and arbitrary';[131] social-ecological systems are conceptualised as 'linked and co-evolutionary systems of society and nature'.[132] The social dimension of ecosystems adds the social and institutional complexity that is present in human societies to the already complex task of ecosystem management and nature conservation.[133] Multi-layered stakeholder interactions and multipartite, polycentric disputes and conflicts of interest are some of the manifestations of such complexity.[134]

These two integrated facets of complexity are explored in the following sections. The focus of the discussion is confined to the implications of social-ecological complexity for nature conservation decision-making and provides the basis for the argument in favour of a more adaptive approach. Although the two aspects of complexity are looked at separately, it must be highlighted that this separation is artificial and serves the analysis. The term 'social-ecological complexity' was introduced precisely to convey the multi-level interaction across the natural and human world. Even when discussing the ecological dimension of ecosystems, it must be understood that this is never sealed off from human influence.

Especially within a regulatory context, humans' interaction with nature is multi-folded and can be found at both ends of the regulatory process: at the creation and application of laws and regulations. At the back-end of the process, nature conservation management is essentially about managing

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[130] Berkes and Folke (n55) 9; *see* in general F. Berkes, C. Folke and J. Colding (eds), *Linking Social and Ecological Systems: Management Practices and Social Mechanisms for Building Resilience* (Cambridge University Press, 1998) and the subsequent work F. Berkes, J. Colding and C. Folke (eds), *Navigating Social-Ecological Systems: Building Resilience for Complexity and Change* (Cambridge University Press, 2008).

[131] Berkes and Folke (n55) 4.

[132] Derek Armitage and others, 'Emerging Concepts in Adaptive Management' in C.R. Allen and A. Garmestani (eds), *Adaptive Management of Social-Ecological Systems* (Springer 2015) 238

[133] Folke and others (n126) 443.

[134] ibid.

human activities; the recipients of any laws or regulations are not the birds, animals or plants but people. At the front end, it is through human decisions that any conservation interventions aimed at reversing biodiversity-declining trends are carried out. Humans will be those to decide and set priorities and objectives. Even if legislation is introduced to ensure that we 'let nature be', choosing to take this approach would also be a human decision. Hence, although the object of the protection might belong to natural world, such protection is nevertheless taking place within a human/social context.

2.2 Ecological Complexity, Uncertainty and Nature Conservation Law

2.2.1 The transition from 'nature in balance' to 'nature in flux'

Having its origins deep in ancient times, our history, civilisation and religion,[135] the idea of 'Nature undisturbed' ruled ecological thinking until recently.[136] Botkin, one of the pioneers of modern ecology and a supporter of the non-equilibrium theory,[137] quotes three basic features of the 'myth', as he characterises it, of the 'Balance of Nature' theory.[138] According to this theory,

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[135] Daniel B. Botkin, 'Adjusting Law to Nature's Discordant Harmonies' (1996) 7 Duke Envtl L & Pol'y F 25 (1996) 26; Tarlock (n123) 1126; Frank N. Egerton, 'Changing Concepts of the Balance of Nature' (1973) 48 The Quarterly Review of Biology 322, 325.

[136] Botkin *Discordant harmonies: a new ecology for the twenty-first century* (n123) 9; Botkin 'Adjusting Law to Nature's Discordant Harmonies' (135) 25-26; Tarlock (n123) 1126; For an overview of the history of the idea of the 'Balance of Nature' *see* Egerton (n135).

[137] *See supra* n123.

[138] Botkin 'Adjusting Law to Nature's Discordant Harmonies' (n135) 26.
For the variety of ways ecologists have described equilibrium in ecosystems *see:* Joseph H. Connell and Wayne P. Sousa, 'On the Evidence Needed to Judge Ecological Stability or Persistence' (1983) 121 The American Naturalist 789, 790; William W. Murdoch, 'Population Regulation and Population Inertia' (1970) 51 Ecology 497, referring to population stability; G. H Orians 'Diversity, stability and maturity in natural ecosystems' 139-150 in W. H. van Dobben and Ro McConnell (eds), *Unifying concepts in ecology : report of the plenary sessions of the First international congress of ecology, The Hague, the Netherlands, September 8-14, 1974* (W. Junk ; Centre for Agricultural Pub. and Documentation 1975); R. Margalef 'Diversity and stability: a practical proposal and a model of interdependence' 25-37 in *Diversity and stability in ecological systems* (Biology Dep., Brookhaven National Laboratory 1969); D.F Boesch 'Diversity, stability and response to human disturbance in estuarine ecosystems' 109-114 in International Congress of Ecology, *Proceedings of the International Congress of Ecology 1.*

nature when left undisturbed achieves through linear development a steady, permanent and perfect condition (an ecological climax) to which it is capable of returning if disturbed by outside forces.[139] Human interventions were considered disturbances in response to which nature deviated from its perfect stable state. Hence, to preserve its ideal condition humans should be kept away.[140]

The idea of an ordered and steady state ecosystem 'runs throughout the western history'[141] and despite arguments against it (e.g. Lucretius,[142] Elton[143]), the theory of ecosystem equilibrium was widely advocated and accepted[144] by the great ecologists and conservationists of the 20th century

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1974, The Hague: Structure, functioning and management of ecosystems (Centre for Agricultural Publishing and Documentation); C.S Holling and W.C Clark 'Notes towards a science of ecological management' 247-251 in Dobben and McConnell (eds), id; C.S Holling, 'Engineering resilience versus ecological resilience' 31-44 in National Academy of Engineering, *Engineering Within Ecological Constraints* (Peter Schulze ed, The National Academies Press 1996).

[139] Botkin 'Adjusting Law to Nature's Discordant Harmonies' (n135) 26; Stewart T. A Pickett, V.T Parker and P Fielder, 'The new paradigm in ecology: implications for conservation biology above the species level' in Peggy L. Fiedler and Subodh K. Jain eds (eds), *Conservation biology: the theory and practice of nature conservation, preservation, and management* (Chapman and Hall 1992).

[140] Tabatha J. Wallington, Richard J. Hobbs and Susan A. Moore, 'Implications of current ecological thinking for biodiversity conservation: a review of the salient issues' (2005) 10 Ecology and Society 15 4; Timothy H. Profeta, 'Managing without a Balance: Environmental Regulation in Light of Ecological Advances First Annual Cummings Colloquium on Environmental Law: Beyond the Balance of Nature: Environmental Law Faces the New Ecology' (1996) 7 Duke Envtl L & Pol'y F 71, 72; *See also*, Julie Thrower, 'Adaptive Management and NEPA: How a Nonequilibrium View of Ecosystem Mandates Flexible Regulation Annual Review of Environmental and Natural Resources Law' (2006) 33 Ecology LQ 871, 875 referring to Aldo Leopold who 'although he recognised that humans were no longer separated from nature, he believed that nature without human influence was right'.

[141] Botkin *Discordant harmonies: a new ecology for the twenty-first century* (n123) 9.

[142] ibid 9, 94-95 referring to Lucretius work Lucretius (Titus Lucretius Carus), *De Rerum Natura,* trans. R. Humphries (Bloomington: University of Indiana Press 1968).

[143] Botkin, *Discordant harmonies: a new ecology for the twenty-first century* (n123) 15 quotes Charles Elton who argues that *'The Balance of Nature doesn't exist, and perhaps has never existed. The numbers of wild animals are constantly varying to a greater or a lesser extent, and the variations are usually irregular in period and always irregular in amplitude' See:* Charles S. Elton, *Animal ecology and evolution* (The Clarendon Press; H. Milford 1930).

[144]Botkin, *Discordant harmonies: a new ecology for the twenty-first century* (n123) 9 stating 'Until the past few years, the predominant theories in ecology either presumed or had as a necessary consequence a very strict concept of a highly structured, ordered, regulated, steady-state ecological system'; Meyer (n124) 875 argues that 'the classical paradigm in ecology

who shared a belief in a general equilibrium at different levels of organisation.[145] The assertion derived from ecology and subsequently used by legislators, resource managers and policy makers was *'Let Nature Be.'*[146] Nature undisturbed by human intervention was the desirable outcome of environmental regulation;[147] ecosystems left undisturbed would continue to perpetuate themselves over time.[148]

However, management efforts based on the idea of ecosystem equilibrium proved fruitless.[149] In the 1950's and 1960's scientific evidence pointed to a different direction; animal populations were not in a static

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conceives of an ideal ecosystem that is either in equilibrium, stable or moving toward stability'.

[145] *See* Stephen Alfred Forbes, *The lake as a microcosm* (Urbana, III 1925) who wrote that 'no phenomenon of life...is more remarkable than the steady balance of organic nature which holds each species within the limits of uniform average number, year after year, although each one is always doing its best to break across boundaries on every side' as quoted in Botkin *Discordant harmonies: a new ecology for the twenty-first century* (n123) 33; *See also* A. J. Nicholson, 'Supplement: the Balance of Animal Populations' (1933) 2 Journal of Animal Ecology 131, 132 responding to Charles Elton and those doubting the validity of the 'balance of nature theory'. *See also:* Aldo Leopold and Charles Walsh Schwartz, *A Sand County almanac, and sketches here and there* (Oxford University Press 1987), 224-25 as quoted and referenced in Tarlock (n123) 1122; Eugene P. Odum, *Fundamentals of ecology* (Saunders 1969) as quoted and referenced in Tarlock (n123) 1127. E. Odum made according to Tarlock the most authoritative scientific statement of equilibrium. However, in 1992, Odum proceeded to place the 'non-equilibrium paradigm' first within his list of the twenty great ideas in ecology. Eugene P. Odum, 'Great Ideas in Ecology for the 1990s' (1992) 42 BioScience 542, 542.

[146] Tarlock (n123) 1122; Bruce Pardy, 'Changing Nature: The Myth of the Inevitability of Ecosystem Management' (2003) 20 Pace Envtl L Rev 675, 681.

[147] Profeta (n140) 72; Tarlock (n123) 1229; Botkin, 'Adjusting Law to Nature's Discordant Harmonies' (n135).

[148] Botkin, 'Adjusting Law to Nature's Discordant Harmonies' (n135) 26; Meyer (n124) 875; Profeta (n140) 72; Fred P. Bosselman and A. Dan Tarlock, 'Influence of Ecological Science on American Law: An Introduction, The Symposium on the Ecology and the Law' (1993) 69 Chi-Kent L Rev 847,847.

[149] *See* Botkin, *Discordant harmonies: a new ecology for the twenty-first century* (n123) 15-25 describing unsuccessful attempts to manage living resources (elephant populations in Tsavo and management of fisheries) based on 'nature undisturbed'; Also ibid 68-70 referring to the case of Kirtland's warbler a small bird whose population was reducing due to the twentieth century practice of fire suppression; *also* I. Scoones, 'New Ecology and the Social Sciences: What Prospects for a Fruitful Engagement?' (1999) 28 Annual Review of Anthropology 479, 482-483 and cited literature.

equilibrium and the rule was not that of stability, but one of variation.[150] This is when ecologists' perception of how nature actually works gradually changed and a shift from the equilibrium to the non-equilibrium paradigm occurred.[151]

The new paradigm rejects the traditional ideas of a world in equilibrium and recognizes change and evolution as inherent characteristics of the ecosystems, 152 while viewing humans as integral components of natural systems and human induced perturbations as influencing ecosystem change.[153] The equilibrium paradigm is now an outmoded concept and the idea of constantly evolving and changing ecosystems has replaced that of the 'balance of nature' within modern ecology.[154] The new paradigm calls for non-equilibrium dynamics, temporal and spatial variations and recognises change, disturbances, perpetual flux and uncertainty as natural characteristics of ecosystems.[155]

Modern ecology views nature as dynamic in time, in a perpetual flux;[156] ecosystems do not reach a climax state through linear processes but exist in 'multi-stable' states with 'multiple successional pathways'.[157] Change, gradual

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[150] Botkin, *Discordant harmonies: a new ecology for the twenty-first century* (n123) 47; Meyer (n124) 876; Thrower (n140) 876; also, Connell and Sousa (n138) 789 suggesting that 'If a balance of nature exists, it has proved exceedingly difficult to demonstrate'.

[151] Tarlock (n123) 1122ff.

[152] Meyer (n124) 875; Tarlock (n123) 1129; Jonathan Baert Wiener, 'Beyond the Balance of Nature' (1996) 7 Duke Envtl L & Pol'y F 1.

[153] Wallington, Hobbs and Moore (n140) 4-5; Tarlock (n123) 1129; Pickett, Parker and Fielder (n139) 73.

[154] Tarlock (n123) 1128.

[155] Botkin, 'Adjusting Law to Nature's Discordant Harmonies' (n135) 27; Wiener (n152) 1; Norman L. Christensen and others, 'The Report of the Ecological Society of America Committee on the Scientific Basis for Ecosystem Management' (1996) 6 Ecological Applications 665, 669, 673-675; Meyer (n124) 877 who suggests a new term to replace that of the 'Balance of Nature': 'I suggest "the dance of nature" as an image that conveys a sense of change and movement in response to myriad of influences (...)'.

[156] Botkin, *Discordant harmonies: a new ecology for the twenty-first century* (n123) 10 stating that '[...] change now appears to be intrinsic and natural'; id at 62 'Wherever we expect to find constancy, we discover change [...] we find that nature undisturbed is not constant in form, structure, or proportion, but changes at every scale of time and space. The old idea of a static landscape, like a single musical chord sounded forever, must be abandoned, for such a landscape never existed except in our imagination'.

[157] Meyer (n124) 876.

or rapid,[158] is an essential component of the stability of the system.[159] The non-equilibrium paradigm rejects the idea of static systems, where every species has its ordered position and role in nature and views ecosystems as open and heterogeneous.[160] Thus, ecosystems are not only internally in a constant flux but they interact and are influenced by adjusted systems.[161] Nature functions in different spatial scales [162] and knows no human-made boundaries, jurisdictional or ownership based. [163] Even the so-called well-bounded systems [164] are not entirely isolated and are thus vulnerable from other systems beyond them.

2.2.2 Ecosystems are not only more complex than we think, but more complex than we can think[165]

Ecologist Frank Egler wrote in 1977 that 'ecosystems are not only more complex than we think, but more complex than we can think'.[166] Ecosystems

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[158] Wallington, Hobbs and Moore (n140) 3.

[159] J.B. Ruhl, 'Taking Adaptive Management Seriously: A Case Study of the Endangered Species Act' (2003) 52 U Kan L Rev 1249, 1261.

[160] Botkin, *Discordant harmonies: a new ecology for the twenty-first century* (n123) 75; Wallington, Hobbs and Moore (n140) 5.

[161] ibid.

[162] As a result, an ecosystem could include anything from 'the microbes in a single drop of water to the entire solar system', both of them falling within the definition of the ecosystem as 'a community of mutually interdependent species and the physical environment with which they interact', Karkkainen, 'Collaborative Ecosystem Governance: Scale, Complexity, and Dynamism' (n54) 207.

[163] *See* Christensen and others (n155) 670 who argue that 'nature has not provided us with a natural system of classification or rigid guidelines for boundaries demarcation'.

[164] David M. Post and others, 'The problem of boundaries in defining ecosystems: A potential landmine for uniting geomorphology and ecology' [2007] 89 Geomorphology 111, 115 stressing that *well-bounded* are the systems 'where strong associations occur among resource flow, community membership and physical boundaries, which is common for lakes and islands' and where 'delineating ecosystem boundaries is relatively straightforward because of the convergence of functional and structural attributes of those boundaries'.

[165] Frank Edwin Egler and Association Connecticut Conservation, *The Nature of vegetation, its management and mismanagement: an introduction to vegetation science* (Conn.: Aton Forest; Conn.: Connecticut conservation association 1977) as quoted and referenced in Reed F. Noss, 'Some Principles of Conservation Biology, as They Apply to Environmental Law Symposium on the Ecology and the Law' (1993) 69 Chi-Kent L Rev 893, 898.

[166] Egler and Connecticut Conservation as quoted and reference in Noss (n165) 898.

function at multiple temporal and spatial scales, with continual interactions between biotic and abiotic factors, inputs, outputs and cycling of materials and energy, which makes it really difficult, if not impossible, to predict the consequences of any action.[167] Ecosystems are non-linear systems.[168] Therefore the effects of intentional or unintentional interventions are discontinuous both in time and space and are often unpredictable.[169] As Karkkainen rightly points out, the complexity of ecosystems prevents us from fully understanding how an entire system functions and predicting the results of any particular intervention, even if we have complete understanding of their components.[170]

> Even if we had a relatively sophisticated scientific understanding of each of the components, there is likely to remain a residuum of inherent *uncertainty* and *unpredictability* with respect to the consequences of any particular input-including any adjustments we might make through management measures due to the inherent stochasticity and continuously evolving nature of complex natural systems.[171]

Ecosystem complexity and the implications for nature conservation decision-making are encapsulated in two short quotes of Daniel Botkin: 'nature does

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[167] Reed F. Noss, Michael A. O'Connell and Dennis D. Murphy, *The science of conservation planning : habitat conservation under the Endangered Species Act* (Island Press 1997) 76 state that 'nature at all levels of biological organisation - genes, populations, species, communities, ecosystem, landscapes - encompasses many phenomena that cannot be perceived, measured, or understood using the traditional methods of scientific inquiry', as quoted and referenced in Karkkainen, 'Collaborative Ecosystem Governance: Scale, Complexity, and Dynamism' (n54) 196.

[168] ibid 195.

[169] C. S. Holling, Fikret Berkes and Carl Folke, 'Science, Sustainability and Resource Management' in F. Berkes, C. Folke and J. Colding (eds), *Linking social and ecological systems: management practices and social mechanisms for building resilience* (n55) 342 stating that 'surprises are inevitably incomplete, not only because science is inevitably incomplete, but because non-linear, dynamic, natural systems exhibit so many discontinuous behaviours that "it is not possible *a priori* to predict even the kinds of changes that will occur, let alone their probability"; *See also* Karkkainen, 'Collaborative Ecosystem Governance: Scale, Complexity, and Dynamism' (n54) 195 who states that '[there are] complications by co-causation and synergistic interaction among multiple factors, operating along multiple complex chains of causation, often *incorporating* both positive and negative feedback simultaneously. As a result, small inputs can sometimes result (...) in unpredictable results'.

[170] Karkkainen, 'Collaborative Ecosystem Governance: Scale, Complexity, and Dynamism' (n54) 195.

[171] ibid 196.

not play fair'; nature 'does not do what we expect it to do'.[172] Managers in New Jersey were expecting to preserve the Hutchinson Forest by fire suppression but instead they achieved the exact opposite;[173] uncertainty is thriving.

2.2.3 Intensifying scientific uncertainty

Although considerable ambivalence exists regarding the appropriate role of science within nature conservation regimes, that it has a central role to play is beyond any dispute.[174] As Fischer points out, environmental problems are intrinsically different from the majority of social problems the law is called upon to address, as they revolve around 'facts' and physical phenomena occurring in the natural world:

> whereas social problems typically draw much of their rhetorical power from moral discourse (e.g., `should women get the same pay as men? Should the homeless sleep in the park?), environmental problems turn much more on arguments about "facts". Problems such as global warming, while morally charged, tend to be more directly tied to scientific findings and claims. Although they are generally traceable to human agents, environmental problems have an imposing physicality compared to other problems, which are more often rooted in social and personal concerns that are converted into public issues.[175]

Hence, neither the legislator nor the executive branch of government has the expertise to determine when an ecosystem is deteriorating, the reasons behind such deterioration or right ways to address and reverse it. Finding solutions to some of the most intricate challenges set by the

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[172] Botkin, 'Adjusting Law to Nature's Discordant Harmonies' (n135) 30.

[173] ibid 51ff; Botkin discusses the case of an old oak forest in New Jersey, US where fire suppression had the exact opposite result from the one intended (the forest's preservation). Fires that had been common before European settlement in the area were what had actually been preventing sugar maple trees from overtaking the forest. Fire suppression allowed the less fire-resistant maple tree to grow, changing the forest's form and structure.

[174] Christensen and others (n155); Brent Steel and others, 'The role of scientists in the environmental policy process: a case study from the American west' (2004) 7 Environmental Science & Policy 1; Holly Doremus, 'Listing Decisions Under the Endangered Species Act: Why Better Science Isn't Always Better Policy' (1997) 75 Wash U L Rev 1031.

[175] Frank Fischer, *Citizens, experts, and the environment: the politics of local knowledge* (Duke University Press 2000) 90.

complexity of natural systems requires lawyers and policy and decision makers to work closely and in partnership with scientists from a wide array of disciplines, who will be able to study the problem and provide different options in order to address it.[176]

However, and despite law's expectations and continuous appeals to science for accurate predictions, [177] the inductively acquired scientific knowledge is uncertain since scientific statements are in fact far from being capable of absolute verification. [178] The scientific community is now acknowledging the limitations of science in providing certain answers and prefers to refrain from making definite assertions. [179] Science is not omnipotent; it is flexible and constantly evolving, an enterprise that as Nicolas de Sadeleer notes 'seeks to apprehend the greatest uncertainty - that is, ignorance - and assess its dialectical interaction with knowledge'. [180] The overthrow of even a well-established theory should be considered possible if not anticipated. On its relation to certainty, biologists Paul and Anne Ehrlich argue that:

> [...] science can never provide absolute certainty or the 'proof' that many who misunderstand science often say society needs. Certainty is a standard commodity for some religious leaders and political columnists, but it is forever denied to scientists. asserted 'asserted

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[176] Steel and others (n174) 1.

[177] D. Sarewitz and R.A. Pielke, 'Prediction in Science and Policy' in D. Sarewitz, R.A. Pielke and R. Byerly (eds), *Prediction: Science, Decision Making, and the Future of Nature* (Island Press 2000) 11.

[178] Despite positivists' initial refutation of Hume's problem of induction, they eventually came to realize the merit of Hume's argument and admitted that even empirical propositions could not be absolutely verified, and that absolute certainty is unattainable, *See* Hans Reichenbach, *Experience and prediction: an analysis of the foundations and the structure of knowledge* (University of Chicago Press 1938) 187, 188.

[179] *See* in general John Lemons (ed), *Scientific uncertainty and environmental problem solving* (Blackwell Science 1996); *Also,* Doremus, 'Listing Decisions Under the Endangered Species Act: Why Better Science Isn't Always Better Policy' (n174) 1069-1071 discussing the limits of reliability of scientific knowledge.

[180] Nicolas de Sadeleer, *Environmental principles: from political slogans to legal rules* (Oxford University Press 2002), 117 discussing the development of the precautionary principle as a response to scientific uncertainty.

Furthermore, science is not as neutral and objective as often depicted. [181] Even setting aside questions of potential bias and political influence,[182] neither scientific information nor knowledge can ever be entirely objective.[183] Contrary to positivist assertions on a fact-value dichotomy, there is no such thing as value neutrality in science.[184] On the contrary, science is inherently value-laden. Objective criteria are set by people and objective assessments, as long as they are made by people, are not possible.[185] Scientific knowledge is not about objective determinations but subjective interpretations. Chemist and Nobel Prize winner John Polanyi for instance, argued that personal judgments were what scientific progress depended on: 'science is done by scientists, and since scientists are people, the progress of science depends more on scientific judgments than on scientific instruments'.[186]

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[181] Fischer (n175) 8; Doremus, 'Listing Decisions Under the Endangered Species Act: Why Better Science Isn't Always Better Policy' (n174) 1065-1069.

[182] John McEldowney and Sharron McEldowney, 'Science and Environmental Law: Collaboration across the Double Helix' (2011) 13 Envtl L Rev 169 argues that '*science may be used as a smoke screen for political purposes*'; Eric Biber, 'Which Science? Whose Science? How Scientific Disciplines Can Shape Environmental Law' (2012) 79 The University of Chicago Law Review 471, 473, stresses that '*scholars have criticized agencies, interest groups, and scientists for pursuing a science "charade" in which policy conclusions and value choices are hidden in complicated, technical models and analyses, primarily via assumptions and inferences';* Doremus, 'Listing Decisions Under the Endangered Species Act: Why Better Science Isn't Always Better Policy' (n174) 1038-1040 writes that politicians '*are often more interested in cloaking their favored policies with the prestige of science in choosing policies which accurately reflect scientific knowledge'.*

[183] Steel and others (n174) 2-3.

[184] ibid; K.S Van Houtan, 'Conservation as Virtue: a Scientific and Social Process for Conservation Ethics' (2006) 20 Conservation Biology 1367, 1369 referring to the critics of science's objectivity suggests that 'that "pure science" is a fiction, that no scientific observation is value free'; *See also* Doremus, 'Listing Decisions Under the Endangered Species Act: Why Better Science Isn't Always Better Policy' (n174) 1065-1068 for a discussion on the limitations of scientific objectivity.

[185] Steel and others (n174) 3.

[186] John Polanyi quoted in ibid 3.

Human factors[187] and the socio-legal context of scientific research influence scientists' judgement-based-processes.[188] Scientific 'neutrality' is severely compromised by scientific and political interests, social needs, professional or economic competitions between scientists and research institutions, available funding, legislation that may set limitations on research methods, all factors that set the course of scientific research.[189] Hence, different scientists will draw different conclusions even from the same set of empirical data, equivocal to some degree given the fact that they are the result of human observation, which can never be completely reliable.[190] Hence, the lack of objectivity increases the already striking problem of scientific indeterminacy. Does this mean that we should dismiss science as a reliable source of knowledge? Certainly, not; what is needed is to acknowledge the relativity and subjectivity of scientific knowledge.

To return to nature conservation and ecosystem management, the inherent limitations of science to provide with definite answers and flawless objective advice are further intensified by ecological complexity. Although no science can provide 100% certainty, there are differences in reliability, predictive capacity and the influence of subjective values among 'hard' and 'soft' sciences.[191] In this regard, Carpenter lists a number of disciplines along a spectrum of decreasing certainty.[192] At the high reliability end of the spectrum we find physics, astronomy and chemistry. These are capable of providing highly reliable data and characterized by widely, accepted theories and general agreement among the peers as a result of the clear-cut questions they are called to address.[193]

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[187] Expert Working Group on Human Factors in Latent Print Analysis, *Latent Print Examination and Human Factors: Improving the Practice through a Systems Approach* (US Department of Commerce, National Institute of Standards and Technology, 2012).
[188] Doremus, 'Listing Decisions Under the Endangered Species Act: Why Better Science Isn't Always Better Policy' (n174) 1065-1069.
[189] C.J. Misak, *Verificationism: Its History and Prospects* (Routledge 2005).
[190] Doremus, 'Listing Decisions Under the Endangered Species Act: Why Better Science Isn't Always Better Policy' (n174) 1068.
[191] *See* the discussion in Carpenter (n125).
[192] ibid 587.
[193] ibid 586.

Without undermining the high degree of difficulty and determination needed on behalf of the scientists, Doremus suggests that 'hard sciences' 'deal with relatively simple, uniform systems susceptible to strong experimental control [that in turn] permits highly accurate measurements and highly reliable predictions'.[194] Thus, for instance, the chemical reaction between two substances can be tested, re-tested and measured within a controlled lab environment and produce reliable evidence to become a firm base for a theory on how these two substances interact. But the question is rather straightforward: two substances without any confounding variable affecting the result of the experiment. Biology on the other hand is found lower on the spectrum of certainty. There is nothing simple or straightforward in biology – at least at any level beyond cell biology. At either the organism or community level, complexity prevails. No individual organism is identical to another, all the more so when the focus of research is a whole community. As Doremus notes, 'individual organisms and communities vary substantially from one another, producing the kind of background noise which can confound experimental interpretation'. In addition, being able to control all the different parameters that might affect an organism or a community is not usually an option for biologists.

Ecology is at the intermediate point of the spectrum, just above the social sciences but below economics; it is the 'organizing and integrating discipline for other sciences of the natural environment'[195] and the most uncertain of all natural sciences, given that too many variables have major impacts on the reliability of its results.[196] When uncertainty and complexity reach their peak in sciences such as biology and ecology, there is much room for subjective value judgments. The final result will be the combined product of empirical observation and personal interpretations. Under conditions of scientific uncertainty, the scientist's personal interpretation of the facts comes

[194] Doremus, 'Listing Decisions Under the Endangered Species Act: Why Better Science Isn't Always Better Policy' (n174) 1069.
[195] Carpenter (n125) 578.
[196] ibid 589.

into play, to fill in the gaps or join the dots. And ultimately, to translate imperfect knowledge into policy decisions.

The literature identifies three types of uncertainty that arise in ecosystem management.[197] The first type includes 'the unknowable responses and true surprises that arise from the complex and ever-changing character of ecosystems and their responses to perturbations that are unprecedented'.[198] These are uncertainties that cannot be eliminated or reduced but whose magnitude and relative importance can be estimated. For instance, ecosystem behaviour in response to rapid climate change or unpreceded rated of carbon dioxide enrichment.[199] Also, uncertainties derived from multiple causes and non-linear responses such as how an accumulation of insults to aquatic and marine ecosystems might affect populations of migratory fish. [200] 'The concepts of complexity theory and chaos may have manifestations in ecosystem behavior that allow explanation of deterministic relationships but not prediction'.[201]

The second type of uncertainty arises from 'the lack of ecological understanding and principles upon which ecological models can be constructed'. Reduction of this type of uncertainty is possible through constant ecologic research[202] that is nevertheless 'inherently difficult and long term'.[203] However, given that ecology cannot be practiced in a closed laboratory, control and replication is often impractical;[204] additionally, the non-linear, multiple temporal and spatial scales that ecosystem operate make transferring any results very difficult.[205] In contrast, the third type of uncertainty resulting

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[197] Christensen and others (n155) 676; Richard A. Carpenter, 'Uncertainty in Managing Ecosystems Sustainably' in John Lemons (ed), *Scientific uncertainty and environmental problem solving* (Blackwell Science 1996) 120.
[198] Christensen and others (n155) 676.
[199] ibid.
[200] ibid.
[201] Carpenter, 'Uncertainty in Managing Ecosystems Sustainably' (n197) 120.
[202] Christensen and others (n155) 676.
[203] Carpenter, 'Uncertainty in Managing Ecosystems Sustainably' (n197) 120.
[204] Christensen and others (n155) 676.
[205] ibid.

from 'poor data quality, sampling bias, and analytical errors'[206] can be reduced through high quality research and good cooperation among scientists and managers to determine acceptable level of decision errors. [207]

The pervasive uncertainty that challenges ecosystem management does not mean we should refrain from trying to predict or explain ecosystem responses to management interventions. However, it needs to be acknowledged that any decision made will be subject to inherent scientific uncertainty and shortage of information. Hence, decisions need to account for uncertainty and the possibility of error rather than be based on the misconception of clear-cut cause-effect relationships and accurate predictions.

2.2.4 Mismatches between ecosystems, science and law

Ecological complexity as recognised in the non-equilibrium theory and the inherent uncertainties associated with ecosystem management challenge decision making *inter alia* in two interrelated ways: First, the majority of legal approaches to nature conservation were developed while the equilibrium paradigm was the dominant theory in ecology and as a result, are based on the model of a static, linear view of nature (first mismatch).[208] Second, and related to the first, the inner workings of nature and that of the legal system are profoundly different: ecosystem complexity and uncertainty deliver a blow to the foundations of the legal system, which is a framework traditionally premised on the idea of certainty[209] (second mismatch).

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[206] ibid.

[207] ibid.

[208] There is a substantive body of literature from the US asserting that early legislation was profoundly influenced by the non-equilibrium paradigm: *see inter alia* Ibid 25; Botkin *Discordant harmonies: a new ecology for the twenty-first century* (n123) 9; Tarlock (n123) 1122; (n149) 681; Wiener (n152) 1-2; Profeta (n140), 71; Scoones (n149) 482; Ruhl, 'Taking Adaptive Management Seriously: A Case Study of the Endangered Species Act ' (n159) 1250; Wallington, Hobbs and Moore (n140) 1; Thrower (n140) 875.

[209] McEldowney and McEldowney (n182) 172.

2.2.4.1 First mismatch: adherence to the equilibrium paradigm

As to the first mismatch, looking at traditional legal approaches aimed at nature conservation, the influence of the equilibrium paradigm has been pervasive. A number of approaches have been criticized for continuing to adhere to the old paradigm both in terms of their overall purpose and their implementation methods,[210] which have been criticized for being too static, linear, reductionist and predictive.[211]

To begin with, exemplifying the old paradigm is a strict preservationist approach endorsing the 'let nature be' axiom; this is where 'pristine' ecosystems are secured from human intervention by separating man from nature. The central concept is the idea of 'wilderness', a term commonly used to refer to areas of 'untouched nature'[212] usually associated with New World countries such as the United States, Canada, Brazil, Argentina, Australia and New Zealand.[213] Legal approaches founded on the notion of wilderness define it as areas 'where the earth and its community of life are untrammelled by man'[214] thereby introducing a very strict status of protection from human development in order to preserve the area in its 'natural condition'.[215]

Under New Ecology this approach is based on a false proposition: that there is such thing as 'untouched nature', the 'natural condition' of which can be preserved. But even the so called 'pristine' ecosystems are affected by phenomena such as climate change or ozone layer loss.[216] As Botkin states,

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[210] Ruhl, 'Regulation by Adaptive Management - Is It Possible' (n51); Holly Doremus, 'Endangered Species Act: Static Law Meets Dynamic World, The New Directions in Environmental Law' (2010) 32 Wash U J L & Pol'y 175; Doremus, 'Listing Decisions Under the Endangered Species Act: Why Better Science Isn't Always Better Policy' (n174); Wiener (n152).

[211] Ruhl, 'Thinking of Environmental Law as a Complex Adaptive System: How to Clean Up the Environment by Making a Mess of Environmental Law', (n50) 967ff.

[212] K. Crane, *Myths of Wilderness in Contemporary Narratives: Environmental Postcolonialism in Australia and Canada* (Palgrave Macmillan US 2012) 2.

[213] ibid.

[214] Wiener, (n152) 12 referring to the definition of 'wilderness' by the US Wilderness Act 1964, 16 U.S.C. § 1131(c) (1988).

[215] 16 U.S.C. § 1131(a) (1988).

[216] Christensen and others (n155) 679; Colin T. Reid, 'The Privatisation of Biodiversity? Possible New Approaches to Nature Conservation Law in the UK' (2011) 23 Journal of

'there is no longer any part of the Earth that is untouched by our actions in some way [...]'.[217] Hence, there is no such thing as a 'natural condition' to be preserved by blockage of human effects. That is particularly true with regard to English nature: with Great Britain being such a heavily populated island, there is almost no part of England that is even close to the definition of 'wilderness'. The new paradigm in ecology teaches that ecosystems are complex, dynamic systems subject to human and non-human (e.g invasive species) influence. A balance cannot be preserved, simply because there is no balance to preserve. [218]

Furthermore, approaches such as twin species/habitats protection regimes have been criticised for being static, linear, reductionist and predictive.[219] These are traits in sharp contrast to ecosystems' complexity, non-linearity and unpredictability. To begin with, a core concept within the selection process of protected species is that of rarity;[220] in order for species and habitats to fall under the law's protective umbrella they need to reach a critical point of endangerment.[221] Individual species are afforded protection according to their perceived vulnerability, primarily by criminalising different types of interference, and habitats are protected through the designation of land areas and the subsequent restriction of certain activities.[222] But to begin with, the concept of rarity is too *static*. As Gilg argues 'it deals with what we

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Environmental Law 203, 220 stating in n103 that 'virtually no land in the UK is in a truly 'natural' state since its current condition is the consequence of centuries of human involvement [...]'.

[217] Botkin, *Discordant harmonies: a new ecology for the twenty-first century* (n123) 194.

[218] *See* J.B. Ruhl, 'The Myth of What Is Inevitable under Ecosystem Management: A Response to Pardy' (2003) 21 Pace Envtl L Rev 315 arguing why a preservation-based approach is neither appropriate not possible to implement.

[219] Ruhl, 'Thinking of Environmental Law as a Complex Adaptive System: How to Clean Up the Environment by Making a Mess of Environmental Law' (n50) 967ff.

[220] Rarity and related concepts such as vulnerability and endangerment. However, it needs to be acknowledged that within the WCA 1981, there is an exception for birds for which a system of reverse listing applies with all birds being afforded at least the basic level of protection unless expressly excluded (e.g game).

[221] Andrew A Smith, Margaret A Moote and Cecile R Schwalbe, 'The Endangered Species Act at Twenty: An Analytical Survey of Federal Endangered Species Protection' (1993) 33 Natural Resources Journal 1027.

[222] *See* for instance the WCA 1981 s.9 (species) and pt II (habitats).

have, or have inherited, rather than what we might have or what we did have a long time ago'.[223] Particularly in a country like England, whose land has been farmed and been exploited for centuries, so that most of its habitats have been modified if not created by humans, there can be no certainty over what needs to be conserved. Hence, to cite Gilg, this has led to policies which 'have attempted to conserve the very poor moorland habitats that we inherited in the twentieth century, rather than imaginatively trying to recreate the native woodland that could be there'.[224] Furthermore, the concept of rarity reflects a linear and reactive approach which cannot necessarily guarantee that species enjoying no protection will retain their current 'least concerned' status in the future. The history of the passenger pigeon provides a very good example of an abundant species that went extinct within a very short time.[225]

Second, regimes based on the species/habitats twin approach exhibit some degree of reductionism in the sense that they are focused on the species and/or habitats they seek to protect but do not take into account the interaction with other ecosystem biotic and abiotic components. Hence, decision making is guided by the needs of specific species and habitats. As J.B Ruhl argues when discussing the protective regime of the US Endangered Species Act (ESA), 'decisions must be made only about the species, based only on the status of the species and only on behalf of the species.'[226] Although the focus of nature conservation law in England is wider than the ESA provisions Ruhl is referring to – e.g contrary to the ESA, habitats are protected regardless of whether a listed species is found therein – the fact remains that such approaches, although significant steps towards the protection of the 'crown jewels of English natural heritage', have led to a fragmented landscape of conservation where the wider countryside and abundant species are

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[223] A. Gilg, *Countryside Planning: The First Half Century* (Taylor & Francis 2002) 187.
[224] ibid.
[225] M. Avery, *A Message from Martha: The Extinction of the Passenger Pigeon and Its Relevance Today* (Bloomsbury Publishing 2014).
[226] Ruhl, 'Thinking of Environmental Law as a Complex Adaptive System: How to Clean Up the Environment by Making a Mess of Environmental Law' (n50) 971.

neglected.[227]

Therefore, by focusing on the 'part' and disregarding the whole, these approaches fail to account for the inner synergies and interactions among the various ecosystem components.[228] In light of the non-equilibrium paradigm, a narrow focused, single-species or habitats management, while necessary, will not suffice to reverse downwards biodiversity trends. At the same time, focusing protection only on endangered and rare species further overlooks the key role some thriving species might play in ecosystem functionality.[229] The degree of complexity of natural systems requires law and decision makers to think outside the 'box' of protected areas. As Ruhl suggests, 'each species is part of a dynamic co-adaptive assemblage of species dependent on and interacting with their surrounding habitat. It is that total package that must be managed not just some of the bits and pieces.'[230]

Finally, although in recent years scientific determinism in law has gradually decreased,[231] there remains an assumption that science is capable of providing objective reliable data and predicting the fate of species and the impact of positive and negative activities on nature.[232] Returning to the selection criteria for protected species, the Habitats Directive requires that

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[227] *See* Chapter 1 discussion on the conclusions drawn in the Lawton Report; *Also,* Lynda M. Warren, 'New Approaches to Nature Conservation in the UK Legislation and Policy' (2012) 14 Envtl L Rev 44.

[228] Jane Holder, *Environmental assessment: the regulation of decision making* (Oxford University Press 2004) 85 discusses reductionism in the context of environmental assessment arguing that 'the influence of ecological science in environmental assessment (…) is limited (…) individual species tend to be dealt in isolation, with little appreciation of their place in an integrated ecosystem. Potential impacts are frequently treated in a fragmented manner, so that their significance on the integrity of an ecosystem as a whole is lost. The prevailing approach is distinctly environmental, with a focus upon the impacts of development upon the quality of human life—pollution of various sorts, nuisance, and visual disturbances, rather than an ecological systems approach which would necessarily entail an examination of broad, cumulative effects, the interrelation of species and habitats, and the effects of development on this'.

[229] John Copeland Nagle and J. B. Ruhl, *The law of biodiversity and ecosystem management* (2nd edn, Foundation Press 2006) 374.

[230] J. B. Ruhl, 'Ecosystem Management, and the ESA, the Seven Degrees of Relevance' (1999-2000) 14 Nat Resources & Env't 156, 159.

[231] Holder (n228) 77.

[232] Ruhl, 'Thinking of Environmental Law as a Complex Adaptive System: How to Clean Up the Environment by Making a Mess of Environmental Law' (n50) 974-975.

they are endangered, vulnerable and rare species.[233] However, the truth is that these classifications are 'entirely subjective, with no objective assessment of threat, vulnerability, rarity or endemism.'[234] Drafting lists of endangered species and designating protected sites is hampered by the well-known problem of incomplete knowledge and inevitable bias.[235] The quality of research, the availability of information and choice of methodologies might lead to differences in species classification and site designation.[236]

At the same time, the law asks scientists to predict 'the occurrence, magnitude and impacts of natural and human induced phenomena',[237] to predict the positive or negative impact of a certain policy or decision. Decision makers need scientists to provide them with a firm basis for reliable and justified decision making. Hence, scientists are required to predict the fate of species,[238] or the impact of management decisions.[239]

Prediction is also central to legally mandated impact assessments of

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[233] Together with 'endemic' these are the criteria for listing species under the Habitats Directive (n34) art.1 and 2.

[234] Pedro Cardoso, 'Habitats Directive species lists: urgent need of revision' (2012) 5 Insect Conservation and Diversity 169, 169.

[235] ibid, discussing geographical, range and size (larger species are more often included) bias in drafting species lists. *See also* the problems arising from the classification of the different Habitats types in Annex I of the Habitats Directive that the Scientific Working Group, set up by the Habitats Committee expressed the need to prepare a manual for the interpretation of Annex I. *See Interpretation manual of European Union habitats (version EUR28)* (European Commission, DG-ENV, 2013) available at:
<http://ec.europa.eu/environment/nature/legislation/habitatsdirective/docs/Int_Manual_EU28.pdf> accessed January 2018

[236] *See for instance*, *R(Western Power Distribution Investments Limited) v Countryside Council for Wales* [2007] EWHC 50 (Admin); [2007] Env L R 25, where the methodology used to identify a site as qualifying for SSSI designation was challenged by the claimants; *See also* the dispute between the Commission and the Netherlands on the application of scientific criteria in order to establish Special Protection Areas required under the Birds Directive *Case C-3/96 Commission of the European Communities v Kingdom of the Netherlands* [1998] ECR 1-03031.

[237] Steel and others (n174) 3.

[238] Ruhl, 'Thinking of Environmental Law as a Complex Adaptive System: How to Clean Up the Environment by Making a Mess of Environmental Law' (n50) 975; *See for instance* the definition of 'vulnerable' species in art.1 of the Habitats Directive as 'believed likely to move into the endangered category in the near future if the causal factors continue operating'.

[239] ibid.

human activities on the natural environment.[240] The anticipatory control of environmental assessment is indeed markedly different from the reactive approach of species protection regimes. However, and although triggered by the recognition of uncertainty, [241] environmental assessment is itself a procedure 'problematic in evidential terms'[242] whereby experts are required to predict the likelihood of significant environmental harm. Legislation such as the US National Environmental Policy Act, the EU Environmental Impact Assessment Directive and art.6(3) and (4) of the EC Habitats Directive, require front-end assessments with relative prediction on future impacts of proposed projects.[243]

As mentioned above, accurate, objective predictions of activities on biodiversity are severely compromised by the combined effect of the ecological complexity and scientific uncertainty discussed above. On the one hand, the non-linear and complex character of nature means that any number of variables might affect the ecosystem's response to a given activity, hence the ability to establish and study cause-and-effect relationships is severely undermined. On the other, assessments are not an objective evaluation but a subjective interpretation of equivocal scientific data; the outcome of subjective or value-laden judgments.[244]

2.2.4.2 Second mismatch: ecological uncertainty against legal certainty

The second mismatch is more internal, one between the inner workings of nature and that of the legal system. In fact, it can be argued that law's adherence to the equilibrium paradigm and positivist views on the authority of scientific knowledge is in part because of their better alignment to the legal worldview. The differences between the two systems are clear: ecosystems are complex, unpredictable and uncertain. So is the science of ecology. But is it so

[240] Holder (n234) 75ff.
[241] bid 77.
[242] ibid.
[243] Thrower (n140) 883.
[244] Holder (n234) 75.

problematic that scientists disagree on scientific matters? Not for science itself; however, when science is placed at the service of law, policy and decision making, then, scientific uncertainty – especially when not recognised and embraced - [245] it does indeed become problematic.

This is because law seeks to eliminate any trace of uncertainty in favour of stability in social relationships; to establish legal relationships and legal rights and reassure the regulated that legal conditions will not change from one day to another. The principle of legal certainty is enriched in legal regimes[246] as a sine qua non to the rule of law and requires *rules to be clear and precise so that individuals may ascertain unequivocally what their rights and obligations are and take steps accordingly*[247]. The principle of non-retroactivity, the protection of legitimate expectations, the principle of res judicata,[248] all derive from the general principle of legal certainty.

At the same time, law likes order. Law has a preference for hierarchical systems where all rules fit neatly into boxes and which can be easily enforceable. [249] It likes cause and effect relationships and jurisdictional boundaries; clear lines of authority and divisions for responsibility.[250] Such preference may explain to an extent why environmental law is so fragmented. Having laws for the different media administered by different agencies fits better with the way law is used to operating in. [251]

But as demonstrated above, this is not how nature operates. The whole is substantially different from a mere collection of its parts. Ecosystems operate in multiple spatial and temporal scales, disregard any man-made

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[245] Fischer (n175) 102.

[246] James R. Maxeiner, 'Some Realism About Legal Certainty in the Globalization of the Rule of Law' (2008) 31 Houston Journal of International Law 27.

[247] *Gridan and Others v. Romania* [2013] ECHR 507, para 13.

[248] ibid para 14.

[249] Karkkainen, 'Collaborative Ecosystem Governance: Scale, Complexity, and Dynamism' (n54) 235.

[250] ibid.

[251] Karkkainen, 'Adaptive Ecosystem Management and Regulatory Penalty Defaults: Toward a Bounded Pragmatism' (n74) 946 arguing that 'conventional environmental regulation and natural resources management operate piecemeal, attempting to fraction ecological complexes into smaller, putatively manageable components and parcelling out management responsibilities among mission specific agencies and programs'.

geographical and administrative delineations; the responses to management actions go against the cause-effect linear relations that law is eager to establish and are impossible to predict.

2.2.5 The promise of adaptive management

The notion of adaptive management emerged in US literature as a response to ecological complexity, uncertainty and the limitations of knowledge.[252] It traces its origins to the seminal works of C.S Holling[253] and C.Walters[254] who developed a flexible management model tailored to the needs of complex, dynamic systems as a way 'for resource managers to integrate scientific understanding with the management of natural resources'.[255] Since then, Holling's and Walter's ideas have gained wide support among US literature and are accepted with overwhelming enthusiasm by ecologists,[256] management practitioners[257] and lawyers.[258]

Essentially, theirs is a science-driven approach to natural resources management that views policy decisions as provisional and subject to change in light of scientific developments and information gathered through continuous monitoring.[259] This iterative process of decision-making is however the only common denominator among a diverse range of understandings of 'adaptive management'. From a simple 'learning by doing' to well-articulated, technical, models of active experimentation, adaptive

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[252] Lee, 'Appraising Adaptive Management' (n72)
[253] Holling (n62).
[254] Walters (n62).
[255] Lance Gunderson, 'Lessons from Adaptive Management: Obstacles and Outcomes' in C.R. Allen and A. Garmestani (eds), *Adaptive Management of Social-Ecological Systems* (Springer Netherlands 2015) 27.
[256] Christensen and others (n155).
[257] B. K. Williams, R. C. Szaro and S. Shapiro, *Adaptive Management: The U.S Department of Interior Technical Guide* (Adaptive Management Working Group, US Department of Interior, 2009).
[258] J. B. Ruhl, 'It's Time to Learn to Live with Adaptive Management (Because We Don't Have a Choice)' (2009) 39 Envtl L Rep 10920, one of the most ardent proponents of adaptive management goes as far as to suggest that it is our only choice.
[259] Karkkainen, 'Collaborative Ecosystem Governance: Scale, Complexity, and Dynamism' (n54) 202.

management ultimately becomes a buzz word, an umbrella term that encompasses the different things it means for different people.[260]

Ecologists tend to adhere to its original conception by Holling as a scientific, experimental learning process, whereby one or more uncertain hypotheses are implemented and monitored for a provisional period under carefully delimited conditions.[261] The results are analysed and measured to inform subsequent decision-making. In natural resources and policy circles on the other hand, adaptive management is more loosely defined to include 'any adaptive approach that seeks to respond to changing conditions or subsequently acquired knowledge'.[262]

According to J.B Ruhl, the leading proponent of adaptive management among legal scholars, an adaptive management approach to ecosystem conservation:

> 'relies on expert agencies to implement ecosystem management by exercising professional judgment through an iterative decision-making process emphasizing definition of goals, description of policy decision models, active experimentation with monitoring of conditions, and adjustment of implementation decisions as suggested by performance results.'[263]

Adaptive management is not a legal conception. It is a scientific construct, a method, a management logic that in order to leave the realm of literature and be implemented in the real world, requires a legal framework to support and underpin it or at least to allow and not impede its application. Following the conception and development of adaptive management theory, efforts were made to implement adaptive management across a range of

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[260] Barry L. Johnson, 'The Role of Adaptive Management as an Operational Approach for Resource Management Agencies' (1999) 3 Conservation Ecology Art.8, 1.

[261] Karkkainen, 'Collaborative Ecosystem Governance: Scale, Complexity, and Dynamism' (n54) 202; Karkkainen draws a distinction between his conceptualisation of adaptive management and that of ecologists; *See in that respect* Holling (n62); Walters(n62); Walters and Holling (n64).

[262] Karkkainen, 'Collaborative Ecosystem Governance: Scale, Complexity, and Dynamism' (n54) 202.

[263] J. B. Ruhl, 'Adaptive Management for Natural Resources-Inevitable, Impossible or Both?' in *Rocky Mountain Mineral Law Institute Annual Proceedings*, vol 54 (2008).

natural resources, with varying degrees of success.[264]

The majority of constraints were legal and institutional. [265] By introducing flexible decision-making procedures, adaptive management seeks to address the first category of mismatches between law and nature. Doing that however, brings to the fore the second mismatch: interim decision-making is not entirely compatible with the principle of legal certainty, which allows those subject to legal rules a high degree of confidence that these rules will be interpreted consistently by those applying them and protects them from the arbitrary use of power from the state.

Hence, adaptive management advocators express their concerns over its proper implementation; this scepticism is mostly focused on whether current legal and institutional frameworks can accommodate such a flexible and often experimental approach, concluding that although integration is possible to a certain extent, it might be the case that a legal and institutional reform is necessary in order to realise its full potential.[266]

As with most of the adaptive management literature, the majority of criticism originates in US legal scholarship in relation to US laws and institutions. The argument of this thesis constructed in chapters four and five is that the English legal framework exhibits certain characteristics that - within certain limitations - allows some form of flexible, adaptive decision making.

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[264] Lance Gunderson and Stephen S. Light, 'Adaptive Management and Adaptive Governance in the Everglades Ecosystem' [Springer] 39 Policy Sciences 323; Carl J. Walters, 'Challenges in adaptive management of riparian and coastal ecosystems' (1997) 1 Conservation Ecology; Kai N. Lee and Jody Lawrence, 'Adaptive Management: Learning from the Columbia River Basin Fish and Wildlife Program' (1986) 16 Envtl L 431; Alejandro E. Camacho, 'Can Regulation Evolve? Lessons from a Study in Maladaptive Management' (2007) 55 UCLA Law Review 293.
[265] Walters, 'Challenges in adaptive management of riparian and coastal ecosystems' (n264)2.
[266] Ruhl, 'Adaptive Management for Natural Resources-Inevitable, Impossible or Both?' (n263) 11-33 arguing that that '*adaptive management is not possible under the conventional administrative law of natural resources, and that many of the shortcomings of adaptive management law to date can be explained by the poor fit between the two'.* Doremus, 'Adaptive Management, the Endangered Species Act, and the Institutional Challenges of New Age Environmental Protection' (n68).

2.3 Socio-ecological complexity: Addressing conservation conflicts

Ecological change, complexity and inconclusive knowledge are not the only challenges in designing and implementing effective nature conservation management. Human relationships and relationships between humans and nature are also complex. The paradigm of New Ecology wiped away the idea of watertight social and natural systems. Instead, man and nature interact dialectically within complex adaptive social-ecological systems characterized by nonlinearity, uncertainty, emergence, and reciprocal feedbacks. [267] Decisions on nature conservation taken by humans and directed to humans also have a social dimension.

Social-ecological complexity has two interrelated implications for nature conservation law and decision-making relating to the 'means' and the 'ends' of the process. The first implication is that the social dimension of ecosystems adds further variables that increase uncertainty of what (sociologists) Thompson and Tuden refer to as 'causation'.[268] According to Thompson and Tuden, 'causation' refers to whether we can understand why things work and whether we can predict the effects of a particular action.[269] As mentioned above, fully understanding 'causation' is rather unlikely even in relation to purely ecological interactions. If to ecological uncertainty we add social interactions and human/nature interaction together with associated and poorly understood social pressures, then uncertainty is further intensified. The second implication is contentious 'preferences about outcomes';[270] as nature conservation decision making does not take place in a vacuum but within society and as such, societal values have a central role in goal setting.[271] Shannon and Antypas describe this as ambiguity.[272]

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[267] Berkes, Colding and Folke (n58).

[268] James D. Thompson and A Tuden, 'Strategies, structures, and processes of organisational decision' in James D. Thompson and others (eds), *Comparative studies in administration* (Garland Publishing Company 1987) as referenced in Stankey, Clark and Bormann (n65) 46.

[269] Stankey, Clark and Bormann (n65) 46.

[270] ibid.

[271] ibid.

[272] ibid.

Thompson and Tuden introduce a scheme representing how decisions are made in different social settings *(figure 1)*. In cell A there are situations where agreement exists on both causation and preferred outcomes, hence, decision-making is less challenging and heavily routinized. It is as Kai Lee suggests 'the realm of bureaucracy'.[273] In situations like these, there are no arguments about preferred outcomes, there is agreement on what causes the problem and how it can be addressed, and an organisation is set up to apply rules mechanically and uniformly.[274] However, the analysis in the section above clearly suggests that there can be no certainty in relation to 'causation' of environmental problems, especially one like biodiversity loss.

Cell B represents situations where neither the cause of the problem is very well understood, nor the effects of a particular action predicted, but nevertheless agreement exists on the ultimate goal. So, in essence we agree on what we want to achieve but we don't know how to do it. This is 'the realm of science'[275] and the institutional structure applicable, that of the collegium.[276] As Stankey discusses, 'because of differences in problem perception and interpretations of scientific evidence, the collective wisdom of the decision unit needs to be brought to bear the problem'.[277] Organisations must rely on that collective wisdom of experts to guide the decision-making process.[278] However, even the collective wisdom of experts will not suffice to address the magnitude of ecological uncertainty. Therefore, scientific research must be continuous and the management adaptive. This approach corresponds to a science-driven model of adaptive management that will be discussed in the next chapter.

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[273] Lee, 'Appraising Adaptive Management' (n72) 10.
[274] ibid.
[275] ibid.
[276] ibid; Stankey, Clark and Bormann (n65) 46.
[277] Stankey, Clark and Bormann (n65) 46.
[278] Ibid.

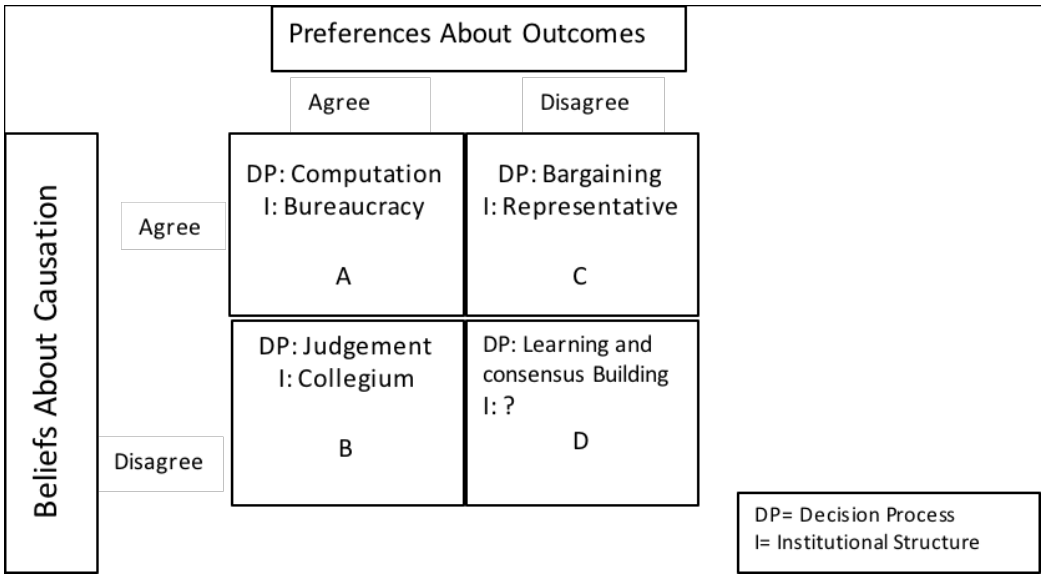

Figure 1 Thompson-Tuden model[279]

In cell C, there are situations where there is agreement on 'causation' but disagreement on the overall goals of decision-making. Within human societies, different societal groups share different values and perspectives that are often contradictory, therefore a common understanding of preference outcomes is rather unlikely. Hence, decision-makers need to find ways to reconcile diverse 'ends'.[280] Compromise, bargaining and negotiation dominate here.[281] In contentious situations like these, it needs to be understood that it is likely that some of the negotiating parties will not have their goals satisfied in one or more cases.

Finally, there are the situations falling into Cell D. The hardest of all, these are situations characterised by high degree of uncertainty and conflict, where there is no agreement on causation or preferred outcomes. Nature conservation decision making falls exactly within this category. Ecological complexity, scientific uncertainty and bias, coupled with social pressures that affect the application of science to conservation problems, create a very challenging environment for decision-makers permeated by disagreements

[279] ibid 47.
[280] Lee, 'Appraising Adaptive Management'(n72) 10; Stankey, Clark and Bormann (n65) 46.
[281] Lee, 'Appraising Adaptive Management' (n72) 10; Stankey, Clark and Bormann (n65) 46.

and conflict varying from data interpretation (causation) to goal setting (preferred outcomes).

2.3.1 Conservation Conflicts

Given that nature conservation decision-making takes place not merely against an ecological but also a socio-economic backdrop, conflicts become integral to conservation management, which is ultimately carried out in a contentious environment and conflicts are likely to increase given the multiple and increasing pressures on biodiversity.[282] They can take many forms; they can co-exist and overlap and are likely to emerge during the different phases of law and management design and implementation. But what exactly constitutes a conservation conflict? Defining what we mean by conservation conflict is paramount; as with all problems how the definition of a problem affects the methods we chose to resolve it.[283]

Defined as 'a serious incompatibility between two or more opinions, principles or interests'[284] or 'expressed disagreements among people who see incompatible goals and potential interference in achieving these goals'[285] the concept of conflict expands beyond a mere disagreement and implies conscious action among two or more adversaries.[286] On the surface, conflicts surrounding conservation may appear to be between humans and wildlife. In fact, this is how conservation conflict is usually depicted in the literature.[287] It is usually defined as what occurs 'whenever an action by either humans or

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[282] Juliette C. Young and others, 'The emergence of biodiversity conflicts from biodiversity impacts: characteristics and management strategies' (2010) 19 Biodiversity and Conservation 3973.

[283] *See* Stephen Mark Redpath, Saloni Bhatia and Juliette Young, 'Tilting at wildlife: reconsidering human–wildlife conflict' (2014) 49 Oryx 222, 222 suggesting that misidentification of the antagonists in human–wildlife conflict limits the likelihood of finding effective solutions.

[284] Oxford Dictionaries.

[285] M. Nils Peterson and others, 'Rearticulating the myth of human–wildlife conflict' [Blackwell Publishing Inc] 3 Conservation Letters 74.

[286] Redpath, Bhatia and Young (n283) 222.

[287] ibid; Peterson in Peterson and others (n285) 74 refers to the idea as 'the central vocabulary for cases requiring balance between resource demands of humans and wildlife'.

wildlife has an adverse effect on the other'.[288] Hence, conflicts appear to revolve around the impact of wildlife on human activities or alternatively when human activities impact negatively on biodiversity.[289]

However as many scholars have pointed out, this assertion is problematic since it places 'wildlife entities that cannot represent themselves in the political sphere, in the role of combatants against people'.[290] Focusing on the wildlife-human interaction 'masks the underlying human dimension of conservation conflict'.[291] In this respect, Young et al distinguishes between biodiversity impacts and conservation conflicts, defining the latter as 'conflicts between people about biodiversity or other aspects of the wildlife'. [292] The hen harrier conflict in the UK uplands, for instance, is essentially a conflict between game (grouse) managers and landowners, who resent the presence of birds of prey, and conservationists, who seek to enhance the status of raptors through stronger protection. [293] Therefore Redpath et al propose an alternative definition for conflict, as what occurs when 'parties clash over differences about conservation objectives and when one party asserts, or at least is perceived to assert, its interests at the expense of another'.[294]

Recognising the social dimension of conservation conflict is central in identifying ways to resolve it. One major implication of seeing conflicts as occurring between humans and wildlife is the heavy reliance on technical solutions.[295] While there will be certain occasions when science can assist in

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[288] Michael R. Conover, *Resolving human-wildlife conflicts: the science of wildlife damage management* (Lewis Publishers 2002) 4.

[289] Young and others (n282) 3974 refer to a current misunderstanding in the literature regarding the issue of biodiversity conflicts: many papers interpret biodiversity impacts as conflict'; Stephen M. Redpath and others, 'An Introduction to Conservation Conflicts' in Stephen M. Redpath and others (eds), *Conflicts in Conservation: Navigating Towards Solutions* (Cambridge University Press 2015), 3.

[290] Peterson and others (n285) 75; Peterson argues that given that conflict definition implies conscious actions wildlife should be excluded as an adversary.

[291] Redpath, Bhatia and Young (n283) 222.

[292] Young and others (n282) 3974; Redpath and others (n289) 4.

[293] Arjun Amar and Stephen M. Redpath, 'Conflicts in the UK uplands: birds of prey and red grouse' in Stephen M. Redpath and others (eds), *Conflicts in Conservation: Navigating towards solutions* (Cambridge University Press 2015).

[294] Redpath and others (n289) 4.

[295] ibid (n289) 3.

reducing conflict - by finding ways to reduce the impact of one competing interest over the other -[296] it will not be able to eliminate conflicts. As Redpath et al suggest, under the surface of conflicts is 'a complex layering of diverse issues related to different world views, issues of trust, power imbalances or latent historical issues - issues that lie well outside the sphere of natural sciences'.[297]

Conflicts are essentially between people who espouse different values and seek to fulfil different objectives; therefore, it is the 'arts of politics' rather than the science of ecology that needs to be practiced.[298] As Young et al argue, 'the central role of people in conflicts, conveys the need to understand the socio-economic and political context of conflicts, rather than restricting consideration to ecological context solely'. [299] Conservation conflicts are complex and messy, involving human politics and enriched with human values. Without underestimating the contribution of scientific evidence, technical solutions alone are unlikely to be able to address this. Hence, despite strong scientific evidence, conservationists in South Africa struggle to convince people and authorities about the value of sharks.[300] Therefore, the focus should shift from technical solutions to finding ways to facilitate negotiation and find some common ground among competing interests.

2.3.2 Types of conflict

There are six broad, interrelated and overlapping categories of conservation conflict that have been identified in the literature.[301]

a. Conflicts of interest: when two or more different groups want different things from the same area or the same species. For

[296] ibid.
[297] ibid.
[298] Stankey, Clark and Bormann (n65) 47.
[299] Young and others (n282) 3974.
[300] Alison A. Kock and M Justin O'Rian, 'Living with white sharks: non-lethal solutions to shark-human interactions in South Africa' in Stephen M. Redpath and others (eds), *Conflicts in Conservation: Navigating Towards Solutions* (Cambridge University Press 2015).
[301] Redpath and others (n289) 6-8.

instance, the timber industry against those wishing to preserve forests, grouse managers against NGOs protecting birds of prey, farmers against protected areas.

b. Conflicts over beliefs and values: these are difficult to resolve and often underlie conflicts of interest. Such conflicts exist when different groups of people have 'on-going differences of view about what ought to happen to an environment'.[302] Redpath offers the example of species reintroduction where for instance stakeholders might have strong beliefs and disagree about whether species that threaten livestock should be reintroduced.[303] Such conflicts involve different understandings of humans' relation to the natural world. Dower distinguishes value conflicts from conflicts of interests, stressing that 'they are not just conflicts between different people with different private interests' but 'ethical conflicts insofar as the reasons given for different practical responses involve different general values as goals - economic well-being, long-term human interests, the flourishing of nature'.[304]

c. Conflicts over processes: Conflicts in relation to different approaches to decision making and problem solving taken by different groups of people, agencies or organisation. This is the case for example in top-down command and control approaches as opposed to bottom-up participatory ones. It can also refer to differences in conflict management by different people, agencies or organisations.

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[302] Nigel Dower, 'Conservation Conflicts: Ethical Issues' in Stephen M. Redpath and others (eds), *Conflicts in Conservation: Navigating Towards Solutions* (Cambridge University Press 2015) 138.
[303] Redpath and others (n289) 7.
[304] Dower (n302) 138.

d. Conflicts over information: These conflicts arise 'when information is lacking misunderstood or perceived in different ways by different stakeholders'.[305] This is often the situation in conflicts between local and formal knowledge.[306] Local stakeholders and land managers may have been managing lands for generations, applying their own practices, and distrust 'scientists-outsiders' whose formal knowledge is not always accepted as correct.[307]

e. Structural conflicts: These relate to the structure of society in terms of social, legal economic and cultural arrangements. They are latent conflicts involving inequalities and power distribution between parties, which surface when conflicts of interest are brought into the forefront.

f. Interpersonal Conflicts: These arise because of personality differences between people or groups as well as issues of communication and trust. They relate to many aspects of society but need to be recognised as 'integral to conservation conflicts.'[308]

Some of these types of conflicts originate in disagreements associated with Thompson's 'preferred outcomes' (a and b) and some in relation to causation (d) and can be latent or already ignited. The focus of this thesis is primarily on conflicts of interest and values, which are the most challenging types of conflict to address as they include many parties and are often rooted in deeply embedded perceptions of humanity's relationship with nature.

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[305] Redpath and others (n289) 7.
[306] ibid.
[307] Eilidh Johnston and Chris Soulsby, 'The role of science in environmental policy: an examination of the local context' (2006) 23 Land Use Policy 161,161; Also ibid, 166 citing the response of a crofter from Sunderland demonstrating the resistance of local stakeholders to formal knowledge: '…you get the odd one that says what do you know about conservation anyway, and I say to myself "well how would you know if a sheep was needing lambing or how to go about it or whatever?" We've all got our expertise, we've also got our opinions'.
[308] Redpath and others (n289) 7.

2.3.3 Law and Conservation Conflicts

So how is law related to conservation conflicts? Arie Trouwborst refers to one among many definitions, describing law as:

> the sum of all rules and prescriptions for the promotion and protection of societal interests that have been publicly (governmentally) established and/or recognized and are, where necessary, enforced through penalties[309]

Law shapes human societies and regulates human behaviour. It indicates what is permitted and what is not and in case of wrong conduct, provides the citizens the possibility to seek compliance by others.[310] Law is also used as means to achieve a set of policy objectives, including nature conservation. It also provides a means 'for avoiding, mitigating and setting conflicts in society'.

Hence, law can be instrumental in resolving or avoiding some types of conservation conflicts. Conflicts of values and interest are usually dealt by substantive legislation that traditionally seeks to resolve conflicts based on a top-down approach.[311] Hence, it provides for designating areas, within which conservation interests – regardless of underlying justifications - prevail, or by listing species whose conservation – at least in principle - overrides human interests. By implication it can be argued that in non-designated areas or with regard to non-listed species other interests take precedence over conservation.

As with all adversarial methods of dispute resolution, one party wins and the other loses. As a result, it is often the case that instead of resolving conflict, such an approach often causes or escalates conflict at least on the side

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[309] A Trouwborst, 'Law and Conservation Conflicts' in Stephen M. Redpath and others (eds), *Conflicts in Conservation: Navigating Towards Solutions*, vol Cambridge University Press (Cambridge University Press 2015) 108.
[310] ibid.
[311] ibid; Reed and Sidoli Del Ceno (n60).

of the losing party.[312] When for example a forest is protected, conservationists, scientists and nature itself win, but the logging and tourist industry that would like to build a forest resort might lose. Had conflict been eliminated, everyone would be content with the outcome; but they are not. At this point, we also need to consider Trouwborst's observation in relation to dispute settlement and genuine conflict resolution. He notes that the judicial settlement of a dispute should not be confused with conflict resolution. A court judgment might put an end to the dispute but will not resolve the underlying conflict that led the parties to seek judicial resolution in the first place.[313]

In multi-layered, multipartite problems such as conservation conflict, the conventional, adversarial legal approaches are inadequate. 'Agreement on all human values is unlikely given human diversity, deep-seated cultural norms, and the variation of human needs and desires'.[314] Therefore the 'right-answer' that law is traditionally looking for, usually with the assistance of scientists and experts, is ill-suited to address 'the epistemological gap between gaps and values, and ethical questions around utility versus the intrinsic value of nature'.[315]

Indeed, nature conservation is all about value-based choices.[316] There would be no need for nature conservation if some people did not value nature.[317] But there are different reasons for which people value nature that lead to a confluence of grounds for justification with monetary, scientific, aesthetical, religious and moral dimensions.[318]

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[312] Trouwborst (n309) 112.
[313] ibid, 112-113.
[314] Carrie Menkel-Meadow, 'From Legal Disputes to Con ict Resolution and Human Problem Solving: Legal Dispute Resolution in a Multidisciplinary Context' (2004) 54 J Legal Educ 7, 9
[315] Reed and Sidoli Del Ceno (n60) 227.
[316] Mike Alexander, *Management planning for nature conservation: a theoretical basis & practical guide* (Springer 2008) 117 '*We will only conserve only what we value; this is why values are so central to conservation planning and management'.*
[317] ibid.
[318] Oliver A. Houck, 'Why Do We Protect Endangered Species, and What Does That Say about Whether Restrictions on Private Property to Protect Them Constitute Takings' (1994) 80 Iowa Law Review 297, 298.

Different values underpin different approaches to conservation, which in turn will formulate policies that will ultimately lead to the adoption of statutory legislation. This diverse justification of nature conservation challenges the development of a coherent framework, as the different grounds for justification can often seem contradictory. [319] What is deemed worthy of protection and prioritised will vary according to the approach taken.[320] Hence, if the motivation is purely the economic value of nature, then only what can be measured in monetary terms is worthy of protection; if the justification is recreational or aesthetic reasons, then only places of natural beauty and what known as 'charismatic species' will enjoy protection under the umbrella of nature conservation law; on the other hand, an entirely scientific justification would require protection only of those species deemed to be of 'biological interest'; finally, moving towards an entirely biocentric approach and considering the intrinsic value of nature, then any interference with the natural environment should not be allowed.

Most assuredly, conservation managers have been relying on science to become 'the primary tool for identifying, justifying and even defending nature conservation priorities and actions'.[321] Species listing and SSSI designations are carried out according to scientific criteria. However, by building a nature conservation framework exclusively on science, it is possible that we will lose sight of the fact that the scientific methods which work so well in a laboratory may well be unsuitable for addressing value-based issues that cannot always

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[319] This is the main reason why until recently in England there had been two different agencies: English Nature administering nature conservation (SSSIs and NNRs designated on the basis of scientific criteria) on the one hand and the Countryside Commission administering National Parks (aesthetic considerations) and countryside management on the other. However, *see* Brian Jones and others, *Countryside law* (4th edn, Shaw 2004), asserting that '*although they have viewed matters from differing perspectives, this has not generally led each to develop policies programmes which are contrary to the objectives of the other*'. He goes on to refer to suspicions raised over the proposed merger of the two, '*that there may be a hidden agenda within this ostensibly sensible move: the clipping the wings' of English Nature, a body which has perhaps more often in the past come into opposition with government plans than has the Countryside Commission or Agency*'.

[320] Gilg (n223).

[321] Alexander (n316) 114.

be framed in a technical manner.[322] Therefore, while science is an essential tool to help us 'describe, understand and manage wildlife,'[323] it is just one of the many ways in which humanity can express values and preferences and this is why for many it cannot be seen as the sole justification for nature conservation.[324]

Conflicts over values are not merely restricted to the question 'why we should protect nature?' but also influence what nature we want to protect and how far we are willing to go to achieve its protection. Conflicts over values relate not just to competing justifications of nature conservation but also to conflicts between nature conservation and other interests.[325] So, how do we decide what is acceptable or unacceptable? Who is to decide on that and according to what criteria? [326] The answer as with most questions that give rise to environmental debates is not straightforward. But given the fact that legislation in democratic societies expresses societal values, choices will eventually revolve around the question, how much damage is society willing to accept and where it draws its limitations; how much degradation is 'acceptable' before the need to take legislative and regulatory action?[327] How does society value a pretty, colourful butterfly, a primary mammal, a beautiful flower, a hairy spider, an awkward looking newt, the need for food production, power and development? How does it prioritize based on ethical, economic and social considerations and what is it willing to sacrifice; is it willing to

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[322] Stankey, Clark and Bormann (n65) 34.

[323] Alexander (n316) 112.

[324] Ibid; Certainly, science is not the only justification for introducing legally binding rules in favour of nature conservation in the UK. As explained in the previous chapter, National Parks and AONBs are deemed worthy of protection due to their aesthetic value. Nevertheless, the legal framework for NP and AONBs does not confer strict protection to the designated sites and when conflicts of interest arise therein, nature conservation is likely to be subordinated to other considerations.

[325] Stephen M. Redpath and others (eds), *Conflicts in Conservation: Navigating Towards Solutions* (Cambridge University Press 2015), 6; This issue is the focus of the next chapter.

[326]Van Houtan (n184) 1369 uses a pastor metaphor and asks the question 'if biodiversity conservation is a sheep, maybe an important question to ask is: who plays the shepherd?'

[327] Judith S. Weiss, 'Scientific Uncertainty and Environmental Policy: Four Pollution Case Studies' in John Lemons (ed), *Scientific uncertainty and environmental problem solving* (Blackwell Science 1996) 184.

sacrifice commercial development over some newts?[328] Or even historical culture and worship over bats?[329]

A scientific approach to nature conservation assigns a scientific value to nature and this scientific value is then given precedence over other interests. But are these questions, the answers to which are to become the touchstone of policy making, for scientists alone to answer or for the entire society to come up with? It is at least arguable that as scientists are part of society, they can participate in the debate and enlighten their citizens or even 'extend our realm of moral concern'[330] but this should not directly imply that science 'mandates a particular choice'.[331] Science can certainly assist in implementing these choices providing knowledge, independent of these choices; providing the means to either protect or exploit nature. For example, science can assist in providing relevant information on how to conserve a forest because of the monetary value of timber production. Or science can demonstrate that habitats loss may have adverse effects on certain species, but this does not necessarily mean that we should be concerned with these species in the first place.[332]

The discussion above on the complex issue of conservation values is far from exhausting and is not intended to provide a meticulous analysis of the topic. It nevertheless demonstrates how difficult resolving value-laden conflicts can be and that a science-driven 'right answer' approach to conservation legislation might lose sight of the inherent complexity of the issues. Nature conservation decision-making too grey an area to apply black and white approaches.

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[328] *See* 'Breeding newts delay York Monks Cross shop development' at < http://www.bbc.co.uk/news/uk-england-york-north-yorkshire-20910702> accessed November 2018.

[329] *See* EU bat rules 'put future of hundreds of churches at risk' at http://www.bbc.co.uk/news/uk-politics-23043451 accessed November 2018

[330] Stephen Bocking, *Nature's experts: science, politics, and the environment* (Rutgers University Press 2004) 56.

[331] Ibid; *See also* Stankey, Clark and Bormann (n65) 34 referring to issues natural resources managers are confronted with as 'trans-science'.

[332] Bocking (n330).

2.3.4 The emergence of conflicts in the application of nature conservation law and policy

It is not only differences and disagreements over the values that inspire nature conservation which lead to the tensions among interests remaining essentially unresolved. It is also the case that often, the implementation or even the adoption of legislation that seek to resolve such problems result in conflict flaring up. This section seeks to understand conflict not as a theoretical construct but as it ignites in practice during the different stages of the creation and implementation of a framework for nature conservation.

2.3.4.1 Preparation, drafting and adoption of legislation

Conflict can emerge during the preparation and adoption of legislation establishing a system of species and habitats protection by providing for species listing and sites' designations or other restrictions. This was the case with the passing of the controversial Wildlife and Countryside Act 1981[333] and subsequently the Countryside and Rights of Way Act.

As mentioned, acts like the Wildlife and Countryside Act 1981 follow the traditional model of environmental legislation: they confer direct protection to rare or endangered species [334] and create a framework for administrative action by the competent regulatory authorities, laying down criteria to be applied for the designation of protected sites within which certain activities are restricted.[335] In short, they set a framework for action where the state has a direct role within the different stages of implementation of a nature conservation regime: listing, designating, enforcing, granting licenses to lift restrictions or negotiate management agreements.

One only has to look at the contentious passage of the Wildlife and Countryside Act 1981 or the Countryside and Rights of Ways Act 2000 to

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[333] Philip Lowe, *Countryside conflicts: the politics of farming, forestry and conservation* (Gower/Maurice Temple Smith 1986) ch.6; *See also* a detailed insight on the Bill's passing and the fierce debate that took place behind the scenes in Westminster in W.M. Adams, *Nature's Place (Routledge Revivals): Conservation Sites and Countryside Change* (Taylor & Francis 2014) ch.4.

[334] Wildlife and Countryside Act 1981, Part I.

[335] ibid, Part II, s.27-34.

understand how controversial nature conservation can be. The bills proposed led to long debates in both Houses and several amendments before the legislation was approved. Following the familiar binary approach, such legislation 'adjudicates' in favour of science and the natural environment. However, in practice this tends to inflame conflict because of the perception that nature conservation designation obstructs development and hinders economic activities.[336] Indeed, at this stage, conflict is perhaps more the result of these misconceptions, unexpressed mistrust and stereotypes of nature conservation legislation than it is the enactment of legislation itself, which does not usually directly affect business interests.[337] Affected individuals are sceptical and suspicious of legislation setting up frameworks for site designation; in their mind the potential designation of their land would mean expropriation or major interference with their economic activities.

At the other end of the discourse, the lack of legislation restricting damaging development implies that the legal system favours such activities. Hence, tensions arise between conservation organizations, members of the public supporting biodiversity and state actors who refrain from adopting the relevant legislation.

2.3.4.2 Site selection and designation

Whereas provisions on species protection confer direct protection to birds, plants and animals on an individual and species basis, legal protection of certain areas of land (habitats) is conferred through the processes of site selection and designation by subsequent administrative decisions. Different procedures apply for European and national legislation, but both share the same philosophy: whether Sites of Special Scientific Interest (SSSIs), National Nature Reserves (NNRs), Special Protected Areas (SPAs) or Special Areas of

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[336]I.M Bouwma, R van Apeldoorn and D.A. Kamphorst, *Current Practices in Solving Multiple Use Issues of Natura 2000 sites: Conflict Management Strategies and Participatory Approaches* (Alterra, Wageningen, the Netherlands, 2010) 21.

[337] For example, the mere enactment of WCA 1981 does not carry any obligations in relation to site protection and management. until such sites are designated.

Conservation (SAC)s, sites are designated for their ecological value based on scientific criteria only.

Designating land will bring about restrictions and specific management requirements, which in turn will give rise to further conflict. Conflicts at this stage will set the scene for further discussions and conflicts, which tend to come to a head during the subsequent process of management formulation.[338]

However, potential restrictions are not the sole source of conflict during the designation process. The results of a European Workshop on how to deal with conflicts within the Natura 2000 network reveal several sources of tension, relating to the process as well as the criteria applied during site selection and designation.[339] With respect to the process, sources of conflict identified include inadequate consultation and the exclusion of concerned stakeholders from the designation process as a result of a primarily science-driven, top-down approach.[340] A further reason was the lack of information on the effects of site designation to those involved. [341] Stakeholders have prejudices against conservation designation due to misconceptions about what it entails.[342] Poor communication between stakeholders and regulatory agencies further intensifies uncertainties and mistrusts.[343] Additionally the extensive use of scientific jargon, inaccessible to most stakeholders, is perceived as an 'inflexible object' or 'weapon' against which a layperson is unable to provide any argument and creates feelings of 'powerlessness, frustration and despair'.[344]

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[338] Bouwma, Apeldoorn and Kamphorst (n336) 20.

[339] ibid, 20-21; These are conflicts over process and information mentioned above under s.2.3.2.

[340] ibid, 21.

[341] ibid.

[342] E.g. they might have concerns that designation will impose too many obligations on them, or that their land will lose its market value if it is designated.

[343] Bouwma, Apeldoorn and Kamphorst (n336).

[344] ibid 20; B. Wynne, 'May the sheep safely graze? A reflexive view of the expert-lay knowledge divide' in S. Lash, B. Szerszynski and B Wynne (eds), *Risk, Environment and Modernity—Towards a New Ecology* (Sage, London 1996); *See also* in this respect Johnston and Soulsby's (n307) interview-based research in northern Scotland, which explored stakeholders' views of designated nature conservation sites and the roles of scientific and local knowledge. It was found that stakeholders felt unable to participate in environmental debates

Disagreement also exists over the scientific evidence on which designations are based. Stakeholders question the quality of scientific data e.g arguing that site designation took place based on species and habitats that do not occur.[345] The decisive role of science during the designation process strengthens laypeople's perceptions about the differences between local and scientific knowledge, paving the way for further conflicts over preferred management techniques and fuelling the 'belief that conservationists were detached from local realities'.[346] Conflicts may also arise when the relevant authorities fail to designate areas that conservationists see as necessary for the survival of species, as a result of pressure from conservationists or those sympathetic to conservation interests.[347]

2.3.4.3 Conflicts over management and as a result of multiple uses or development

Conflict tends to intensify when it comes to management decisions, whether they refer to particular species or to land management. Conflicts over land management practices are not limited to designated areas but given the gradual expansion of environmental management to the wider countryside, they are likely to arise in areas outside of designated sites.

Non-equilibrium concepts of ecological complexity and interaction have finally begun to influence and become embedded into conservation strategies. It is now widely acknowledged that a focus shift from the 'crown jewels' to larger areas is needed to promote ecological resilience and conserve biodiversity conservation, through the implementation of a mixture of site-related and wider countryside conservation measures.[348] But expanding the focus area of conservation management also results in the expansion of the

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or challenge an SSSI notification decision without hiring an expert.

[345] Bouwma, Apeldoorn and Kamphorst (n336) 21.

[346] Johnston and Soulsby (n307) 165.

[347] *See for instance* the facts in *C-44/95 Regina v Secretary of State for the Environment, ex parte: Royal Society for the Protection of* Birds (Lappel Bank)[1996] ECR I-3805

[348] JNCC, *Guidelines for the Selection of Biological SSSIs. Part 1: Rationale, Operational Approach and Criteria for Site Selection* (2013).

group of affected stakeholders, which in turn leads to more conservation conflicts.

Conflicts usually emerge in response to decisions on appropriate land management practices and/or development. As to the former, tensions in general arise due to the different management practices required to purse conservation, agriculture, forestry, fisheries, recreational activities, and tourism (e.g. grazing, tree planting, water drainage etc). In designated areas, such conflicts exacerbate as a result of various restrictions imposed to land use. This is the case, for example, with the list of operations requiring Natural England's consent following the notification of an area as a SSSI.[349] As a result, landowners feel that the regulatory authorities are interfering with their sovereignty over their land and their right to decide on its use. Conflicts can also arise as a result of species management, which can be threatening to livestock and in extreme cases to human life (e.g. practices related to the reintroduction of large carnivores). [350]

Conflicts also relate to development projects. For instance, a port or airport expansion will have impacts (minor or major) on the biodiversity of the area. Conservationists, recreational groups and businesses will object to the project while shipping and tourist industry will be sympathetic. But even individuals belonging to the same or similar social groups, whose interests are usually aligned, might disagree about the merits of a particular project. This will be the case, for instance, with the building of a new airport. The airport might bring more tourists to the area, which would please hotel owners but if it is built at the cost of the local landscape, where tourist operators organize outdoors activities, then the latter interest group is likely to be less happy. Similarly, the residents of the area might be divided between those who see the airport as a transport link or job creator and those who see it as depriving them of some much-wanted green space. This example illustrates the complexity of environmental conflicts; the decision maker needs to navigate

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[349] WCA 1981 s.28(4), s28E.

[350] J Frank, 'Wolves in Sweden' in Stephen M. Redpath and others (eds), *Conflicts in Conservation Navigating Towards Solutions* (Cambridge University Press 2015).

the convoluted web of diverse and overlapping interests - which, to make things even more complicated, are often directly linked to legally safeguarded rights[351] - where everything is in flux, even sides, interests' alliances, and societal preferences.

2.3.5 The promise of adaptive collaborative management

In the situation above, the question that arise is whose interests should be prioritised and according to which criteria? In the example cited above, applying a binary approach to conflict resolution means that only one of the interests would be satisfied. Hence, if either the area or the species concerned fall under legal protection, conservation interest prevails over the interests favoured by development. The 'right answer' approach restricts development in the area. Assuming that there is no scientific interest on the site, then development will proceed.

However, as discussed above, in complex situations like conservation decision making there is a rarely a straightforward 'right answer'. Therefore, we might need to look beyond conventional legal processes such as adjudication, which cannot fully satisfy nature's or humanity's needs and interests and introduce more flexible and bottom-up approaches that are better suited to addressing multilateral and multipartite disputes.[352]

Thus, to return to Thompson and Tuden's diagram Cell D, what we need is an approach capable of addressing both disagreements over causation and disagreements about 'preferred outcomes'. We need a suitable framework for decision-making to provide the foundations for better management in the face of uncertainty, one that allows for decisions to be made in the absence of complete knowledge and understanding, and which can be combined with conflict resolution approaches such as compromise, bargaining and negotiation.

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[351] E.g. the right of property which is enshrined in Article 1 of Protocol No. 1 of the European Convention on Human Rights.

[352] Reed and Sidoli Del Ceno (n60) 228-231.

This thesis will explore the potential of adaptive collaborative management, a concept born out of the amalgamation of adaptive management and co-management theory.[353] The proposition is that both the adaptive and the collaborative elements of adaptive co-management allow nature conservation decision making to 'adapt', not only to evolving science and unpredictable ecosystem responses but also to the ever-changing values, interests and perceptions that underlie conservation conflicts. The two elements provide a platform for all those affected or who might affect decision making to come together, engage in dialogue, negotiation and consensus building in order to resolve or even better to avoid conflict during the different stages of management design and implementation. As mentioned above, much tension originates due to misconceptions and lack of trust towards scientists and decision-makers. Good communication and relationships of trust are instrumental in overcoming these issues. Additionally, as well as extending the network of participants, such an approach contributes to a better understanding of ecosystem responses; wider participation amounts to wider information input and more variables to be added to the exploration of cause and effect relations.

Does this mean, that there is no place for traditional legislation in conservation decision-making? Certainly not. This thesis argues that flexible bottom-up approaches need to be employed in combination and complementary to conventional legislation. Hence, the thesis does not suggest a total reform of current frameworks but examines whether adaptive co-management can operate within the current laws and institutions.

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[353] Plummer and others (n114) 1; Even without the addition of the word 'collaborative' in the term 'adaptive management', stakeholder collaboration is often considered integral feature of the process. *See for instance* National Research Council, *Adaptive Management for Water Resources Project Planning* (The National Academies Press 2004).

Part II

3 The scientific model of adaptive management: Addressing ecological complexity and scientific indeterminacy

3.1 A science-driven process

The original science-driven model of adaptive management seeks to underpin decision-making in the face of incomplete scientific knowledge, the complexities and the stochastic behaviour of ecosystems.[354] Adaptive management seeks to enhance scientific knowledge to address the uncertainties and incomplete knowledge that plague natural resources and ecosystem management.[355] It is a model that looks into Thompson's and Tuden's 'causation'[356] and focuses on the question of 'how' to manage in order to realise set goals and aims.[357]

More specifically scientific adaptive management presupposes a heightened role for science and the scientific method of inquiry and a central role for scientists within the decision-making process. It is the model closest to the original idea of adaptive management as set out by Holling back in the 1970s,[358] before the term's further elaboration, amendment and growing expansion that ultimately led to the multitude of definitions that currently appear in literature and practice.[359]

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[354] Holling (n62).
[355] ibid.
[356] *See supra* ch2 s.2.3.
[357] Jacobson and others (n73) 485.
[358] Holling (n62).
[359] *See supra* ch.1 s.1.4 and ch.2 s.2.2.5.

Under an adaptive approach, natural resources management takes place within an iterative process of decision-making where policy decisions are adjusted in order to reflect the new understanding.[360] Essentially, the theory of adaptive management extends the practices of the scientific community to conservation management.[361] Accordingly, and as its name suggests, within the context of this thesis I identify two primary characteristics of scientific adaptive management: science as the primary use of knowledge and decision driver; and adaptability to new information and changing circumstances modelled on scientific experimentation.

Integrating science into nature conservation decision-making is neither a novel idea nor limited to adaptive management. In this respect, scientific adaptive management is consistent with the expert-driven approaches to decision-making that became prominent in the 20th century. However, there is a striking, qualitative difference with conventional technocratic decision-making. As already discussed, traditional science-based decision-making has assumed a linear, static nature[362] and that science is definitive and capable of providing answers and accurate predictions.[363] This incorrect and erroneous perception of both the nature of ecosystems and the capacity of scientific knowledge is one of the main reasons limiting the capacity of legal frameworks to address continuing biodiversity loss.[364]

In scientific adaptive management, however, adaptability is the key: nature changes and science progresses and management needs to adapt to

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[360] J.B. Ruhl in Ruhl, 'Regulation by Adaptive Management - Is It Possible' 2005 (n51) defines adaptive management as an iterative, incremental decision-making process built around a continuous process of monitoring the effects of decisions and adjusting decisions accordingly. Ruhl's definition encapsulates the essence and main characteristics of adaptive management common to all the different versions adaptive management, from formally structured well-defined experiments to more haphazard and less rigorous models.

[361] Bocking (n330) 93.

[362] Tarlock (n123) 112 2; Botkin, 'Adjusting Law to Nature's Discordant Harmonies' (n135); A. S. Garmestani, C. R. Allen and M. H. Benson, 'Can Law Foster Social-Ecological Resilience?' (2013) 18 Ecology and Society 37.

[363] Steel and others (n174); Fischer (n175) 94.

[364] *See* Ruhl, 'Regulation by Adaptive Management - Is It Possible' (n51) 39 arguing that the species focused statutory structure of the US Endangered Species Act is 'ill-equipped' to handle its original task as it does not account for ecosystem complexity.

both. Adaptive management develops on the basis of the assertion of the elusiveness of scientific knowledge and the recognition of nature's dynamic character. A scientific construct, conceived by scientists as a way to integrate scientific understanding with natural resources management,[365] adaptive management accepts and seeks to address scientific indeterminacy and reduce the level of uncertainty surrounding nature conservation. Contrary to conventional linear approaches, the cyclical, iterative adaptive management model, enshrines a post-positivist perception of science being founded on the premise that our knowledge of natural systems is always incomplete, elusive and thereby insufficient to provide a basis for taking action with full understanding of its consequences.[366]

Nevertheless, decisions need to be made and action needs to be taken and this is how adaptive management fits in. As Lee and Lawrence suggest:

> as a conceptual approach, adaptive management sets a scientifically sound course that does not make action dependent on extensive studies. As a strategy of implementation, adaptive management provides a framework within which measures can be evaluated systematically as they are carried out.[367]

3.2 Addressing scientific uncertainty: Learning through experimentation

The capacity to learn is essential for coping with changing conditions and the increasing acquisition of knowledge.[368] Learning lies at the heart of a scientific adaptive management model and it is simultaneously the driver and a desirable outcome of the process.[369] This interrelationship is founded on the recognition that 'learning derives from action and in turn, informs subsequent

[365] Bocking (n330) 93; Gunderson (n255) 28.
[366] Stankey, Clark and Bormann (n65) 8.
[367] Lee and Lawrence (n264) 442.
[368] G. Peterson and others, 'Uncertainty, Climate Change, and Adaptive Management' (1997) 1 Conservation Ecology.
[369] Stankey, Clark and Bormann (n65) 14.

action'.[370] In a nutshell, adaptive management is 'learning by doing'.[371] As Lee observes, 'in theory, adaptive management recapitulates the promise that Francis Bacon articulated four centuries ago: to control nature one must understand her'.[372]

Learning through experience is no novelty either; it has been an important concern for philosophers throughout the years. But even in the context of managing natural resources, the idea is not entirely new. Falanruw discusses how the Yap people of Micronesia address resource scarcity through adaptive methods of management for years.[373] In England, the adaptive approach towards conservation land management (in nature reserves) has been applied since the 1960's without the concept being formalised or formally recognised.[374] As Alexander notes 'it was just the way in which conservation managers managed their sites'.[375]

However during the last 35 years adaptive management became a recognised process with methods defined, explored, tested and refined.[376] It is not simply 'trial and error', but well informed management that incorporates and produces scientific knowledge through the use of scientific tools and methods.[377] Seen as a way to improve our learning capacity, scientific adaptive management 'constitutes an argument to extend practice of

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[370] ibid.

[371] Robert M. Argent, 'Components of Adaptive Management' in Catherine Allan and George H Stankey (eds), *Adaptive Environmental Assessment and Management: A Practitioner's Guide* (Springer 2009) 13.

[372] Lee, 'Appraising Adaptive Management' (n72) 4.

[373] M.V.C Falanruw, 'People Pressure and Management of Limited Resources on Yap' in J.A McNeely and K. R Miller (eds), *National Parks Conservation, and Development: The Role of Protected Areas in Sustaining Society* (The Smithsonian Institution Press 1984); *See also* Fikret Berkes, Johan Colding and Carl Folke, 'Rediscovery of Traditional Ecological Knowledge as Adaptive Management' (2000) 10 Ecological Applications 1251 discussing traditional and local knowledge of indigenous groups and their similarities to adaptive management 'with its emphasis on feedback learning, and its treatment of uncertainty and unpredictability intrinsic to all ecosystem'.

[374] Alexander (n316) 72.

[375] ibid.

[376] E. Sabine, G. Schreiber and others, 'Adaptive management: a synthesis of current understanding and effective application' (2004) 5 Ecological Management & Restoration 177.

[377] Gunderson (n255).

the scientific community-especially experimentation- to the work of resource management'.[378] Without in principle ruling out information acquired through formal scientific inquiry, adaptive management focuses on the management itself as a learning process with political and scientific implications. It has political implications in the sense that it allows for decisions to be made without waiting for the conclusions - if any - of time-consuming formal scientific research.[379] On the other hand, it provides a more accurate scientific profile since it is being applied to the system in question. In contrast to other research areas, biological, technical and economic reasons prevent ecosystem recreation in a laboratory and therefore *in situ* research is the only option for safer results.[380]

3.2.1 Designing policies as experiments

As its name suggests, in a scientific adaptive management model, science has a decisive role in natural resources management decision-making.[381] The name of the model also indicates a closed circle of participants, which makes this model less participatory than other conceptualizations of adaptive management. In this respect, scientific adaptive management finds itself at one end of the participation spectrum and closer to the expert-driven traditional command and control approaches.[382] Hence, the main actors here are scientists and managers; other stakeholders as well all ordinary members of the public do not have an influential role to play in shaping decisions pertaining to nature conservation.[383]

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[378] Bocking (n330) 93.
[379] Stankey, Clark and Bormann (n65) 17.
[380] Doremus, 'Listing Decisions Under the Endangered Species Act: Why Better Science Isn't Always Better Policy' (n174).
[381] Stankey, Clark and Bormann (n65) 33 stating that 'the concept of scientific adaptive management rests on the notion that the formal methods of inquiry, based on hypothesis testing represent the most effective and efficient means of acquiring new knowledge'.
[382] ibid 13.
[383] ibid.

What defines adaptive management and distinguishes it from other forms of technocratic decision-making though, is that it adopts the scientific method as its *modus operandi;* it is the element of experimentation that is deeply embedded in some form or degree into the model of scientific adaptive management, intended to enhance learning and acquire a better understanding of the system.[384]

Hence, in its classic form adaptive management, is seen as more than mere incrementalism.[385] Adaptive management is a purposeful process.[386] Pre-set goals serve as a basis for a process that generates information, increase knowledge and enhance understanding of the system in relation to these goals. To address ecosystem complexity and uncertainty, Holling and Walters, the pioneers of adaptive management, articulated a structured process that mimics the scientific method of enquiry, puts great emphasis on mathematics and computer modelling and treats policy making as well defined hypotheses that are to be tested on the ground.[387] Hence, the information that derives from what is in essence a 'policy experiment' becomes the basis for changes in subsequent actions and policies. [388]

Adaptive management's iterative cycle of decision-making resembles the method used by empirical scientists to acquire new knowledge or amend and integrate existing knowledge. As Wilson et al note, the strength of adaptive management is that 'it brings a scientific approach to management of complex biological, ecological, economic and social systems (…). [389] A number of structural models have been developed to reflect this iterative process of

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[384] Walters and Holling (n64); Such experimentation is however likely to fail. Accepting the possibility of failure as part of the learning process is crucial. *See* Stankey, Clark and Bormann (n65) 29 stressing that even if we fail to confirm the hypothesis we have nevertheless managed to acquire information to revise it', which then leads to questions of who decides how much failure risk is acceptable, and according to which criteria? *See* Ch 2.

[385] Stankey, Clark and Bormann (n65) 7.

[386] ibid (n278) 7.

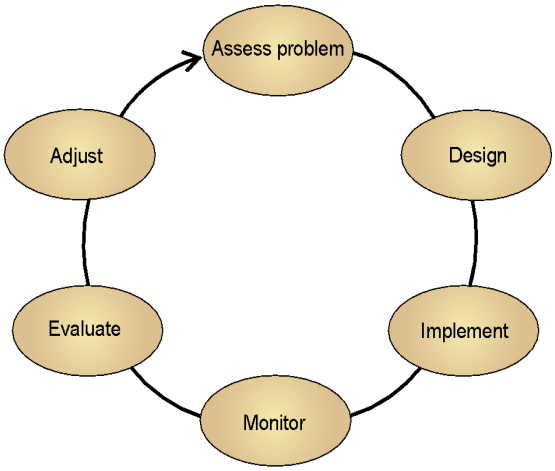
[387] Holling (n62); Walters, *Adaptive management of renewable resources* (n62).

[388] Stankey, Clark and Bormann (n65) 5.

[389] G Wilson, M Edwards and G Carruthers, 'Environmental Management Systems as Adaptive Natural Resource Management: Case Studies from Agriculture' in Catherine Allan and George H. Stankey (eds), *Adaptive Environmental Management: A Practitioner's Guide* (Springer Science & Business Media 2009) 209.

learning, from the very basic that strip the model down to four steps, to the more elaborate with a greater number steps and multiple loops at each stage.[390] The most prevalent in the literature (and the skeleton for more elaborated frameworks) is the six-step adaptive management framework, which is most commonly presented as follows: problem-assessment – design – implementation – monitoring – evaluation-adjustment[391]

Figure 2 US Department of Interior diagram of adaptive management[392]



However, adaptive management is not pure scientific research and neither does it consider science as a distinct process.[393] The novelty of the approach is that scientific processes are 'cast into adaptive management experimentation'[394] and find their place at all stages of the adaptive management cycle (e.g hypothesis formulation, modelling, monitoring, evaluation). As many authors agree, adaptive

[390] *See i.a*: ibid 211 for a simple four-step process; Stankey, Clark and Bormann (n65) for an expanded four-step process; Williams, Szaro and Shapiro (n257) 4 for a linear six-step process; Glenys Jones, 'The adaptive management system for the Tasmanian Wilderness World Heritage Area – linking management planning with effectiveness evaluation' in Catherine Allan and George H Stankey (eds), *Adaptive Environmental Management A Practitioners Guide* (Springer 2009) 237; Hannah Birgé and others, *Adaptive management for soil ecosystem services*, vol 183 (2016) 6 for a more elaborate outline of adaptive management.

[391] Dennis D. Murphy and Paul S. Weiland, 'Science and structured decision making: fulfilling the promise of adaptive management for imperilled species' (2014) 4 Journal of Environmental Studies and Sciences 200, 201.

[392] Williams, Szaro and Shapiro (n257).

[393] Gunderson (n255) 31.

[394] ibid.

management 'blurs the distinction between science and management' that together become 'part of a more holistic model of management'.[395]

Common to all versions of adaptive management is continuous monitoring.[396] Often a source of confusion itself,[397] effective monitoring is critical to the completion of the adaptive management circle, as it provides the basis for the following stage of assessment; it is constant, well designed monitoring that will provide the data, which will then turn into information that will subsequently become action.[398] Assessment of monitoring results will either validate existing practices or call for a recalibration of decisions and a new cycle of management is initiated.[399]

3.2.1.1 Variations in Experimentation: Evolutionary, Passive and Active Adaptive Management

The rigorously articulated theoretical model of adaptive management has been watered down since its inception and the term 'adaptive management' is now often used to refer to models of decision making of a more relaxed structure and non-active experimentation;[400] decisions are adjusted if they fail to reach targets but there is not deliberate designing of management actions or active experimentation included. A literature search will reveal that there is no consensus on how well formalized or experimental an adaptive

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[395] ibid citing Holling (n62); *See also* Walters, *Adaptive management of renewable resources* (n62); L.H. Gunderson, L. Pritchard and International Council of Scientific Unions. Scientific Committee on Problems of the Environment, *Resilience and the behavior of large-scale systems* (Island Press 2002); Williams, Szaro and Shapiro (n257).

[396] *See* the adaptive management conceptualisations in Gunderson (n255) 30.

[397] Caroline Stem and others, 'Monitoring and Evaluation in Conservation: a Review of Trends and Approaches' (2005) 19 Conservation Biology 295.

[398] Stankey, Clark and Bormann (n65) 2.

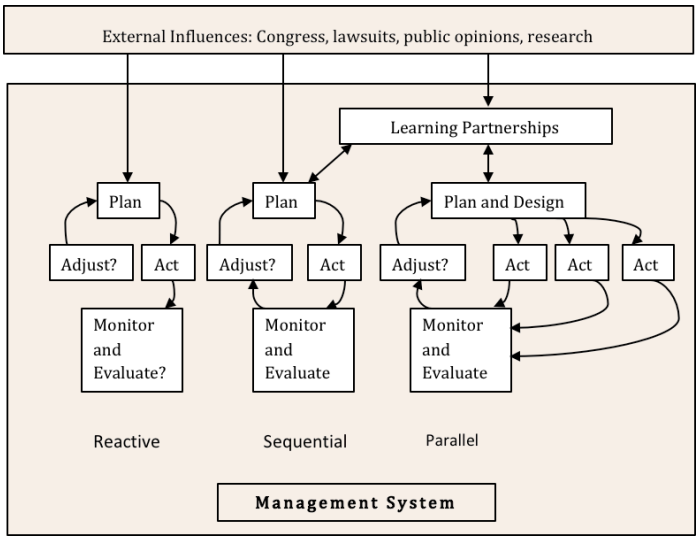
[399] ibid (n278) 2.

[400] Compare for instance Holling's conceptual model of adaptive management with three interacting spheres of activity and the one developed by the US Department of Interior, which proposed a six-step linear but cyclical approach, found in Gunderson (n255) 30-31; *See* also J. B. Fischman Ruhl, Robert L., 'Adaptive Management in the Courts' (2010) 95 Minn L Rev 424, referring to the watered down version of adaptive management theory as a/m lite. Ruhl and Fischman, ibid, 428 refer to this weak depiction of adaptive management in US policy and practice 'as a weak lemonade of ad hoc contingency planning'.

management approach should be.[401] Along an increasing continuum of scientific rigor for experimentation and hypothesis testing, a distinction is made between three types of adaptive management with varying emphasis on learning and differences in the ways they treat uncertainties[402]: evolutionary, passive and active adaptive management[403] (fig.3). Bocking writes in that respect:

> Definitions of adaptive management vary: from better monitoring of the ecological effects of resource management, and an improved capacity to respond to unexpected changes; to a more formal process involving modelling of potential impacts of alternative policies, experiments to test these predictions and obtain knew knowledge and application of this knowledge to management practice, with these steps repeated as an iterative process.[404]

Figure 3 Conceptualisations of Adaptive Management from Bormann et al[405]



In general, the more experimental and structured the design, the more learning it will generate. It becomes a little bit more science and a little bit less management. Many scholars, especially natural scientists, reject mere incrementalism and adhere to the original concept of active implementation.[406] Given the number of constraints and low success rates of

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[401] *See* the discussion that follows, infra s.3.2.1.2-3.2.1.4.

[402] B. K. Williams, 'Passive and Active Adaptive Management: Approaches and an Example', (2011) 92 Journal of Environmental Management 1371.

[403] Walters and Holling (n64) 2060; Also found in literature as reactive, sequential and parallel *See* Bormann *et al* (n66) 512.

[404] Bocking (n330) 93.

[405] Bormann *et al* (n66) 512.

[406] *See* Walters, 'Challenges in adaptive management of riparian and coastal ecosystems' (n264) 2 arguing that in adaptive management learning becomes a process of direct selection: 'adaptive management planning allows us at least in principle, to replace management

active adaptive management,[407] others would be willing to accept a mere 'learning by doing approach' to adaptive management as being preferable option to 'doing nothing'.[408] What follows is a brief discussion on the different versions of adaptive management situated on a continuum of increasing experimentation and scientific design.

3.2.1.2 Evolutionary Adaptive Management

At one end of the continuum we find *evolutionary adaptive management*.[409] Contrary to what was said about the purposefulness of adaptive management implementation, evolutionary adaptive management is neither a process carefully planned and designed, nor one directed to learning. Instead, in evolutionary adaptive management choices become a reactive approach to learning.[410] In reactive learning, there is no explicit monitoring or evaluation mechanisms to review past actions and inform future ones.[411] According to Hilborn, learning does occur eventually; after constantly repeating the same mistakes the organization 'learns its lessons and realizes its errors'.[412] Stimuli in reactive approaches are external to management and may include law and policy, lawsuits, public reactions and research findings.[413] Hence, the interrelationship between adaptive management and policy is reversed: instead of adaptive management informing and guiding policy actions it is actually law and policy that shape management.[414]

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learning by trial and error (an evolutionary process) with learning by careful tests (a process of directed selection).

[407] R. Gregory, D. Ohlson and J. Arvai, 'Deconstructing Adaptive Management: Criteria for Applications to Environmental Management' [Ecological Society of America] 16 Ecological Applications 2411; Walters, 'Challenges in adaptive management of riparian and coastal ecosystems' (n264).

[408] Alexander (n316) 76ff.

[409] Walters and Holling (n64) 2060.

[410] Ray Hilborn, 'Can Fisheries Agencies Learn from Experience?' (1992) 17 Fisheries 6, 7; Bormann *et al* (n66) 506.

[411] Hilborn (n410) 7.

[412] ibid.

[413] Bormann *et al* (n66) 510.

[414] *See for instance* the case study of the Yellowstone Elk Herd in Bormann *et al* (n66), 511-512.

Considering the rationale behind adaptive management's conception, this approach entails incremental learning but should not be considered genuine adaptive management. Indeed, some authors dismiss evolutionary adaptive management as irrelevant.[415] However, under a broader understanding and a literal interpretation of the term, even this approach falls within the notion of adaptive management 'because feedback does occur and adjustments are made.'[416] In any case, even mere trial and error, especially when implemented in an organized and structured way with monitoring and evaluation techniques, is better than 'doing nothing'.[417] This is especially true given the impediments to the practical implementation of active adaptive management that is likely to make managers reluctant to implement it.[418]

3.2.1.3 Passive Adaptive Management

Passive adaptive management begins with an assessment of the given problem or desirable goal and uses historical data, usually from the focus area or similar areas, to 'construct a single best estimate or model for response, and the decision choice is based on assuming this model is correct'.[419] A "best guess" hypothesis is developed,[420] usually based on policies already having some degree of successful implementation.[421] The results are then monitored, reviewed, evaluated and if necessary the original hypothesis and subsequent actions are adjusted.[422] Passive adaptive management, is then anticipatory

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[415] Alexander (n316) 76; Many scholars only make the distinction between active and passive adaptive management. *See for instance* Gregory, Ohlson and Arvai (n407); Williams (n402); Catherine Allan and George H. Stankey, *Adaptive Environmental Management: A Practitioner's Guide* (Springer Science & Business Media 2009) including only cases of active and passive adaptive management.

[416] Bormann *et al* (n66) 510.

[417] Doremus, 'Adaptive Management, the Endangered Species Act, and the Institutional Challenges of New Age Environmental Protection' (n68) 53; Alexander (n316) 76.

[418] Indeed, scientists tend to prefer active adaptive management as a way to acquire more information in less time. However, as failed attempts have shown, the practical implementation of such an experimental approach is very difficult in the real world. *See* Gregory, Ohlson and Arvai (n407) 2413.

[419] Walters and Holling (n64) 1260.

[420] Gregory, Ohlson and Arvai (n407) 2412.

[421] Alexander (n316) 76.

[422] Gregory, Ohlson and Arvai (n407) 2412.

and reactive but as Gregory *et al* argue that due to the limited extent of intervention, it makes good sense when there is a degree of confidence on ecosystems responses.[423] In these cases the outcomes of the monitoring-evaluation phases are used by managers to refine parameter estimates, not to identify entirely new techniques.[424] Brommann refers to passive adaptive management as 'sequential learning' since management policies and techniques are applied and compared sequentially, not concurrently.[425] Passive adaptive management is more formal and structured than evolutionary adaptive management but contrary to active adaptive management, applies a 'post facto' analysis to management data and experiences.[426]

While passive adaptive management generally recognizes uncertainty, its main focus is on the effects of management actions on resources rather than how learning through management could reduce ecological uncertainty.[427] Hence, learning is useful and well appreciated but not the primary focus in passive adaptive management. Williams refers to it as a 'useful but unintended by-product'.[428] Scientists eager to learn, experiment and acquire new knowledge do not always greet passive adaptive management with great enthusiasm.[429] Due to the sequential application of policy actions, learning can be a very slow process with questionable results in terms of advancing management practices. Walters and Holling identify two fundamental objections to passive policies:

> First, they are likely to confound management and environmental effects. [...] Second, passive policies may fail to detect opportunities for improving system performance if the 'right' model and "wrong" model

[423] ibid (n407) 2412.
[424] ibid (n407) 2412.
[425] Bormann *et al* (n66) 512.
[426] Stankey, Clark and Bormann (n65) 12.
[427] Williams (n402) 1373.
[428] Ibid.
[429] Gregory, Ohlson and Arvai (n407) 2413.

> predict the same response pattern when the system is managed as though the wrong model were correct.[430]

The truth is that passive adaptive management is likely to turn into simple trial and error in the absence of a clear, predefined hypothesis or well-structured monitoring and evaluation processes that create a feedback loop.[431] On the other hand, a passive adaptive management approach might be more realistic and capable of implementation in practice. It incurs fewer costs and is more easily implemented within strong regulatory and institutional constraints.[432]

3.2.1.4 Active Adaptive Management

At the other end of the experimentation spectrum, we find *active adaptive management*. Active adaptive management is the approach that identifies more with the methods of scientific investigation. In active adaptive management, management interventions deliberately aim directly at the reduction of uncertainty and the enhancement of learning.[433] A number of competing hypotheses are constructed and then tested through well-designed management experiments, [434] which are subsequently monitored and evaluated.

Walters and Holling define active adaptive management as the approach where:

> data available at each time are used to structure a range of alternative response models, and a policy choice is made that reflects some computed balance between expected short-term performance and long-term value of knowing which alternative model (if any) is correct'.[435]

Active adaptive management integrates active experimentation into policy designing in order to promote learning in order 'to learn something'.[436]

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[430] Walters and Holling (n64) 2061.
[431] Gregory, Ohlson and Arvai (n407) 2412.
[432] ibid.
[433] ibid.
[434] ibid.
[435] Walters and Holling (n64) 2060.
[436] Lee, 'Appraising Adaptive Management' (n72) 2.

As Stankey observes 'active adaptive management is designed to provide data and feedback on the relative efficacy of alternative models and policies, rather than focusing on the search for the best predictor'. [437] Bormann et al refer to active adaptive management as parallel learning due to the fact that different hypotheses are tested simultaneously.[438] As a result, learning can occur more quickly than when a less structured approach such as passive adaptive management is implemented,[439] although this does not necessarily mean that it is less expensive.[440]

In active adaptive management, learning is set as the central focus and becomes both a driver and an intentional and desirable outcome. In practice, this means that even if a certain intervention failed to deliver the anticipated results, the learning that occurred makes management at least partially successful, since the feedback loop that follows allows future management decisions to begin from an improved level of understanding.[441] This is also true for passive adaptive management but is even more relevant to the active approach; contrary to the passive approach where the management cycle begins with a 'best guess' hypothesis and wishful thinking that it will indeed deliver the anticipated positive results, in active adaptive management it is expected that some of the alternative practices implemented will be less successful than others.

Scientists usually opt for active adaptive management.[442] They do not view the process much as 'management' but rather as a problem that needs to be solved. [443] It is true that active adaptive management, through the simultaneous application of alternative hypotheses, can deliver more information in a shorter time than passive adaptive management[444] and is more likely to identify innovative techniques and even identify the 'best

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[437] Stankey, Clark and Bormann (n65) 13.
[438] Bormann *et al* (n66) 512.
[439] ibid.
[440] Lee, 'Appraising Adaptive Management' (n72) 4.
[441] Lee, *Compass and gyroscope: integrating science and politics for the environment* (n71)53.
[442] Walters and Holling (n64).
[443] Gregory, Ohlson and Arvai (n407) 2413.
[444] Bormann *et al* (n66) 512.

practice'.[445] However, as will be discussed in the following section, the high degree of experimentation added to its already technocratic character further distances it from the realm of law and policy. Active adaptive management finds it hard to operate within regulatory frameworks.[446] On the other hand, active adaptive management involves risks, which in the context of nature conservation might even entail endangering certain species, which leads us to the legitimate question, why use adaptive management if instead of benefiting biodiversity we might actually threaten it even further? Active adaptive management might reduce the uncertainty of the system as a whole but at the expense of some species.[447] In this respect, tensions are likely to arise between adaptive management and substantive nature conservation legislation. Indeed, in the United States where adaptive management has been a popular approach, the Endangered Species Act has often been an insurmountable barrier to the implementation of adaptive management.[448] On a different note, but in practice equally important, the human and financial resources required by active adaptive management are often beyond the capacities of implementing agencies.

3.3 Challenges and considerations for scientific adaptive management implementation within a legal and regulatory context

It is not surprising that the introduction of a scientific construct to the realm of law and policy creates a series of challenges and problems that jeopardize its successful application. The following paragraphs discuss some of the reasons why it might be difficult to fit a purely scientific model of adaptive management within nature conservation legal frameworks. This

[445] Alexander (n234) 77.
[446] Gregory, Ohlson and Arvai (n407) 2412.
[447] Lee, *Compass and gyroscope: integrating science and politics for the environment* (n71) 75
[448] Doremus, 'Adaptive Management, the Endangered Species Act, and the Institutional Challenges of New Age Environmental Protection' (n68).

'mismatch' stems both from the 'scientific' and the 'adaptive' nature of scientific adaptive management.

As to the former (the scientific part), there are concerns similar to those associated with technocratic decision making.[449] Scientific adaptive management is ill-suited to address conflicts of values and interests.[450] As mentioned before, nature conservation decision-making is about choices; choices of what to conserve and how to conserve. Scientific adaptive management is set in motion to answer the 'how' question; science is the means. But to which end? What is the 'preferred outcome'? Assuming that the goals that trigger the adaptive management cycle are set by experts, on the basis of scientific criteria and information, then science apart from being the 'means' is also shaping the 'end.' Scientific adaptive management represents the values and interests of only one of the multiple parties in conservation conflicts: the scientists

A scientific approach in nature conservation, emphasizes the scientific value of biodiversity. Essentially, it is in the interests of science - not nature - that a decision is made. Holland refers to environmental philosophers who go as far as to dismiss the idea of a 'conservation interest':

> Many environmental philosophers (Katz, 1987; Elliot, 1992; McShane,2007) would hold that to reduce the conservation interest, merely, to the interests of conservationists would be at best to undervalue nature and at worst a grievous travesty. The conservation interest can only represent nature, they say, if it views nature as, in some sense, having a value in its own right, a value that transcends the potentially ephemeral interests of particular conservationists. The interest of a particular conservationist in scuba-diving or bird-watching

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[449] The notion of technocracy, the rule of expertise and an elitist approach to governance can be traced back as far as the writings of Plato through Francis Bacon and Auguste Comte who each portrayed experts-led utopian societies. In the early 20th century John Dewey explored the future of democracy and the proper relationship between citizens and experts 'in an age of mass communication, governmental bureaucracy, social complexity, and pluralism.' Due to the special relationship between environmental problems and science, the debate is even more relevant to the field of environmental law and policy, hence the voluminous literature on the subject. *See i.a* Moritz Schlick and others, *Philosophical papers.* , vol II: (1925-1936) (Reidel 1979);Sheila Jasanoff, *Science at the bar : law, science, and technology in America* (Harvard University Press 1995); Bocking (n330);Fischer (n175).

[450] *See* the discussion in ch.2 s. 2.3.2.

> may well coincide with the 'conservation interests' but could never be identified with it. (…) As Katz (…) puts it 'an environmental ethic cannot be based on human interests because of the contingent relationship between human interests and the welfare of the natural environment' [451]

That the interests of science may often coincide with but are not identical to those of natural species or habitats is illustrated by the 1960's case of the Cow Green Reservoir in Upper Teesdale, which demonstrates the divide between science and biodiversity interests.[452] The case was about the proposed construction of a reservoir within a site that had been designated an SSSI for hosting a community of arctic-alpine plants. Hence, although the then Nature Conservancy fought the proposed reservoir tooth and nail all the way to Parliament, where a Private Member's Bill to allow the reservoir was debated, the argument that the area should be protected on the basis of the scientific interest of the site was defeated.[453] The proponents of the reservoir demonstrated that very few scientists had visited the site and little research on it had been published at the time the site was threatened by the construction of the reservoir.[454] Adams notes that it was the scientific interest that was defeated, thus indicating that 'it was impossible to continue to defend nature on the basis of science'.[455] The defenders of the conservation interest of the site 'did not argue that the reservoir was a waste of money or that it intruded on the landscape, nor did they try to argue that the vegetation area had economic value or the landscape "wilderness value" although all of these were arguably true'.[456] It was all about science and a technocratic depiction of nature.

At the same time, scientists are often eager to address conservation problems in strict scientific terms and fail to realise and account for the social

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[451] Alan Holland, 'Philosophy, conflict and conservation' in Stephen M. Redpath and others (eds), *Conflicts in Conservation: Navigating Towards Solutions* (Cambridge University Press 2015) 24-25.

[452] W. M. Adams, *Future nature: a vision for conservation* (Revised edn, Earthscan 2003), 91-92.

[453] ibid.

[454] ibid.

[455] ibid.

[456] ibid.

setting in which they operate. Indeed, adaptive management is about implementing science-driven management experiments - a feature even more prominent in active adaptive management[457]- but scientists may lose sight of the fact that these experiments are not conducted in their private laboratory but outside in the field, where people live and interact, therefore conflict is unavoidable.[458] Hence, the implementation of science-driven decisions in the real world, entails legal intervention. Scientific adaptive management needs the law to adjudicate in favour of the science. But as mentioned in the previous chapter, the law's adversarial approach to conflict resolution often inflames conflict instead of resolving it.[459] Nevertheless, these concerns are not unique to scientific adaptive management but common among technocratic/scientific approaches to conservation and as mentioned in the previous chapter, provide the justification for a wider collaborative adaptive management model.

What is however unique to adaptive management is the flexibility that characterizes it. Besides the theoretical question of whether it is appropriate for science to lead the law and policy of nature conservation, a number of issues and problems arise as a result of the flexibility that adaptive management introduces to environmental law and policy.[460] The flexibility and extent of experimentation that adaptive management demands is not exactly on the 'best of terms' with law and policy, either from a practical or normative perspective. As to the former, the temporal scale of adaptive management is unlikely to match that of decision making. From a normative

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[457] *See supra* s.3.2.1.4.

[458] Gregory, Ohlson and Arvai (n407).

[459] *See supra* ch. 2 s2.3.3.

[460] The inherent differences between adaptive management and the law led some scholars to explore whether the promise of adaptive management can indeed justify making amendments to the way environmental law works. *See in this respect* an in-depth investigation on the pros and cons of adaptive management in relation to environmental law by Biber in Eric Biber, 'Adaptive Management and the Future of Environmental Law' 46 Akron Law Review 933. Biber, ibid 933, in line with Doremus argues that the question of whether adaptive management should adapt to environmental law or vice versa has not been explored in depth by either scientific, management or legal literature; *See also* Holly Doremus, 'Adaptive Management as an Information Problem Adaptation and Resiliency in Legal Systems' (2010-2011) 89 N C L Rev 1455, 1460.

perspective, adaptive management theory might be well suited to the dynamic nature of ecosystems and the non-equilibrium paradigm but finds itself at odds with the law's quest for certainty and social and political stability[461] and is likely to raise questions of accountability and conformity with the rule of law.[462] At the same time, legal procedural and substantive requirements do not leave any room for experimentation.[463] The following paragraphs discuss some issues that arise when attempting to introduce scientific adaptive management to the realm of law and policy.

3.3.1 Law and policy hurdles to adaptability

3.3.1.1 The mismatch of political and ecological timescales

In order to effectively integrate science and management, it is reasonable to expect that an adaptive management plan matches the temporal scale or scales at which ecological processes operate, or the scale of the problem it seeks to address.[464] As Lee suggests, 'the time scale of adaptive management is the biological regeneration rather than the business cycle, the electoral term office or the budget process'.[465]

However, to the extent that management interventions are applied in a real-world context as opposed to closed laboratory environments, adaptive management is in need of political and regulatory decisions to facilitate and provide its implementation. Hence, adaptive management is a political as well as scientific process. Besides any other inherent differences between science

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[461] Carl Brush, 'Adaptive Water Management: Strengthening Laws and Institutions to Cope with Uncertainty' in Biswas Asit K., Tortajada Cecilia and Izquierdo Rafael (eds), *Water Management in 2020 and Beyond* (Springer 2009) 101; C. R. Allen, 'Adaptive management for a turbulent future' (2011) 92 Journal of Environmental Management 1339, 1343.

[462] Karkkainen, 'Adaptive Ecosystem Management and Regulatory Penalty Defaults: Toward a Bounded Pragmatism' (n74).

[463] Beth C. Bryant, 'Adapting to Uncertainty: Law, Science, and Management in the Steller Sea Lion Controversy' (2009) 28 Stan Envtl L J 171.

[464] Gregory, Ohlson and Arvai (n407) 2415.

[465] Lee, *Compass and gyroscope: integrating science and politics for the environment* (n71)63.

and politics, problems also emerge as a result of 'bad-timing' between the time scales involved: while certain natural processes operate in timeframes spanning over years, even decades, political and budgetary timeframes are typically short- term.[466]

On the one hand, a management plan will most likely include multiple cycles before providing substantive information that can be used to guide policy decisions.[467] However, the culture of political systems to date dictates a much shorter time scale and short-term goals and objectives.[468] As a result, adaptive management cycles will unfold over the 5-15 years of a policy cycle,[469] over electoral cycles and will very likely exceed the professional tenures of managers.[470] The question that arises is whether, given the long-term benefits of lengthy adaptive management plans, politicians are prepared to bear the high political costs incurred by controversies arising among the lobbying interests with stakes in the outcome of the plan.[471] How willing are the politicians to put time, money and effort into something that is equally as likely to fail as it is to succeed, or to give credit to future administrations, even political rivals? How willing and prepared is the public - which is at the same

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[466] Catherine Allan and George H. Stankey, 'Synthesis of Lessons' in Catherine Allan and George H. Stankey (eds), *Adaptive Environmental Management: A Practitioner's Guide* (Springer 2009) 346; R.C. Szaro and D.W. Johnston, *Biodiversity in Managed Landscapes: Theory and Practice* (Oxford University Press 1996) 763.

[467] W. Allen and C. Jacobson, 'Learning About the Social Elements of Adaptive Management in the South Island Tussock Grasslands of New Zealand.' in Catherine Allan and George H. Stankey (eds), *Adaptive Environmental Management : A Practitioner's Guide* (Springer Science & Business Media 2009) 96; *See also* Doremus, 'Adaptive Management, the Endangered Species Act, and the Institutional Challenges of New Age Environmental Protection' (n68) 67, citing Volkam and McConnaha, two insiders at the Northwest Power Planning Council, arguing that robust experimentation is *i.a.* hindered by the fact that '*the political system operates on a much shorter time scale than that needed to generate firm data'.*

[468] RC Szaro and DW Johnston, *Biodiversity in Managed Landscapes: Theory and Practice* (Oxford University Press 1996) 763.

[469] Allen and Jacobson (n467) 96.

[470] National Research Council, *Adaptive Management for Water Resources Project Planning* (n353),26.

[471] I.P.C. Change, *Climate Change 2014 – Impacts, Adaptation and Vulnerability: Part A: Global and Sectoral Aspects: Volume 1, Global and Sectoral Aspects: Working Group II Contribution to the IPCC Fifth Assessment Report* (Cambridge University Press 2014) 389; Doremus, 'Adaptive Management, the Endangered Species Act, and the Institutional Challenges of New Age Environmental Protection', 67.

time the electorate - to incur the cost, either monetary or in the form of new regulations, of an adaptive management plan that if successful will only be of benefit in the long-term, perhaps not even in their lifetimes? [472] As Argent puts it, 'the best adaptive management process, well planned and supported, with good science, data and knowledge, and many willing partners, can founder on the timing of an election or an economic recession'.[473]

Sustaining long-term, rigorous, scientific adaptive management is therefore no easy task. Many adaptive initiatives only make it halfway through the cycle before being replaced by a new policy or derailed by a management issue[474] and will often 'vanish with no visible end product'. [475] Other plans get 'trapped in an apparent endless process of development and refinement'. [476] Lastly, there are those which have been 'artificially squeezed into shorter frames'; [477] on paper they are successful since all the steps of adaptive management have been completed but 'the essence of reflective and scientifically robust discussion and adaptation is missed'.[478]

3.3.1.2 Flexibility, discretion and the rule of law

Whether active or passive, adaptive management is presented in the literature as a form of management where results are monitored, and adjustments made to decisions to reflect new information. As a result, in order to take full advantage of its promise and make effective use of any updates in scientific knowledge, policy decisions should remain flexible and open to

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[472] *See for example* the Environment Agency, *Thame Estuary Plan 2100* (2012) 9, noting with regard to consultation on expenditure that 'many of our stakeholders felt that it was difficult to comment on decisions that would be made late in the century, but were happy to relate to decisions and planning to the middle of the century. Given the chances that the public has the power to influence politics through pressure on politicians and the instigation of legal proceedings, this reluctance does not bode well for the implementation of long-term scientific adaptive management – there is no collaboration either, since participants feel uneasy about commenting on future decisions.

[473] Argent (n371) 23.

[474] Allen and Jacobson (n467) 96.

[475] Walters, 'Challenges in adaptive management of riparian and coastal ecosystems' (n264)3.

[476] ibid.

[477] Allen and Jacobson (n467) 96.

[478] ibid.

readjustment.[479] Hence, prescriptive legislation and/or a centralised system with top-down decision-making processes will probably be unable to support adaptive management, [480] which entails delegation of power to the administration and very broad discretion coupled with judicial deference regarding both procedural and substantive legal requirements.

More specifically, the incredibly strict legislation on species protection places significant constraints on experimental adaptive management practices. [481] On the other hand, procedural requirements such as impact assessments before the modification of every decision, [482] as well as requirements for public participation, slow down the procedure and hinder the implementation of adaptive management – at least in its experimental form.[483]

Hence, in order to operate, adaptive management needs a non-prescriptive, flexible legislative and regulatory framework as well as some degree of judicial deference. There are two sources of concern in relation to the constant readjustment of decisions: a) open-ended decisions become a source of uncertainty; b) issues of accountability and respect for the rule of law.

3.3.1.2.1 Open-ended decisions: a need for closure

The feasibility of non-final decisions, especially when they affect social and private interests, is at least questionable given the fact they are a source of uncertainty for human actors[484] – which is exactly what law is striving to prevent.

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[479] Doremus, 'Adaptive Management, the Endangered Species Act, and the Institutional Challenges of New Age Environmental Protection' (n68) 86.
[480] Thrower (n140) 887.
[481] Bryant (n463); Doremus, 'Adaptive Management, the Endangered Species Act, and the Institutional Challenges of New Age Environmental Protection' (n68) 78.
[482] Melinda Harm Benson and Courtney Schultz, 'Adaptive Management and Law' in C.R. Allen and A. Garmestani (eds), *Adaptive Management of Social-Ecological Systems* (Springer Netherlands 2015).
[483] Ruhl, 'Adaptive Management for Natural Resources-Inevitable, Impossible or Both?' (n263) 11-20.
[484] Biber, 'Adaptive Management and the Future of Environmental Law' (n460) 948.

Doremus argues that with adaptive management 'we can be confident that we will learn over time [but] we cannot be as confident that we will learn quickly.'[485] However, some environmental problems are more pressing and require a decision to be taken immediately or at least well before an an adaptive management plan would normally yield results. Decisions such as development consents and environmental permits cannot be put on hold for years or decades while we wait for adaptive management to 'bear the fruit of reduced uncertainty'.[486]

Is this need for 'patience' a fatal problem with adaptive management? Not necessarily;[487] the advantage of scientific adaptive management is that it allows for the production of information and the enhancement of learning through the implementation of management actions, the process of 'learning by doing'. [488] Sometimes it will be possible to combine that flexibility with a degree of finality to decisions.[489] Incremental decision-making is one way that legal regimes can be reformed to accommodate flexibility and account for ecological resilience; with decisions that can be revisited and amended following a monitoring period.[490]

This however would require regulators to wait for the completion of the plan to impose new conditions or restrictions e.g in the case of permits that need to be reviewed after a given period of time, [491] or in fix-termed management agreements. Closely related to the discussion of the previous

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[485] Doremus, 'Adaptive Management as an Information Problem Adaptation and Resiliency in Legal Systems' (n460) 1470.

[486] Biber, 'Adaptive Management and the Future of Environmental Law' (n460) 943.

[487] ibid 942.

[488] ibid.

[489] Doremus, 'Adaptive Management, the Endangered Species Act, and the Institutional Challenges of New Age Environmental Protection' (n68) 87.

[490] ibid.

[491] *See* Doremus in Doremus, 'Adaptive Management as an Information Problem Adaptation and Resiliency in Legal Systems' (n460) 1472, arguing that estimating the nutrient loading contribution of point source to the Gulf of Mexico, requires existing discharge permits to include monitoring and reporting requirements. Imposing however this new condition would require for regulators to wait for the permits to be renew. However, *'regulatory agencies simply do not have the resources to review and revise each of the hundreds of thousands of discharges permits nationwide every five years'.*

sections on a mismatch between ecological and political timescales, having fixed renewal periods (e.g every five years) can be excessively problematic in cases where the implementation of a plan would require imposing new or amending existing conditions on permits still valid at the time of implementation. Here the mismatch is between ecological and regulatory timescales: in order for the plan to be put into practice, regulators would have to wait for all related permits to expire. Subsequently, the end of the adaptive management cycle would coincide with the renewal date of the permit.[492]

Incremental decision-making will not however be possible in cases of what might be irreversible decisions. 'Adaptive management would not be an appropriate option for rare ecosystems where a potential failure of management will have dire and highly irreversible impacts'.[493] In cases of decisions with severe and irreversible impacts (for instance, deforestation of large area or decisions that involve the last remaining examples of an endangered species[494]) the suitability of scientific adaptive management is brought into question [495] and a precautionary approach may be the most appropriate option.

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[492] In this respect, the regime on environmental permitting regime in England and Wales is much more flexible and thus, more 'adaptive management friendly'. The 'Environmental Permitting Regulations 2010 SI 2010/675 reg.34, require that the permits are reviewed periodically but do not specify when the regulator should carry out a permit review. According to the guidance issued by DEFRA, the Environment Agency will determine when to carry out reviews, with regard to its experience of regulating the various sectors. The permits will be reviewed 'in the light of new information on environmental effects, best available techniques or other relevant issues'. See Food and Rural Affairs Department of Environment, *Environmental Permitting Code of Guidance* (2013) available online at <https://www.gov.uk/government/publications/environmental-permitting-guidance-core-guidance--2 >.

[493] Biber, 'Adaptive Management and the Future of Environmental Law' (n460) 942.

[494] *See for instance National Audubon Society* v. *Hester* (D.C. Cir. September 5, 1986).
where the Court of Appeals found justified the decision of the FWS to order all remaining California Condor to be brought into captivity due to the alarming rates of decline, instead of going forward with the original recovery plan where half of the remaining population were to be released into the wild.

[495] Biber, 'Adaptive Management and the Future of Environmental Law' (n460) 942.

Likewise, the use of incremental decision-making in cases of irreversible investment decisions is questionable.[496] In these cases a degree of certainty is essential for those intending to invest in large development projects. Developers need to have a very good idea of the costs they are likely to incur as a result of any mitigation or compensation burdens before deciding whether a project is economically feasible or not.[497] Doremus suggests that in such cases a better approach would be pre-negotiated management, whereby a decision is initially taken and the responses to monitoring are built into these decisions. Essentially, they are agreements about how to change the 'rules of the game' once new information becomes available. She defines 'pre-negotiated commitments' as commitments:

> […]in which 'the management agencies and the regulated parties agree in advance on specific steps that will be taken if monitoring shows that the species or the system is in decline […]. Such pre-commitments have the advantage of leaving the exact parameters of management free to respond to future information, while providing closure to the decision-making process and a degree of certainty to the regulated community'.[498]

The truth is that the more experimental the adaptive management, the more learning it will generate. However, we need to be pragmatic. Watered-down versions of adaptive management such as the introduction of 'pre-negotiated agreements' [499] are less informative but more pragmatic. Introducing 'pre-negotiated agreements' offers greater political closure and can essentially been seen as means to resolve conflict between the need for flexibility and adaptability serving nature conservation on the one hand and the need for legal certainty to underpin human activities on the other.[500]

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[496] Doremus, 'Adaptive Management, the Endangered Species Act, and the Institutional Challenges of New Age Environmental Protection' (n68) 87.

[497] Biber, 'Adaptive Management and the Future of Environmental Law' (n460) 942.

[498] Doremus, 'Adaptive Management, the Endangered Species Act, and the Institutional Challenges of New Age Environmental Protection' (n68) 85.

[499] The introduction of 'pre-negotiated agreements' however, should fall within the next collaborative model of adaptive management.

[500] Tarlock (n123) 1141 'adaptive management cannot of course be constantly changing, it is public regulation that must satisfy constitutional requirements of substantive and procedural

3.3.1.2.2 Accountability and the rule of law

Without the safeguards of judicial review, adaptive management methods challenge the rule of law, a fundamental principle of the legal system that mitigates against arbitrary decision-making. As Karkkainen observes:

> It displaces fragmentary fixed rules with integrative science and management predicated on a continuous process of experimentation and mutually informed readjustment of both goals and means. This process appears to many lawyers as distinctly un-law like and therefore threatening.[501]

Adaptive management and especially active adaptive management can only (or best) operate within a relaxed legal and regulatory framework where rules – procedural and substantive - can be easily changed without any legal implications. Wide discretion and flexibility, plus open-ended decisions mean no clear, legally enforceable fixed procedural rules. This in turn entails wide discretionary powers that render administrative decisions non-reviewable, but it also raises questions of accountability and conformity with the rule of law. [502] Wide discretion and flexible decision-making making, if not wisely exercised by the administration, render decisions susceptible to political influence and adaptive management becomes, as Doremus calls it, a 'smokescreen to cover politically adaptive evasion of agency responsibilities'.[503]

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due process; Doremus in Doremus, 'Adaptive Management, the Endangered Species Act, and the Institutional Challenges of New Age Environmental Protection' (n68) 87 'At the same time, decisions that they are never final create a different kind of risk for the regulated community. They can never be sure that the terms of their deal will not be arbitrarily changed by a new administration with very different political views'.

[501] Karkkainen, 'Adaptive Ecosystem Management and Regulatory Penalty Defaults: Toward a Bounded Pragmatism' (n74) 956-957.

[502] ibid 944.

[503] Doremus, 'Adaptive Management, the Endangered Species Act, and the Institutional Challenges of New Age Environmental Protection' (n68) 52.

3.4 Adaptive Management Themes for English Nature Conservation Law

Perhaps the strongest element of adaptive management is its underpinning philosophy: that ecosystems are complex, and science is uncertain; and these two statements should guide decision-making. Adaptive management as large-scale management experiments, although they would be much appreciated by the scientific community, will be very difficult to implement in practice - at least not in the technocratic form discussed above - due to a combination of legal, institutional and practical factors. Without undermining the importance of adaptive management as large-scale experimentation, a structured model of active adaptive management may not always be possible.[504] Instead, a more 'relaxed' watered-down approach might be more appropriate. Flexibility must be constrained. Adaptive management itself needs to be adapted to the socio-legal context in which it is to be applied and should be seen more as a management logic based on the two statements above i.e. as adaptive decision-making in the face of pervasive uncertainty.

Hence, on the basis of the above analysis, there are four main themes that emerge, and which form the very essence of adaptive management, that construct the adaptive management used in the next chapter to trace the philosophy of adaptive management within English nature conservation law by looking at whether these elements or the legal framework necessary exists, or at least whether they are not excluded. The four themes reflect both the 'scientific' and the 'adaptive' elements and they are: a) adherence to science as a primary driver of nature conservation decision-making b) adherence to the non-equilibrium paradigm c) research, learning and experimentation d) flexibility and iterative decision making.

The following chapter seeks to trace these elements in the nature conservation framework applied in England. As mentioned before, the purpose of the analysis is not to go through every single document related to nature conservation in order to find references to 'adaptive management' but

[504] Biber, 'Adaptive Management and the Future of Environmental Law' (n460) 959.

rather to look for evidence of the 'mentality' of the approach; is the law, policy and regulatory framework compatible with the assertions of adaptive management theorists or it is something entirely outside its philosophy and therefore impossible to accommodate without a major legal reform?

4 Mapping scientific adaptive management onto the English nature conservation framework.

This chapter seeks to locate a scientific/technocratic conceptualisation of adaptive management within nature conservation law and policy in England. The analysis takes place against the four general, but integral themes identified in the previous chapter, which reflect both the scientific and the adaptive end of adaptive management: a) adherence to science as a primary driver of nature conservation decision-making b) adherence to the non-equilibrium paradigm c) a focus on learning and experimentation d) flexibility and iterative decision making. The extent to which these elements occur or may occur within the English conservation regime is directly linked to the extent to which adaptive management occurs (or has the potential to occur) regardless of whether there are explicit references to the term.

An essential prerequisite for the implementation of adaptive management is that science has a central role within the decision-making process and decisions are the ultimate outcome of a dialectical relationship between scientists and decision-makers. Science can acquire a decisive role in management in various ways *inter alia:* a) through legislation b) as the outcome of an agreement between decision-makers and representatives of other interests[505] c) land acquisition by conservation NGOs, Natural England or anyone willing to manage according to science-based recommendations.

This section argues that English nature conservation law and policy framework is indeed permeated by science, scientific knowledge and technical expertise. Among the competing values and interests, the legislator has chosen to give science and subsequently scientists, a decisive and critical role. Science is being used both as a basis for justifying and legitimizing nature conservation (guiding decisions on what to conserve) and as means of protection (advising on how to protect it).

[505] This is essentially a hybrid process and exemplifies how the two models of adaptive management may interact. *See infra* n508.

The first section of the chapter traces how science has shaped and continues to shape nature conservation decision-making. More specifically, the analysis reveals three different types of administrative decision-making, entirely or largely driven by science a) protected site designation and management[506] b) design of agri-environment management options and c) impact assessments[507] that are to be found at different stages of management:

Site designation (or non-designation) relates to the question of 'what' to conserve; whether the scientific interest of biodiversity mandates prioritising conservation to other activities within a certain unit of land. The management of designated sites relates to the question of 'how' to manage and includes both management design and implementation.

In terms of *agri-environment schemes* (AES), management options are heavily scientific but contrary to the management of designated sites, their implementation depends on being accepted rather than enforced to the regulated.[508]

Impact assessments are multi-tiered well-structured processes that differ greatly depending on whether the land in question is a European Designation or not: these are the Environmental Impact Assessment (EIA),[509] the Strategic Environmental Assessment (SEA) [510] and the Appropriate

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[506] The discussion is about 'nature conservation designations' and more specifically, designation of SSSIs and European Sites (SACs and SPAs).

[507] I focus on assessments in which scientific data is the sole or primary consideration.

[508] The design and implementation of agri-environment schemes are a representative example of the interaction of scientific and collaborative management. Science shapes management choices, which in turn are implemented through mutual agreement between agencies and land-owners. In a sense, by being a party to such an agreement, landowners 'self-designate' their land. AES schemes are also discussed in a collaborative decision-making context and in more detail in Ch. 6.

[509] Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment [2011] OJ L26/3 as amended by the Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 OJ L124/1; The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (SI 2017/571) implement the directive in the context of Town and Planning in England. For a complete list of UK instruments of implementation *see* http://eur-lex.europa.eu/legal-content/EN/NIM/?uri=CELEX:32014L0052 accessed March 2018.

[510] Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment [2001] OJ

Assessment (AA) laid down in art.6 of the Habitats Directive.[511] The EIA and SEA only lay down procedural obligations. The Habitats Directive Assessment on the other hand, includes substantial provisions that place scientific expertise at the helm of the process with a definite role in the final outcome. Although science does have a role to play in all three, given that the purpose of this section is to trace science-driven decision-making, the analysis focuses on the AA of art.6 of the Habitats Directive.

Having established a scientific approach to nature conservation, Chapter 4 continues to trace the adaptive capacity of the legal and regulatory framework. The aim of this exploration is not to examine the existence, or lack thereof, of well-structured management experiments but rather to identify elements reflecting the basic principles of adaptive management within the legal and regulatory framework. As Bruch stresses:

> the conceptual framework for adaptive management is fairly basic, whether articulated in legal frameworks, institutional mandates or management practices. Within a particular context or problem, the initial response is developed; this may be a law, regulation permit and so on. This response is understood to be provisional, due to the limited information that is available.[512]

Before going into the specifics, I would like to introduce some basic features and background characteristics of English regulatory landscape - common to all areas of environmental law - that reflect the English legal tradition and approach to administrative decision-making. In the end it will be through administrative decisions that management will implemented. Hence, such a discussion will help set the scene for the future analysis, in respect to both models of adaptive management, [513] since it conveys the general

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L197/30 implemented by The Environmental Assessment of Plans and Programmes Regulations 2004 (SI 2004/633).

[511] Habitats Directive (n34).

[512] Brush (n461) 93.

[513] The discussion is equally relevant to the exploration of collaborative and deliberative elements since part of it revolves around the amount of administrative discretion in shaping decision-making procedures.

approach of English authorities and institutions towards regulation of private activities and interference with the private sphere of interests of the regulated.

4.1 Features of the English approach to environmental regulation

D. Vogel describes the 'British government's distinctive approach' to regulation, which he considers to be sharply contrasted with respective strategies adopted in the United States. His remarks are made in relation to pollution control, but his points are equally – if not more- relevant to nature conservation. Hence, according to Vogel the British approach is typified in:

> an absence of statutory standards, minimal use of prosecution, a flexible enforcement strategy, considerable administrative discretion, decentralized implementation, close co-operation between regulators and the regulated and restrictions on the ability of non-industry constituents to participate in the regulatory process.[514]

These general characteristics of the English approach to regulation together set not only the tone for the development of laws and regulations but also their implementation and interpretation. The result is a system sufficiently flexible to allow decisions to be adapted to changing ecological conditions but also for the adaptive management of conservation conflicts through deliberative methods, as well as agreements on a course of action that accommodates as many interests possible.

4.1.1 Decentralised decision-making

The administration of environmental law in England draws upon elements from the centralisation and decentralisation models of administration.[515] Although in recent years there has been a tendency towards centralisation, in part due to the influence of EU legislation,[516] day to day

[514] David Vogel, *National styles of regulation: environmental policy in Great Britain and the United States* (Cornell University Press 1986) 70.
[515] S. Bell, D. McGillivray and O. Pedersen, *Environmental Law* (OUP Oxford 2013) 109.
[516] ibid 250.

administration is for the most part decentralised. Several regulatory bodies (Natural England, the Environment Agency, the Forest Commission, Internal Drainage Boards, National Park authorities etc) and local authorities[517] are entrusted with the task of administering environmental law and policy in England.

Additionally, non-governmental organisations, that surely do not possess decision making authority, have a crucial and substantial role in securing environmental protection: besides their historical contribution to the rise of nature conservation movement, [518] the lobbying of government departments, their campaigning towards new legislation and the practical implementation of conservation management through their extensive network of privately owned nature reserves and of volunteers, specialised NGOs are often consulted during the procedures laid out in Reg 61 of the Conservation Regulations; hence they have the power to influence the final decision of the competent authority.[519]

Flexibility, a crucial and defining element of adaptation, is one of the main arguments in favour of decentralisation.[520] The distribution of power and the sharing of responsibilities among the different actors of public life

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[517] For instance, local authorities are responsible for town planning under the Town and Country Planning Act 1990 2 and the designation and management of Local Nature Reserves under s.21 of the NPCA 1949.

[518] Christopher Rootes and Alexander Miller, 'The British environmental movement: organisational field and network of organisations' (ECPR Joint Sessions, Copenhagen, April 14–19, 2000).

[519] In *R (Lewis) v Redcar* [2008] EWCA Civ 746, Jackson J referred to the RSPB, which together with Natural England had consulted on the matter in question, after the Council communicated a copy of the planning application to the NGO, as a '*conservation body for the purposes of [Reg 48 of the 1994 Habitats Regulations]'* (Reg 48 being the respective regulation to that of Reg.61 of the 2010 Regulations) However, it must be noted that this view – justifiably - was not shared by the Court of Appeal. *Lord Justice Pill* only referred to Natural England as the appropriate conservation body for the purpose of the regulations. In any case, its influence was reflected on the 47 conditions which the planning permission was subject to. The conditions included the matters which had been stipulated by NE and RSPB.

[520] D. Osborne and T. Gaebler, *Reinventing Government: How the Entrepreneurial Spirit is Transforming the Public Sector* (Addison-Wesley Publishing Company 1992) cited in Michiel S. De Vries, 'The rise and fall of decentralization: A comparative analysis of arguments and practices in European countries' (2000) 38 European Journal of Political Research 193, 197-198.

makes administration easier, faster and more accessible to the regulated. [521] On the one hand, better informed decisions can be attained by delegation of decision-making to specialised agencies and their qualified personnel. This is vital in a highly technical field such as environmental regulation and nature conservation management. Also, it allows for better representation of the different interests at the decision-making table. One of the criticisms of the merging of English Nature with the Countryside Commission was that it would become 'softer' since the additional commitment to rural development would compromise its conservation focus.[522]

On the other hand, as J. Mills was already arguing in the 19th century, decentralised decision making can be tailored to local needs:

> […] local provision is able to put to use the local goodwill, enthusiasm and knowledge. Services can be more easily tailored to the requirements of local people, which can vary greatly from one place to another.[523]

The argument for decentralization is even more relevant to nature conservation than it is to other policies, especially since management needs to address ecological complexity, resolve conflict and build consensus. Nature conservation policy is implemented in a particular geographical area with specific, often unique, and with complex ecological and social characteristics: uplands are different to highlands, meadows to forests, grasslands to wetlands, birds to animals and animals to plants. The nature of the problem to be solved calls for in situ consideration and tailored-made decisions. Locally elected authorities are much more motivated and more likely to put effort into addressing environmental issues when compared to central government. Given the 'not in my back yard' attitude towards environmental problems, it is unlikely that central government would be eager to use valuable resources on addressing such small-scale local issues. Additionally, contrary to impersonal

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[521] ibid.

[522] Jones and others (n319) in 2004 referred to suspicions that there might have been a hidden agenda to 'clip the wings' of English Nature a body which in the past, had perhaps been opposed to government plan more often than the Countryside Commission or Agency.

[523] J.Mills cited in De Vries (n520) 197.

central administration, officials working at the local level are familiar with local dynamics, preferences, usual sources of conflict, likely areas of compromise and non-negotiable positions.

4.1.2 Regulatory Pluralism

Environmental law is often described as diverse, fragmented and labyrinthine in the sense that it consists of multitude laws, regulations, general principles, spanning across local, regional, national and international level. As such, it has attracted much criticism and is considered by many unsuitable to address environmental degradation in a coherent and integrated way.[524]

Diversity is not however always an undesirable feature of law. It can rather be an indication of an endeavour to adjust regulation to the specific circumstances of a problem. In this context, diversity differs markedly from the fragmentation and proliferation of legislation in the sense that it is not about ten different statutes aimed at species protection, or the adoption of several different policies on water, air or biodiversity. It is about a diversification of regulatory instruments available to the legislator and the competent authorities.

The wide array of available methods reflects what reflexive legal theory has been teaching us: that a legal system operating in a complex environment has cognitive and normative limitations;[525] and that 'a choice of the best legal strategy in any particular case depends on the circumstances of each particular legal issue'.[526] Therefore, a 'one size fits all' approach will not rise to the occasion;[527] the same mechanism cannot 'treat' all environmental

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[524] UKELA, King's College London and Cardiff University, *The State of UK Environmental Legislation in 2011-2012: Is there a Case for Legislative Reform?* (London, UKELA King's College London, Cardiff University, 2011); Maria Platjouw Froukje, 'The need to recognise a coherent legal system as an important element of the ecosystem approach' in Christina Voight (ed), *Rule of Law for Nature: New Dimensions and Ideas in Environmental Law* (Cambridge University Press 2013) 162.

[525] Eric W. Orts, 'Reflexive Environmental Law' (1994-1995) 89 Nw U L Rev 1227, 1265.

[526] ibid 1266.

[527] Neil Gunningham and Darren Sinclair, 'Regulatory Pluralism: Designing Policy Mixes for Environmental Protection' [1999] 21 Law & Policy 49, 50 arguing: *'In our view, such "single*

problems. Traditional administrative regulation based on state-set standards and coercion, adopted at the beginning of the 20th century to tackle air pollution, will not in itself make the desirable headway in protecting and improving the environment. After all, having a limited choice of action and an inflexible framework to apply to something so inherently chaotic is doomed to fail.[528] As the complexity of environmental problems increases, the capacity of the traditional administrative state to address them decreases.[529]

In line with a generalised spirit of deregulation,[530] a number of non-statutory instruments have been introduced to the field of environmental law and policy. Located on a continuum from the least to the most interventionist (the latter being the extensively prescriptive and enforceable top-down regulation) they include (a) instruments such as voluntarism, education and information-based schemes, (b) self-regulatory mechanisms underpinned by voluntary action rather than compulsion and (c) economic instruments such as charges, subsidies, grants and linked payments, trading schemes and deposit and refund schemes.[531]

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instrument" or "single strategy" approaches are misguided, because all instruments have strengths and weaknesses and because none are sufficiently flexible and resilient to be able to successfully address all environmental problems in all contexts'.

[528] *See* Koch and Nielsen who argue: "the complexity of society outgrows the possibilities of the legal system to shape the complexity into a form fitting to the goal-seeking direct use of law" C. Koch and K. Nielsen, *Danish Working Environment Regulation. How reflexive - how political? -a Scandinavian case* (Lyngby, Denmark: Working Paper, Technical University of Denmark, 1996) cited in N. Gunningham, 'Environmental Regulation and Non-State Law: the future public policy agenda' in Hanneke Van Schooten and Jonathan Verschuuren (eds), *International Governance and Law: State Regulation and Non-state Law* (Edward Elgar Publishing 2008) 112.

[529] Gunningham ibid.

[530] Bell, McGillivray and Pedersen (515) 252.

[531] There is no consensus in literature on how to categorise the different approaches. Hence for example for Gunningham information-based instruments are a distinct category while for Bell *et al* (n515) 262, fall within self-regulatory mechanism. Likewise, certain instruments such as eco-labeling are seen as a market-based instrument (*see* Orts at n525 1245), an information-based mechanism (in Gunningham and Sinclair at n527 56) and instrument of self- regulation (*see* Mariëtte van Amstel, Peter Driessen and Pieter Glasbergen, 'Eco-labelling and information asymmetry: a comparison of five eco-labels in the Netherlands' (2008) 16 Journal of Cleaner Production 263, 263).

The result is 'regulatory pluralism',[532] a rich suite of instruments which can be tailored to specific policy goals and as reflexive theory suggests, provides a source of alternative legal strategies depending on the nature of the issue in question. Accordingly, biodiversity conservation objectives can be realized through a combination of tools that address different aspects of the problem but also the different needs of those involved and sharing a common objective: the conservation of nature. The building materials for the construction of adaptive frameworks are provided and it's only a matter of whether and how they will be employed by those associated with biodiversity and natural resources management.

4.1.3 Quality Standards, Open Definitions and Wide Discretion

Neither the decentralised administration, nor the rich toolbox of regulatory instruments would be able to underpin adaptive decision making, if decision-makers were legally bound to act according to legally prescribed rules. This is the case for example with provisions on SSSIs notification where Natural England has *a duty* to notify '*where [...] of the opinion that any area of land is of special interest by reason of any of its flora, fauna, or geological or physiographic features'.*[533] As will be discussed further on, these provisions exemplify administrative, prescriptive and highly technocratic legislation. However, more careful examination suggests that there are several characteristics of environmental law strongly indicating that the English regime is not so cumbersome but instead, capable of encouraging flexible decision making. Some of the features that attach flexibility to statutory legislation are examined below:

- *A Quality-Oriented Approach*

Among the three main command and control approaches to regulate pollution from stationary sources - technical prescriptions, emission

[532] Gunningham and Sinclair (n527).
[533] WCA 1981 s.28.

standards and quality standards - UK law opts for the latter.[534] Pollution control is a classic example of direct state intervention through standards setting. The British approach shows a preference of quality-oriented rules over emission standards that allow for considerable flexibility - within the limitations of command and control regulation.[535]

I do not intend to explore the long-term discourse on *emission v quality standards*; this debate has been very well documented and analysed in the literature with arguments favouring one or the other option.[536] Neither is pollution control the main focus of this thesis. However, on the one hand it is yet another indication of the general philosophy of the British regime, which opts for flexibility instead of uniformity.[537] On the other, the implementation of a flexible decision-making mechanism for meeting conservation objectives is dependent on the segment of pollution control given the cause and effect relationship between the two. Although the adoption and implementation of nature conservation law and policy does not have a direct impact on pollution control, the regulation of pollution has a profound bearing on nature conservation management. Having a flexible pollution control regime makes it easier for the competent authorities to use it in service of nature conservation management, tailored to the needs of all involved.

Quality standards are goal-oriented regulations in the sense that that it prescribes the 'end' - adequate environmental quality - rather than the 'means'.[538] The goals set outline the framework for administrative action. Hence, although a legally binding objective is set, it allows for flexibility - and perhaps adaptive experimentation - regarding 'how' these objectives are reached. By focusing on the 'end', quality standards are able to 'deal with inputs to the environment from all sources and via all potential pathways

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[534] G. Lübbe-Wolff, 'Efficient environmental legislation - on different philosophies of pollution control in Europe' (2001) 13 Journal of Environmental Law 79, 85 comparing it to the 'emission-standard' oriented philosophy of German law.

[535] ibid 81.

[536] ibid 84ff.

[537] Bell, McGillivray and Pedersen (n515) 99 in relation to the system of environmental controls.

[538] Lübbe-Wolff (n534) 81-82.

(and) cater for potentially harmful combinations of substances on the environment' [539] and are therefore arguably better suited to account for ecosystem complexity. Quality standards setting further allows for decisions to be tailored to local conditions. The standards themselves may also vary by being, for example, stricter in biodiversity opportunity areas. [540] Ecology teaches us that no two ecosystems are alike, thus, it is very important to have regimes that allow themselves to be adapted to specific socio-ecological characteristics.

- Open Definitions

Substantive flexibility is further reflected in the use of intentionally open-ended and vague definitions.[541] Concepts such as 'best practical means', 'best available techniques', 'good water status', 'significant effects', 'environmental damage' are not precisely defined in legislation, leaving their interpretation at the discretion of administrative authorities. Often the discretion given to decision-makers is restricted by guidance documents and circulars published in order to clarify and articulate open-ended concepts. Although, in theory these documents lack any legally binding force and are often called 'soft measures' or 'soft law' they nevertheless influence the implementation of the legislation in question. This is particularly true in the case of the soft-law instruments adopted by the European Commission, which seek to guide national authorities on the proper interpretation of the EU law and promote uniformity in the implementation of the EU law among the Member States.[542]

Nevertheless, the administration's discretion in relation to the interpretation of ambiguous definitions is supported by the courts' judicial

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[539] Bell, McGillivray and Pedersen (n515) 244.
[540] ibid (n515) 244.
[541] Maria Lee, *EU environmental law: challenges, change and decision-making* (Hart Pub. 2005) 86; Bell, McGillivray and Pedersen (n515) 97.
[542] Joanne Scott, 'In Legal Limbo: Post-Legislative Guidance as a Challenge for European Administrative Law' (2011) 48 Common Market Law Review 329.

deference to administrative interpretations.[543] Although, under the influence of the ECJ/CJEU case law, English courts engaged themselves with further definition of open-ended concepts,[544] they have reiterated many times that the judiciary can only quash a decision on the basis of the *Wednesbury* unreasonableness.[545]

- Discretions

A notable characteristic of the UK approach to environmental legislation is the wide discretionary powers that are afforded the administration through the use of legislative delegation, [546] the lack of extensively prescriptive legislation[547] coupled with judicial deference. Given the highly technical nature of environmental regulation, the parliament lacks the knowledge and expertise required to formulate specific rules and regulations and delegates to the administration the power *i.a.* to designate sites or set environmental standards. In addition, administrative authorities are further given wide margin of discretion in implementing environmental laws and regulations.[548]

As a result, administrative discretion is evident at all stages of rules' formulation, implementation and enforcement. Such discretion can take many forms: discretion in relation to interpretation of vague definitions mentioned above; discretion given to regulatory agencies or planning authorities to grant contents, permits and planning permissions; discretion to regulatory agencies in relation to the practical implementation of non-binding legal provisions; discretion in relation to the enforcement of environmental legislation.

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[543] *R(Jones) v Mansfield District Council* [2003] EWCA Civ 1408 para. 61.
[544] *See* Holder (n226) on the transition of broad discretion to more judicial intervention in the determination of 'significant effects' in the context of the Environmental Impact Assessment
[545] ibid; A reasoning or decision is Wednesbury unreasonable (or irrational) if it is so unreasonable that no reasonable person could have come to it. *Associated Provincial Picture Houses Ltd v Wednesbury Corporation* (1948) 1 KB 223.
[546] Bell, McGillivray and Pedersen (n515) 97.
[547] *See* the discussion above at 4.1.3 on quality standards and open-ended definitions.
[548] Bell, McGillivray and Pedersen (n515) 97.

The importance of delegated legislation and wide administrative discretion is enormous for adaptive management and I will return to it several times in the discussion. The practice of non-prescriptive rules allows for efficient regulatory updates, without the need to initiate full parliamentary procedures every time new data emerge. Additionally, the wide discretion afforded to agencies such as Natural England and the Environment Agency facilitate the implementation of adaptive management plans as they allow for variation of permits, licences, consents etc.[549]

The width of discretion is further confirmed by British courts 'hands-off' approach to decisions challenged in judicial review; courts traditionally refrain from substituting their judgement for that of the decision-maker unless the principle of Wednesbury unreasonableness applies.[550] However, judicial deference can be a double-edged sword for flexible decision making. Depending on how the administration exercises its discretionary powers, judicial deference may underpin flexibility- as it allows for tailor-made decision-making procedures - or reinforce the technocratic character of administrative environmental decision-making. That would be the case of horizontal, inflexible decision making on behalf of the administration, which without judicial scrutiny carries the risk of abuse of executive power

This section discussed certain characteristics of the UK approach to environmental law that are relevant to adaptive management, as they create conditions conducive to its implementation by attaching flexibility to decision-making. Against this backdrop, this mentality of discretionary, tailor made, flexible decision making the discussion of this and the following chapters to takes place. The section that follows seeks to trace the extent to which science

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[549] If for instance investigating the effects of different patterns of grazing in wetlands SSSI through variations in consent granting.

[550] Expert bodies such as the NE and EA are considered better suited to decide on technical matters. *See i.a. R. (On the Application of Aggregate Industries UK Ltd) v English Nature* [2002] EWHC 908 (Admin) [2003] Env LR 3; *Levy v Environment Agency & Anor* [2002] EWHC 1663 (Admin); Judicial deference is however embedded in English legal culture and extends beyond the judiciary's lack of technical expertise to deeper normative issues in relation to the court's obligation to defer to decision-making to democratic institutions. *See* in general Richard Clayton, 'Principles for Judicial Deference' (2006) 11 Judicial Review 109.

plays a decisive role in nature conservation decision making. As explained before, scientific management can only operate only when the scientific interest of nature is given priority to other considerations.

4.2 A science-driven nature conservation framework

Any approach that emphasizes science could find its way into English nature conservation law and policy, which is not unfamiliar to the idea of placing science at the heart of nature conservation. Science has a twin role within the English legal framework for nature conservation: scientific information is used to justify what is worthy of the law's protection, to justify and legitimise the imposition of restrictions to human activities; scientific information is also used to guide and support management activities. Rodgers comments on the relationship between science and nature conservation law:

> the law also sits (perhaps uncomfortably) at the interface between conservation *science* and environmental management. The content of biodiversity action plans, the site management requirements for protected areas, and the assessment of the vulnerability or otherwise of endangered species, are all matters for the environmental scientist, not the lawyer. Once appropriate strategies have been devised, based on sound scientific evaluation of the needs and requirements of ecosystems and species, however, it is for the law to clothe them in legal enforceability in order to ensure that wildlife is appropriately protected, and biodiversity promoted.[551]

An idea that runs through this thesis is that even within statutory protected sites, the influence of scientific expertise weakens towards the later stage of management implementation where other considerations might influence decision-making. Nature conservation law moves along a continuum from strict designation to flexible management and from top-down to bottom-up decision making.[552]

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[551] Rodgers (n6) 32.
[552] *See* the discussion in ch.6

4.2.1 Site Designation: A technocratic process

If there is one procedure within nature conservation law and policy that is inherently and entirely technocratic, sealed from the influences of other socio-economic factors, it is that of selecting what is worthy of strict legal protection.[553] Certainly, science is not the only criterion that underpins land designations that can be beneficial to biodiversity[554] but it is the only criterion that underpins designations whose primary objective is the conservation of nature. As such, it provides justification for legislation to prioritise, within these areas, the interests of conservation as opposed to private or social interests.[555]

4.2.1.1 Sites of Special Scientific Interest

Sites of Special Scientific Interest (SSSI) are the primary domestic statutory nature conservation designation in England.[556] The SSSIs represent the best of the country's biological or geological features, the most valuable areas for habitats and species conservation and underpin all other domestic and international nature conservation designations.[557] There is no statutory

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[553] WCA 1981.

[554] *See* K. Bishop, A. Phillips and L. M. Warren, 'Protected Areas for the Future: Models from the Past' (1997) 40 Journal of Environmental Planning and Management 81 for a detailed review of land designations. The authors discuss the complex mosaic of UK land designations under a broad understanding as 'an area of land and/or sea especially dedicated to the protection and management of scenic, wildlife, heritage and/or other environmental value'. They compare them against several criteria including their primary, objective, legal status, geographical application, etc. and examine the extent to which they overlap. Although the lists are somewhat outdated, they nevertheless reflect complex and confusing aspects of nature conservation and landscape management.

[555] This is particularly true with regard to European Designations *see infra 4.2.1.2.*

[556] The second nature conservation designation is that of National Nature Reserves (NNRs) designated under NPACA 1949. The main difference is that NNRs are managed by Natural England, the conservation body for Nature Conservation in England, while SSSIs are owned and managed by private landowners who remain in control of the area but whose activities are subject to several restrictions imposed by Natural England as result of their legal designation. (WCA 1981, s.28E); The discussion focuses on SSSIs for two reasons: a) that almost all NNRs are also designated SSSIs (*see infra* n561) b) since SSSIs remain under their owner's control, conservation interests co-exist with other land uses, mainly agriculture, which makes the discussion relevant to collaborative models of adaptive management.

[557] 95% of National Nature Reserves are also designated as SSSIs. Natural England, *Natural England Standard. National Nature Reserves (NNR) Management* (2013); 70% of Special

definition of SSSIs, but a statement of purpose is provided in the government's Code of Guidance:

> The purpose of SSSIs is to safeguard, for present and future generations, the diversity and geographic range of habitats, species, and geological and physiographical features, including the full range of natural and semi- natural ecosystems and of important geological and physiographical phenomena throughout England. The sites included within the series of SSSIs are intended collectively to comprise the full range of natural and semi-natural habitats and the most important geological and physiographic sites. The SSSI series should therefore include all of our most valuable nature conservation and earth heritage sites, selected on the basis of well-established and publicly available scientific criteria.[558]

As their name and the purpose statement suggest, selection is made on scientific grounds and scientific expertise underpins their management and condition assessment. The SSSI notification procedure is provided for in s.28 of the Wildlife and Countryside Act 1981 and introduces for Natural England, a 'duty to notify':

> Where Natural England are of the opinion that any area of land is of special interest **by reason of any of its flora, fauna, or geological or physiographic features**, it shall be the duty of Natural England to notify that fact, to the local planning authority in whose area the land is situated, to every owner and occupier of any of that land and to the Secretary of State[559].

The original notification is followed by its confirmation. Following representations and objections, Natural England is required to either withdraw the notification or confirm it within 9 months, with or without modifications. [560]

Protection SSSIs Areas and Special Areas of Conservation under the Birds and Habitats Directive respectively and Ramsar Sites are also designated as SSSIs *See* Natural England, *Protecting England's Natural Treasures: Sites of Special Scientific Interest* (2011).

[558] DEFRA, *Sites of Special Scientific Interest: Encouraging positive partnerships. Code of guidance* (London, DEFRA, 2003).

[559] WCA 1981, s.28.

[560] ibid s.28(5).

To assist Natural England and the other conservation bodies with the selection of potential SSSIs the Joint Nature Conservation Committee provides the conservation bodies with Guidelines.[561] The Guidelines for the Selection of Biological SSSI is the product of long-term continuous scientific research having its origins as early as the beginning of the 20th century.[562] The Guidelines do not bind Natural England which, in line with what was discussed in the previous section, is afforded wide discretion in assessing the scientific value of the site when exercising its duty of notification.[563] Science does underpin the designation process; but it is not a positivist science. Natural England staff:

> are required to exercise their "opinion" on the selection of sites for notification, and this recognises that special scientific interest is a matter of informed expert judgement rather than simply the rigid application of objective rules'.[564]

What is a distinctive feature of the notification procedure, is the fact that it establishes a 'duty' for Natural England to notify, thereby limiting the agency's discretion. As a result, whereas Natural England has considerable discretion in assessing the scientific value of a site, if it feels the scientific criteria have been met it must notify.[565] This has been the court's ruling in *Fisher v. English Nature* in which Lightman J held that: '*Section 28(1) affords scope for judgment: it affords no scope for discretion'.*[566] As to the body's discretion in relation to confirmation, Lightman J stresses that if Natural England continues to be of the opinion that the criteria for designating the site are satisfied their discretion can be exercised one way, and that is towards confirmation:

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[561] JNCC *Guidelines for the Selection of Biological SSSIs* (2013) (n348).
[562] JNCC, *Guidelines for the Selection of Biological SSSIs* (1989) para.4.2-4.8.
[563] *R (Boyd) v English Nature* [2003] EWHC 1105 (Admin) [2004] Env LR D4, at [11]; R. *(Fisher) v English Nature* [2003] EWHC 1599 (Admin) [2004] 1 WLR 503, at [21].
[564] JNCC Guidelines (n348) para.3.3.
[565] Although material in post-notification management decisions, other considerations such as adequate resource are irrelevant at the designation stage. *See R. (Western Power Distribution Investments Limited) v Countryside Council for Wales* (n236) [26].
[566] *Fisher v English Nature* (n563) at [18].

> for any other course than confirmation would bring into play once again the immediate duty of English Nature to make the notification, and the legislature cannot sensibly have intended this roundabout method of continuing the legal consequences of the continuing opinion of English Nature that the statutory criteria are satisfied.[567]

The ruling in *Fisher* is of particular importance because it establishes science as the only consideration allowed to influence the designation process. In *Fisher* the claimants objected to the designation of the land as SSSI but were content having it designated as SPA, as the latter would entail fewer land-use restrictions. The court however held that as long as English Nature was of the opinion that statutory criteria were satisfied, it could not refuse to confirm on the basis of other considerations such as more effective protection or less interference with property rights, the conclusion of voluntary agreements with landowners or by classification of the area as a SPA.[568]

The discretion given to Natural England in exercising its scientific Judgement, coupled with the courts' reluctance to rule on technical issues, means that upholding a challenge against a notification decision is rather unlikely. The courts have repeatedly stressed and recognised the conservation body's expertise on technical issues: In *Aggregate v. English Nature* Forbes J stresses that the notification of a SSSI is a technical undertaking a task for which English Nature is better qualified than the court.[569] In *Boyd v. English Nature* the court held that the claimants grounds were a challenge to English Nature's finding of '*fact, degree and expert judgement*' for which the conservation body was entrusted by the Parliament and had the benefit of

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[567] ibid.

[568] ibid at [20]; Also, as long as a site meets the scientific criteria for notification, whether it is the best or the only site are irrelevant considerations: *See R(Western Power Distribution Investments Limited) v Countryside Council for Wales* (n236) [36]-[37]; Equally irrelevant has been found to be the availability of resources to protect the site following notification, ibid at [38] '*the simple answer to that submission is that resource considerations cannot play a part in deciding whether a site meets the necessary criteria. If it does, it must be notified';* In *R. v Nature Conservancy Council Ex p. London Brick Co Ltd* [1996] Env LR 1, it was held that the Conservation Body was not required to be assured of the survival of the features in the future.

[569] *Aggregate Industries v. English Nature* (n550) [106].

expert advice.[570] In *Western Power Distribution*, when presented with conflicting scientific evidence the court abstained from entering into the scientific issues and deciding which evidence is better. The court held that as experts on technical matters, the conservation body is entitled to trust its own scientific evidence and conclusions over external scientific information presented before it, unless obviously ridiculous.[571]

Finally, the conservation body is not bound by older decisions or practices: in Fisher it was ruled that English Nature are bound to act on their opinion and on the basis of their scientific expertise regardless of whether that entails a departure from previous decision or a change in policy:

> (…) that the duty of English Nature to exercise their own judgment and notify and confirm in accordance with their expert judgment cannot and should not be qualified by their own past practice or by provisions in the Guidelines… once the current Members of the Council of English Nature came to the conclusion that a site did satisfy the statutory criteria, they were duty bound to act in accordance with their own opinion, whether or not this involved a departure from a previous decision or a change in policy.[572]

4.2.1.2 European Designations

Special Protection Areas (SPAs) and Special Areas of Conservation (SACs) are land designations made under the Wild Birds[573] and Habitats Directives[574] respectively, and together form the ecological network Natura

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[570] *Boyd v. English Nature* (n563) at [10]; the court gave due deference to English Nature, [23]-[24].

[571] *R (Western Power Distribution Investments Limited) v Countryside Council for Wales* (n236) at [12] This case however is again about a challenge to the notification decision. It would be interested to see the court's approach especially on the basis of the precautionary principle in the case of a challenge against an omission of Natural England to notify a site that according to scientific evidence brought by the claimants is of scientific interest whereas according to agency's expert opinion is not.

[572] *Fisher v English Nature* (n563) [21].

[573] Birds Directive (n33).

[574] Habitats Directive (n34).

2000.[575] Although different procedures are laid down for SPAs and SACs, both designations are to be made on entirely scientific grounds so as to ensure that the best areas in the EU are protected for species and habitats deemed of EU importance.[576] The regime is more prescriptive than the one on domestic designations given the attachment of Annexes laying down habitats types and species, whose native habitats should be designated.[577] As to the SACs, the discretion of Members States and their national authorities is further limited by the Commission's active involvement in the procedure.

- Special Protection Areas

More specifically, under the Birds Directive, Member States are required to designate the most suitable territories in number and in size as Special Protection Areas for rare and vulnerable birds as listed in Annex I of the Directive,[578] and for regularly occurring migratory species.[579] The Directive does not lay down any formal criteria and there are no guidelines at EU level. However, a number of rulings by the European Court of Justice influenced and shaped the designation procedure confirming its strong scientific nature.

Hence, Member States have a duty to ensure that all the 'most suitable territories', both in number and surface area, are designated.[580] In several occasions the Court has emphasized that designation is to **be carried out on the basis of ornithological criteria** and any economic and recreational requirements mentioned in art.2 of the Directive, although relevant for the general conservation measures provided in art.3, are not to be considered.[581]

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[575]Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora OJ L 206, 22 July 1992, art.3(1).

[576] *See* http://ec.europa.eu/environment/nature/natura2000/sites/index_en.htm, accessed December 2016.

[577] *See Commission v Netherlands* (n236) [56] where the Court held that if Annex I species are present, the Member State is obliged to define *i.a.* SPAs for them.

[578] Birds Directive (n33) art.4(1).

[579] Council Directive 79/409/EEC on the conservation of wild birds [1979] OJ L103/1 art.4(2)

[580] *Commission v Netherlands* (n236) [62], [67]-[72].

[581] *C-355/90 Commission of the European Communities v Kingdom of Spain* [1993] ECR I-4223 (Santōna Marshes) at [26]; *Lappel Bank* (n347) [26]-[27]; *Commission v Netherlands* (n236) [59].

Following this strict approach the Court has considered as irrelevant, considerations such as the practice of other Member States, [582] urban development[583] and administrative boundaries,[584] that areas in other Member States would be more appropriate for conservation of the same species.[585] The Court has also held that the existence of other conservation measures does not relieve Member States from the obligation to designate SPAs when scientific criteria are satisfied.[586]

The court has repeatedly stressed the importance of making decisions on the basis of the best available scientific data and the use of the most up-to-date scientific information.[587] The Inventory of Important Bird Areas in the European Community (IBA) [588] is a 1989 study that contains scientific evidence to be used as a reference in order to assess whether a Member State has complied with its obligation to classify as special protection areas the most suitable territories in number and size for conservation of the protected

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[582] *C-235/04 Commission of the European Communities v Kingdom of Spain.* [2007] ECR I-05415.

[583] ibid [72]-[73].

[584] ibid [67].

[585] *Case C-418/04 Commission of the European Communities v Ireland* [2007] ECR I-10947 [61].

[586]The Court referred to the State funding of the Corncrake Grant Scheme introduced by Irish authorities which involved funding for fieldworkers, administration costs and payments to farmers, funding and facilitating research and the inclusion of a corncrake tier in the latest Rural Environment Protection Scheme and found that it was not sufficient to secure that the objectives of the Directive would be met. Ibid [95]. It follows that flexible, voluntary schemes can only be complementary when it comes to sensitive areas and designation is required to secure that the protective provisions of the Directive apply. The directive lays down obligations not only as to the 'end' but also as to the 'means' of protection.

[587] *Commission v. Spain* (n582) [24]; *Commission v. Ireland* (n588) [67].

[588] Richard Grimmett, T. A. Jones and International Council for Bird Preservation. European Continental Section., *Important bird areas in Europe* (International Council for Bird Preservation 1989); The first European Inventory was drawn in 1989 by Birdlife International and a second was published in 2000. Alongside the regional publications a number of national inventories have been produced and published by national Birdlife Partners under the auspices of the latter. Failure to consider the evidence by either the most up-to-date IBA 2000 or the national inventories revising the IBA 89 by Member States has been a source of conflict between the latter and the Commission. Several Member States argued in favour of the utilization for the IBA 89 – which included fewer sites than the more recent inventories.

species.[589] However, the Inventory is not legally binding neither does it constitute a conclusive presumption and the Court is willing to accept any sound scientific study supporting Members States decision to designate or not to designate certain territories as SPAs.[590] In the UK, in line with the CJEU case law, purely ecological criteria for SPA designations, have been laid down in a Guidance document by the JNCC.[591]

- Special Areas of Conservation

A striking difference between the two European designations is the Commission's decisive role, it being the one which composes the final list of Sites of Community Importance (SCIs) from a list with proposed sites submitted by Members States, in agreement with the latter.[592] Like its sister SPA designation, that of SACs is also a scientific exercise based on the ecological criteria laid down in ANNEX III of the Habitats Directive.[593]

The Commission's key role in the process is essential for achieving an ambitious and cutting edge – especially at the time of adoption - objective that reflects the ideas of the non-equilibrium paradigm discussed in Chapter 2 on dynamic and complex ecosystem interactions: the creation of a coherent ecological network across the European Union. This objective is laid down in art.3(1) of the Directive which refers to the creation of a network, composed of sites hosting the natural habitat types listed in Annex I and habitats of the species listed in Annex II. That network shall enable these habitats to be maintained or, where appropriate, restored at a favourable conservation status in their natural range.[594] The objective of creating the Natura 2000 network underlies the designation procedure.

More specifically, during the first stage of the process, Member States

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[589] *C 374/98 Commission of the European Communities v French Republic.* [2000] ECR I-10799 [25]; *Commission v Netherlands* (n236) [68]- [70]; *Commission v. Spain* at (n582)[26].
[590] *Commission v Netherlands* (n236) [68]-[70]; *Commission v. Spain* (n582).
[591] *See* <http://jncc.defra.gov.uk/page-1405>.
[592] Habitats Directive (n34) art.4(1)-(3).
[593] In this sense it can be argued that the Habitats Directive is somewhat more prescriptive than the Birds Directive, which does not include such an Annex.
[594] Habitats Directive (n34) art3(1).

based on the criteria set out in ANNEX III, draw up a national list of candidate sites to submit at the European Commission along with all available scientific information.[595] According to the Commission, Member States do enjoy a margin of discretion but subject to compliance of the following conditions:[596]

> - only criteria of a scientific nature may guide the choice of the sites to be proposed;
>
> - the sites proposed must provide a geographical cover which is homogeneous and representative of the entire territory of each Member State, with a view to ensuring the coherence and balance of the resulting network. The list to be submitted by each Member State must therefore reflect the ecological variety (and, in the case of species, the genetic variety) of the natural habitats and species present within its territory;
>
> - the list must be complete each Member State must propose a number of sites which will ensure sufficient representation of all the natural habitat types listed in Annex I and all the species' habitats listed in Annex II to the Directive which exist on its territory.

The CJEU in multiple occasions has stressed that the nomination of candidate SACs **should only be made on scientific grounds** and art.2(3) economic, social and cultural requirements or regional and local characteristics, mentioned in art.2(3) are not to be considered.[597] That was the

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[595] Habitats Directive art. 4(1), 21;

[596] *Case C-67/99 Commission of the European Communities v Ireland* [2001] ECR I-05757 [29]; *C-71/99 Commission of the European Communities v Federal Republic of Germany* [2001] ECR I-05811, [20]; *C-220/99 Commission of the European Communities v French Republic.* [2001] ECR I-05831 [25].

[597] *C- 371/98 The Queen v Secretary of State for the Environment, Transport and the Regions, ex parte First Corporate Shipping Ltd* [2000] ECR I-9235 [23]-[25]; However as indicated by the AG Léger, para 13, para 35ff in 1996, the Commission adopted Commission Decision No 97/266/EC concerning a site information format for proposed Natura 2000 sites (1996) OJ L 107/1, providing with a format for Member States to lay down all relevant scientific information together with any impacts and activities around the site that may have impacts

ruling of the court *in First Corporate Shipping Ltd* on a referral by the High Court on whether a Member State entitled or obliged to take account of the considerations laid down in art. 2(3) when deciding which sites to propose to the Commission and/or when defining the boundaries of such sites.[598] The reasoning of the Court had been that to realise the art.3(1) objective of a coherent European ecological network of SACs, the Commission must have available an exhaustive list of all eligible sites. [599] Given the art.3(1) requirement, site assessment should take place in relation to the entire European territory that the Directive applies.[600]

Hence, the value of the site is not considered in isolation or only in relation to the hosting state's biodiversity objectives but against the site's potential to contribute to the establishment of the Natura 2000 network.[601] Member States given that they lack information about other Member States' territories, are not well-equipped to make such determinations, hence the Commission's central role in the process.[602] Thus, by not including eligible sites in the proposed lists based on non-ecological consideration, they jeopardize the objective of the Directive.[603] The Commission needs to have full knowledge of all sites satisfying the ecological criteria, in order to ensure the Natura 2000 network will be established.[604]

Following the Court of Justice judgement in First Corporate Shipping, the High Court of Justice *in R. (on the application of Newsum) v Welsh Assembly*

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either positive or negative, on the conservation and management of management, ownership status etc. This requirement might indicate that economic considerations are likely to influence the designation process in the sense that sites likely to be more effectively management may be preferred. But as Bell, McGillivray and Pedersen, 742 suggest '*the central point in principle be that such activities are material to designation process only because they are likely to influence the conservation status of the habitat type, not because the activity per se justifies the exclusion of sites merely because of the economic impact of including them'.*

[598] *First Corporate Shipping Ltd* (n597) [11].

[599] ibid [22].

[600] ibid [23].

[601] ibid [22] [23].

[602] ibid.

[603] ibid [23]; That was also the ruling of the Court in *C-226/08 Stadt Papenburg v Bundesrepublik Deutschland* [2010] ECR I-00131, at [30]-[33].

[604] *First Corporate Shipping Ltd* (n597) [24].

(No.2),[605] held that that an existing planning permission, although it may be included in the information communicated to the Commission,[606] '*was not a legally relevant consideration in determining whether to include Pen yr Henblas or Aberdo within the area of the candidate SAC'.*[607]

The criteria for selecting candidate SACs in the UK were developed by the Joint Nature Conservation Committee, on the basis of the Annex III criteria and fully consistent with the conclusions of the first meeting for the Atlantic Biogeographical Region held in 1994.[608] The JNCC criteria similar to the SSSI Guidelines build on scientific research that has been advancing in the country since the early 20th century and reflect the UK's great experience with nature conservation.[609] It is acknowledged that Annex III criteria are principles 'by which to judge the relative importance of sites'[610] and it recognised that there are inherent difficulties in their application due the well-issue of value-laden scientific judgements:

> Even if it were possible to produce objective numerical values for each attribute, there would be a need to transform the various ratings into a common range of values, a process which would inevitably introduce an element of subjective weighting. There is currently no widely agreed way of determining such weighting and of then integrating the data into a single overall index. Further, in any attempt to produce a single indicator value from assessments of a number of criteria there is the problem that intercorrelations are likely to introduce bias.[611]

Hence the use of '*best expert judgement'* is preferred, which is also in line with the European Guidance on Natura 2000 data from.[612]

At the second stage of the designation procedure, the Commission

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[605] *The Queen (on the application of Newsum and Others) v Welsh Assembly Government (No.2* [2005] EWHC 538 (Admin) [2006] Env LR 1
[606] ibid [104].
[607] ibid [104].
[608] CR McLeod and others (eds), *The Habitats Directive: selection of Special Areas of Conservation in the UK* (2 edn, Joint Nature Conservation Committee, Peterborough 2005)
[609] ibid para.1.5.2.2.
[610] ibid para 1.5.2.2.
[611] ibid.
[612] ibid; Commission Decision No 97/266/EC (n597).

moderates the list submitted by the Member States by assessing the overall importance of the site in the context of the appropriate bio-geographical area and the EU as a whole.[613] The assessment is made by reference to the scientific criteria in Annex III of the Directive. Due to the highly technical nature of the assessment, the Commission is assisted by the European Topic Centre on Biological Diversity (ETC/BD), a multidisciplinary consortium that works with the European Environment Agency.[614] The ETC/BD assesses the proposed sites by reference on the Annex III criteria and further guidance prepared by ETC/NC[615] to facilitate their application.[616] Following the technical analysis of the ETC/BD and before the agreement between the Commission and the Member State, the results are discussed in a special forum called Biogeographical Seminar.[617] They are held separately for each of the nine biogeographical regions. They are a prominent feature of the designation process that allows for the exchange of views and scientific information. The seminars are attended by the European Commission, the ETC/BD Member States, NGOs, independent experts and resource users (through the Forum Natura 2000).[618] The participation of NGOs is an extra safeguard to the proper implementation of the Directive as it allows for the consideration of *shadow* lists,[619] which include sites not submitted by Members States usually due to conflicting socio-economic interests. Providing they have a sound scientific background, they form part of the debate. Hence, the Commission is not merely rubber-stamping proposed SCIs. The seminars allow a pluralistic exchange of scientific information among a wide range of experts to ensure

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[613] Habitats Directive (n34) art.4(2).
[614] http://bd.eionet.europa.eu accessed January 2018.
[615] European Topic Centre on Nature Conservation, predecessor to ETC/BD.
[616] Available at:< http://bd.eionet.europa.eu/activities/Natura_2000/crit.> Accessed November 2016.
[617] <http://bd.eionet.europa.eu/activities/Natura_2000/chapter4 >
See also in general Dorottya Papp and Csaba Tóth, *Natura 2000 Site Designation Process with a special focus on the Biogeographic seminars* (CEEWEB, 2004) available at http://www.ceeweb.org/wp-content/uploads/2011/12/biogeo_booklet.pdf accessed November 2017.
[618] ibid para. 6.1.
[619] Ibid.

that the most appropriate sites are designated. They also allow Member States to participate in a process whose outcomes will affect them.

The final list of SCIs is agreed between the Member State and the European Commission following a bilateral meeting between the two. At this stage some flexibility is introduced by art.4(2)(2) that is likely to allow socio-economic considerations to 'infiltrate' the technical exercise of SACs designation. According to art.4(2)(2):

> Member States whose sites hosting one or more priority natural habitat types and priority species represent more than 5 % of their national territory may, in agreement with the Commission, request that the criteria listed in Annex III (Stage 2) be applied more flexibly in selecting all the sites of Community importance in their territory'.

Following the adoption as a SCI, Members States must designate it as a Special Area of Conservation *'as soon as possible and within 6 years at most.'*[620] Contrary to SPAs whose designation falls entirely under the competence of the Members State, the active involvement of the Commission to the designation process, makes it rather unlikely to challenge decisions to which it has been a party.[621] Highlighting the strong technocratic character of the designation process and the Commission's prevalent position therein, art.5 confers powers to the Commission to put under consideration sites that the Member States omitted to submit.[622]

4.2.2 Scientific expertise as a basis for management decisions.

The second function of science within nature conservation law and policy relates to the 'how' question. On several occasions, science is the one to tell decision-makers how to protect. This function of science relates to the management stage of decision-making. In exploring the role of science in management decisions, I draw a distinction between management design and the actual implementation. I am doing so because the influence of science

[620] Habitats Directive (n34) art 4(4).
[621] Rodgers (n6) 212.
[622] Habitats Directive (n34) art 5.

varies in between the two phases, as the latter allows for non-scientific considerations to shape the final decision.

In this section I am focusing on how science guides management design, while implementation of decisions and the extent to which scientific assessments are overridden by socio-economic consideration are explored in Chapter 6 given that it is at this stage where conservation conflict usually flares up.

In this context, I am further distinguishing between two broad categories of science-based decision making:

The first relates to the development of management policies and plans, in the sense of having science prescribing specific management activities in the traditional do/do not way. The discussion covers management design in designated and non-designated areas. Science has a primary role to play in both but there is a critical difference in relation to the way science-driven management serving conservation interests takes precedence over other considerations.

In relation to designated sites, science derives its legitimacy from legislation. Law and science are found in a complementary circular dialectic interaction: science provides a justification for conservation to legislation, which in turn legitimises science to guide decision making. This is the most scientific model of management where: science sets the 'ends' and the 'means' and scientific recommendations are turned into binding enforceable decisions through state regulation.

In the wider countryside, the situation is somewhat different. Science does shape the management options of agri-environment schemes. However, it doesn't draw its power from statutory legislation. By contrast, scientific management is implemented through contractual agreements between NE and landowners opting to enter the schemes. However, voluntary participation in the scheme only goes as far as the choice to enter. After that, private individuals are given limited discretion; they do choose what they want to do, but from a list of pre-set management options and they are bound not by statutory legislation but contractual agreements. Agri-environment

schemes reflect how science-driven, top-down regulation interacts with collaborative management. This model of management is scientific in its design but collaborative in its implementation.

The second process of decision-making relates to the application of scientific criteria to assess the effects of a proposed activity to biodiversity when administrative authorities are deciding on whether to grant of a consent, permit or permission.

4.2.2.1 Nature Conservation Land Management

Before going into the details of conservation land management, I would like to make some observations in relation to nature conservation law and its implementation, which influence the way public authorities exercise their discretion when they attempt to manage areas of land, especially those under designation. As will be discussed in more detail in s.4.3 of this chapter and Chapter 6, the amount of discretion administrative authorities are allowed is crucial to the application of both conceptualisations of adaptive management.

To begin with, the Natural Environment and Rural Communities Act 2006 introduces a statutory duty for Natural England to ensure that 'the natural environment is conserved, enhanced and managed for the benefit of present and future generations, thereby contributing to sustainable development'.[623] Hence, in contrast with e.g the Forest Commission and what can be conflicting statutory duties of promoting the interests of forestry and conservation, Natural England is only responsible for conservation. However, compared to its predecessor English Nature, its sole commitment to nature conservation and the strong scientific character of its predecessor has been watered down: Natural England is the amalgamation of English Nature, Countryside Commission and DEFRA's Rural Development Service[624] hence it has acquired the latter two bodies' responsibilities in relation to countryside and recreation.[625]

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[623] Natural Environment and Rural Communities Act (NERC) 2006.
[624] ibid.
[625] Reid, *Nature conservation law* (n1) 85.

Although there is no statutory purpose of designated areas (SSSIs)[626] it is nevertheless stated in DEFRA's policy on SSSI management as:

> […] to safeguard, for present and future generations, the diversity and geographic range of habitats, species, and geological and physiographical features, including the full range of natural and semi- natural ecosystems and of important geological and physiographical phenomena throughout England.[627]

According to the 1981 Act all public bodies are under a duty to take reasonable steps, consistent with the proper exercise of the authority's functions, to further the conservation and enhancement of SSSIs.[628] This would include for instance the Environment Agency when issuing permits for activities to take place within a SSSI.

In terms of European sites, the Secretary of State and Natural England have a statutory duty to exercise their functions under nature conservation legislation so as to secure compliance with the requirements of the Habitats Directive.[629] These requirements include to avoid, in the special areas of conservation, the deterioration of natural habitats and the habitats of species as well as disturbance of the species for which the areas have been designated, in so far as such disturbance could significantly affect realising the objectives of this Directive.[630] This is *a results obligation*.[631] Therefore to be in

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[626] Since all European and International sites are also designated as SSSI, unless mentioned otherwise any reference to 'designated sites' is made in relation to SSSIs. In fact, it is often the case that the SSSI regime offers greater protection than the Habitats regulations to European designation and thus applying the SSSI provisions is preferable. *See* Reid *Nature conservation law* (n1) 192.

[627] DEFRA, *Sites of Special Scientific Interest: Encouraging positive partnerships. Code of guidance* (n558) 10.

[628] WCA 1981, s.28G.

[629] CHSR 2010 (n34) reg.9(1); All other competent authorities must 'have regard', *See* CHSR 2010 reg. 9(5).

[630] Habitats Directive Habitats Directive (n34) art.6(2).

[631] European Commission, *Managing Natura 2000 Sites: The Provisions of Article 6 of the 'Habitats' Directive 92/43/CEE* (Office for Official Publications of the European Communities, 2000).

See also: Marc Clément, 'Global Objectives and Scope of the Habitats Directive' in C.H. Born and others (eds), *The Habitats Directive in Its EU Environmental Law Context: European Nature's Best Hope?* (Taylor & Francis 2014) 12.

compliance with the Directive, Member States are not required merely to take measures but to take effective measures that will maintain the favourable conservation status and prevent further deterioration.[632] These measures may also include restoration measures. The Habitats (and the Birds) Directive explicitly refer to restoration: The Habitats Directive defines conservation as '*a series of measures required to maintain or restore the natural habitats at the populations of species of wild fauna and flora at a favourable status'*. Also art. 2(2) provides that '*measures taken pursuant to this directive shall be designed to maintain or restore at favourable conservation status natural habitats and species of wild fauna and flora of Community interest'.*

Given the fact that a large percentage of both habitats and species across Europe are assessed as unfavourable,[633] restoration measures become a legal requirement. However, as already discussed in the previous chapter, mere designation and restriction of human activities does not suffice. Favourable conservation status cannot be achieved simply by imposing restrictions to prevent further deterioration of habitats that are already in an unfavourable condition. Positive action is also necessary and in line with this idea, the obligation to avoid deterioration has been interpreted by CJEU as being inclusive of the obligation to take restoration measures if necessary: in *Commission v Ireland*, the Court ruled that as the Irish authorities themselves recognised, they had to 'not only take measures to stabilise the problem of overgrazing, but also to ensure that damaged habitats are allowed to recover'.[634]

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[632] Establishing however efficacy of measures and thereby compliance with the directive is met with the well-known od ecological complexity and uncertainty: *See* Clément, ibid, 16, 'It remains extremely difficult to prove that measures adopted are insufficient without figures showing the decrease (or even the sharp decrease) of populations or, at least, degradation of the conservation status for the species involved. But even demonstrating this decrease in population or the bad conservation status may also be a more complex issue to prove than it appears at first sight'.

[633] European Environment Agency, *The State of Nature in the EU*: Results from reporting under the nature directives 2007–2012 (EEA, 2015).

[634] Case C-117/00 *Commission v Ireland* [2002] ECR I-5445 [31]; *See also* the Opinion of AG Kokott in Cascina Tre Pini on declassification of a site where it was suggested that the deterioration of a site due to the failure of Member State to comply with the Directive 'does not warrant the withdrawal of protected status'. Instead, Member States should rather take

There are some conclusions to be drawn from the preceding paragraphs. One, is that the establishment of statutory conservation duties as well as the court's interpretation of the aim laid down in the Habitats Directive, suggest that the UK government and Natural England are bound to the results. The introduction of a binding duty for Natural England (and other public bodies) has the legal implication of judicial review likely to be brought against a decision with potential negative implications for the conservation status of a site.[635] Hence, these duties provide a framework that constrains the allowable limits of discretion afforded to Natural England by primary legislation–for instance in relation to prosecution and enforcement, the grant of consent and management agreements.[636]

On the other hand, the obligations arising from the Habitats and Birds Directives have greater implications for the management of European sites since deterioration of a designated area will make the Member State subject to actions brought by the Commission for failure to fulfil the obligations imposed by the EU law. Deterioration might be the direct result of unregulated activities and deliberative damage or the indirect result of neglect and poor management.[637] As mentioned, the obligation to avoid deterioration also include the obligation to take restoration measures. In this regard, the measures to be taken need not only be these negative obligations (e.g the list

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necessary measures to restore the site'; Along the same lines, it is also the policy of Natural England not to denotify SSSIs that have been illegally damaged or suffer from neglect. Natural England, *Sites of Special Scientific Interest (SSSIs). England's special wildlife and geological sites* (2008). A different approach could work as a motivation to landowners wishing to regain full control of their land, to intentionally damage a SSSI.

However, *also see* the recent judgement *R (Seiont, Gwyrfai and Llyfni Anglers' Society) v Natural Resources Wales* Court of Appeal (Civil Division) [2016] EWCA Civ 797 [13] [22]-[23] where the High Court upheld Hickinbottom J' ruling of a narrower definition of 'damage' that would invoke the EU Environmental Liability Directive as a 'measurable deterioration' to the 'natural resource' or 'natural resource service' from its baseline condition that does not extend to or encompass the prevention of an already damaged environmental situation from recovering to acceptable levels, or a deceleration in achieving those acceptable levels.

[635] Bell, McGillivray and Pedersen (n515) 724.

[636] *See supra* s.4.1.3, *also infra* ch. 4 and ch.6 .

[637] Sites under no management agreements are susceptible to neglect and carry the risk of moving into a declining condition *See* Natural England *Protecting England's Natural Treasures: Sites of Special Scientific Interest* (n557).

with restricted operations likely to damage the integrity of a SSS) but also positive measures to encourage active management therefore avoiding neglect and helping a site to recover.

As will be discussed in the following paragraphs and in Chapter Six, these measures can vary from direct regulation to more flexible mechanisms. The Habitats Directive requires Members States to take 'appropriate statutory, administrative or contractual measures which correspond to the ecological requirements of the natural habitat types in Annex I and the species in Annex II present on the sites'[638]. The Wildlife and Countryside Act 1981 introduces a management system implemented through a combination of measures; apart from imposing duties and obligation on public authorities, it also criminalises SSSI damage.[639] Furthermore, it requires Natural England to provide a list with operations that are likely to damage the integrity of the site and which in principle are not allowed.[640] It makes provision for contractual management agreements with landowners[641] and also provides Natural England with two powerful tools that allow for positive management as well as secure the management scheme[642] and management notice.[643] At its most extreme, effective conservation management could be achieved through the acquisition of all land of special conservation interests by the State though compulsory purchase.[644] How flexible the regime is and how much space there is for adaptive management will depend on how Natural England, given the wide discretion granted to it by both the 1981 Act and the Habitats Regulations, opts to implement it in practice. This is however a question for 1.3 where the

[638] Habitats Directive (n34) art.6(1).
[639] WCA 1981 (n29) s.28P; Nevertheless, prosecution is at the discretion of Natural England, which very rarely makes use of this power.
[640] ibid s.28(4).
[641] Countryside Act 1968 s.15(2) amended by Countryside and Rights of Way Act 2000 s.75(3) for SSSIs; NPACA 1949 (n22) for NNRs; Conservation of Habitats and Species Regulations, SI 2010/490 reg.14 for European Sites.
[642] WCA 1981 (n29) s28J.
[643] WCA 1981 (n29) s28K.
[644] WCA 1981 (n29) s28N; This is the preferred method in states like US and Canada but also some European countries such as Sweden that opt to rely on state ownership to reach conservation targets.

adaptability of decision-making to ecological change and uncertain science is explored, and Chapter Six which explores adaptability in a conflict resolution context. This section continues to identify science-driven management design

4.2.2.1.1 Management in Designated Areas: Negative Obligations and Positive Management

Negative Obligations

In light of the above discussion, the designation of an area for conservation purposes would be meaningless unless it had further implications for the management and use of the land. To an extent, the legal framework for nature conservation represents a command and control approach in the sense that it provides for regulation and control of managing activities within protected areas.[645] Nevertheless, as will be discussed in Chapter Six, the legal provisions relating to the post-notification stage are considerably more flexible than those governing designation and allow for more 'negotiated' management.

Although there is no legal duty for the development of coherent management plans, neither for the national nor the European designations, the 1981 Act requires Natural England to include in the notification of the SSSI a list of operations that require Natural England's consent (also previously referred to as 'Operations Likely to Damage' (OLD)) and a statement of Natural England's views for the management, including any views NE may have about the conservation and enhancement of the flora, fauna or features of the site.[646]

The 'views about management' (VAM) statement outlines the agency's position on the management of SSSIs. The VAM statement is based on the agency's technical knowledge and expertise plus scientific research related to

[645] Through species legislation, it also directly controls damaging activities outside protected areas in relation to protected species.
[646] WCA 1981 (n29) s.28.

the features of the SSSI.[647] It nevertheless places no obligation on the owner or occupier of the land.[648] What does create legal obligations though is the list of operations likely to damage the features of the SSSI (OLDs), currently known as 'operations requiring Natural England's consent'.[649]

The OLDs feature is the primary regulatory mechanism of SSSIs and exemplifies technocratic, top-down regulation. In essence, the list with operations that require consent imposes negative obligations on landowners, who face criminal charges if found carrying out such operations, unless consent is given by the Conservation Body (or a management agreement is concluded) or one of the defences laid down in s.28P(4) applies.[650] Effectively, the 1981 Act imposes considerable restrictions on the use of land and thus, the full enjoyment and exercise of the landowner's property rights.[651] Rodgers, through the prism of a resource allocation model of property rights,[652] views the OLDs mechanism as '[transferring] property from the landowner to the

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[647] *See for instance* the English Nature VAM statement on Hatfield Moors Site of Special Scientific Interest in South Yorkshire available at https://necmsi.esdm.co.uk/PDFsForWeb/VAM/1000536.pdf, accessed November 2016

[648]Natural England SSSI Glossary at:
<https://designatedsites.naturalengland.org.uk/SSSIGlossary.aspx#vam,> accessed November 2016.

[649] WCA 1981 (n29) s.28, 28E; *See for instance* the OLDs for the aforementioned Hatfield Moors SSSI listing 28 different activities ranging from cultivation and use of pesticides, to building development, vehicle use and recreational activities, available at:
<https://necmsi.esdm.co.uk/PDFsForWeb/Consent/1000536.pdf >.

[650] ibid, s.28E, s.28P; Similar provisions are introduced with respect to activities undertaken or permitted by statutory undertakers in ss.28H-I.

[651] *See Aggregate Industries v. English Nature* (n550) [73]-[77] in which Forbes J ruled that 'the confirmation of the SSSI did constitute an outcome (…) which was "directly decisive" of Aggregate Industries' civil rights and obligations in relation to its land and which did not merely affect those rights and obligations in a remote or tenuous fashion'. Forbes J continued that since Aggregate Industries were required to seek consent or enter a management agreement for many and various purposes related to the normal use and enjoyment of the land, that until notification neither English Nature's consent nor an agreement were required, *'the legal consequences of the designation order (i.e. the notification and confirmation of the SSSI) were that Aggregate Industries was no longer free to use or cultivate its land as it saw fit and as it had formerly been free to do within the existing constraints of the law'.*

[652] According to Rodgers (n6) 28 a "resource allocation model" of property *'focuses on the role of property rights in allocating and defining access to the resources that land represents'*; On the contrary, an "entitlement- based model", '*stresses the role of property rules in defining the legitimacy of land use and ownership entitlements;.*

state-represented in this Case by the Conservation Body notifying the SSSI'.[653] According to Rodgers, the restrictions imposed by notification are not to be considered expropriation of property to the State but rather as '[reallocation] of key decisions on land use, and thereby on access to the land resource to the Conservation Body'. [654] The extent to which rights are reallocated will depend on the operations listed and will differ between sites. [655] Following the amendments of the Countryside and Rights of Way Act 2000[656] reallocation cannot be reversed unless a site is subsequently denotifed.[657]

The 1981 Act gives Natural England wide discretion when drawing up lists of OLDs. Rodgers notes that 'there is surprisingly little guidance on the ambit of this administrative power in the 1981 Act itself, in policy guidance or in the case law.[658] According to the author, the relative 'paucity of case law' is likely to be attributed to Natural England's preference towards negotiation and consensus building rather than strict imposition of rules.[659] This is largely true given that there are currently more than 4.000 designated SSSIs and only a handful of cases have been tried before the courts in relation to SSSI notifications.

Recognising the need to adapt regulation to the individual characteristics of each the site, the list is unique to each SSSI. Operations are wide ranging and include activities such as: the felling of trees; the introduction of grazing; the application of fertilizer; and the filling of ditches

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[653]ibid 86,87; For a full analysis of the resource allocation model of property rights and its relevance to nature conservation *see* ibid 288-313.

[654] ibid 87.

[655] ibid; The Hatfield Moors example cited above at n652 is a very good example on extensive restrictions (and reallocation) of the exercise of property rights.

[656] Until the adoption of CROWA 2000, the only effect of the SSSI notification, was a four-month delay when a landowner wishing to undertake a listed operation notified the Conservation Body of his intention to do so before proceeding lawfully. The four-month period was used as a window of opportunity for the Conservation Body to conclude a management agreement and was often abused by landowners who saw it as an income opportunity.

[657] Christopher Rodgers 'Property rights, land use and the rural environment: A case for reform' (2009) 26, S1 Land Use Policy S134, S140.

[658] Rodgers *The law of nature conservation : property, environment and the limits of the law* (n6); *See also* the discussion on open definitions in s.4.1.3.

[659] Rodgers, ibid.

or ponds.[660] In fact, it has been the Court's view that an 'operation' can be anything with an impact on the special interest of the site.[661] The term 'operations' has been interpreted widely, by the court in *Sweet v Secretary of State*,[662] so that the list can legitimately include a wide range of OLDs.[663] More specifically, the court held that the term should be given a wider interpretation than the one given under the planning legislation where the term relates more to activities resulting to some degree of physical permanence to the land.[664] The interpretation was necessary to be wider since the point was to cover activities that would escape the normal regulatory controls (primarily agricultural activities).[665] Schiemann J, considered 'operations' in the context of the 1981 Act, 'passive' activities such as cultivation, grazing, burning, application of manure and the release of animals onto the land.[666]

Therefore, the Conservation Body can include almost any activity that is likely to affect the features of the Site. How the agency chooses to use this discretion will influence the degree of direct interference. However, given the general duty that binds Natural England to further the conservation and enhancement of the features that justified the SSSI notification,[667] the omission of operations on grounds other than scientific might give rise for judicial review.

The agency's discretion is also likely to be limited by restrictive interpretations of causality between the 'operation' and 'damage' such as the one in *North Uist Fisheries Ltd v Secretary of State for Scotland*[668] in which the Court held that for an operation to be 'likely' to damage the site, there must be

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[660] Natural England, *Protecting England's Natural Treasures: Sites of Special Scientific Interest* (n557) 19.
[661] Bell, McGillivray and Pedersen (n515)731
[662] *Sweet v Secretary of State for the Environment and Nature Conservancy Council* [1989] JPL 927 [1989] EGCS 8
[663] ibid.
[664] ibid.
[665] ibid.
[666] ibid.
[667] WCA 1981 (n29) s.28G; *See also* the statutory purpose of Natural England laid down in NERC 2006, s.2.
[668] *North Uist Fisheries Ltd v Secretary of State for Scotland* (1992) JEL 241.

a probability rather than a mere possibility that the operation will damage or destroy the conservation features of the site.[669]

However, as many scholars note, such a restrictive interpretation aligns with the voluntarism approach dominant at the time and it is unlikely for a number of reasons to be followed today.[670] First, since the adoption of CROWA 2000 the law has moved away from voluntarism as the favoured policy approach. Second, under the EU law precautionary principle that has been widely applied by the Court of Justice, any operation having the potential to damage the feature should be included. Rodgers argues that at least for the SSSIs also designated as SACs and SPAs, any other interpretation would be inappropriate, given the ECJ precautionary ruling in *Waddenzee*.[671] Rodgers argues in this respect, that 'it would be anachronistic were anything other than a precautionary approach to be adopted at the prior stage when OLDSIs are identified and specified in the European site notification'.[672]

Positive Management

Notwithstanding its wide interpretation, the 'operation' definition cannot stretch inasmuch as to include 'doing nothing'.[673] Although, positive management of designated areas is critical for securing their favourable conservation status, neither the WCA 1981 Act nor the Habitats and Birds Directives lay down procedural rules for setting up a plan active management. In line with law's preference towards wide administrative discretion, setting

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[669] ibid.

[670] Bell, McGillivray and Pedersen (n515) 731; Rodgers *The law of nature conservation : property, environment and the limits of the law* (n6) 89.

[671] *C-127/02 Landelijke Vereniging tot Behoud van de Waddenzee and Nederlandse Vereniging tot Bescherming van Vogels v Staatssecretaris van Landbouw, Natuurbeheer en Visserij* [2004] ECR I-07405, in ruling on the application of art.6(4) of the Habitats Directive in relation to the assessment of plans and projects likely to damage the integrity of a site, the ECJ held that consent should be granted only when the competent authority has ascertained that there is no reasonable scientific doubts as to the absence of such effects.

[672] Rodgers *The law of nature conservation : property, environment and the limits of the law* (n6) 89.

[673] Bell, McGillivray and Pedersen (n515) 731; *See also R. v Nature Conservancy Council Ex p. London Brick Co Ltd* (n568) in which the favourable status of the species in question was dependant on continuous water pumping.

out a management model is largely left to the administration. Within the ambit of the WCA 1981, there is not an explicit statutory duty for positive or active management of designated areas. However, the administrative authorities are bound by the overarching duties of 1) s.28G of the WCA 1981 that requires public bodies to further conservation within the SSSIs 2) art.2(1) of the Habitats Directive that requires Member States to contribute towards ensuring bio-diversity through the conservation of natural habitat. Hence, given that active management is indeed paramount in maintaining and restoring natural habitats at a favourable conservation status, it can be argued that securing positive management is in fact a legal requirement.

Nevertheless, no statutory requirement exists for designing management plans. The Habitats Directive suggests drafting management plans but does not make it compulsory for Member States.[674] However, as mentioned, the WCA 1981 places an obligation to Natural England to include with a SSSI notification a statement with their views about the management.[675] However, this is merely Natural England's views 'with no further statutory significance'.[676] The 'views about management' (VAM) statement:

> gives a straightforward account of the basic management that is needed to conserve and enhance the wildlife or geological features of the SSSI. By giving a clear and simple statement about the management principles for conservation, these views will help to clarify and build upon the existing understanding between SSSI owners and occupiers and Natural England about the management of their SSSIs. The VAM places no additional obligation on the owner or occupier of a SSSI nor do they replace any more detailed management advice which Natural England may have already given.

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[674] However, some Member States - the UK not among them - have opted for making the drafting of management plans for European Sites mandatory and the plans themselves legally binding. *See* European Commission, *Establishing conservation measures for Natura 2000 Sites: a review of the provisions of Article 6.1 and their practical implementation in different Member States* (European Commission 2014) ANNEX II available at <http://ec.europa.eu/environment/nature/natura2000/management/guidance_en.htm>

[675] WCA 1981 s.28(4).

[676] *R. (on the application of Boggis) v Natural England* [2009] EWCA Civ 1061; [2010] 1 All ER 159 [28].

It follows that the VAM statement, similarly the more elaborated and structured management plans that are often drafted and implemented by Natural England, local authorities and conservation organisations are not legally binding and cannot be legally enforced. The lack of a statutory requirement for management plans has considerable implications for adaptive management, especially with regard to the collaborative model explored in Chapter Six. I will return to it later. [677]The need for positive management is bound to create tensions between the nature conservation interest of a site and the landowner's intended use of land. Compulsory purchase by the state (or nature conservation bodies) would enable conservationists to actively manage the land in favour of biodiversity. But by now it has been made clear that given the percentage of designated land under private ownership, such an approach would be Natural England's last resort. Instead, the preferred approach has been to engage landowners in managing land already managed for agricultural and other purposes, in accordance with the nature conservation interest of the site. [678] To do so, the legal framework has empowered Natural England to enter into management agreements with landowners.[679] Management agreements are voluntary, albeit legally binding, individually negotiated contractual agreements providing for the positive management of the land.[680]

Statutory management agreements reflect the general trend towards more regulatory control that followed the enactment of CROWA 2000. Before CROWA 2000 amendments management agreements were the only way to secure nature conservation interests, with the SSSI legal provisions on restricted operations being just a delay mechanism so that the conservation body could negotiate an agreement with the landowner who intended to

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[677] *See infra* ch. 6.

[678] The preference of management agreements over more intrusive mechanisms such as compulsory purchase is clearly reflected in the primary legislation. The WCA 1981 s.28N, imposes a statutory duty on Natural England to offer voluntary management agreements to land managers before using compulsory purchase as a means of last resort to protect sites from damage or neglect.

[679] *See supra* n.641.

[680] *See infra* ch.6 .

undertake such an operation. As a result, any longer-term management of the land was the product of agreement rather than legal coercion. As discussed above, CROWA 2000 made provisions for reactive enforcement though the notification of OLDs and the threat of criminal proceedings against offenders.

Nevertheless, what is perhaps the greatest contribution of the CROWA 2000 amendments is that it enables the implementation of proactive regulation; because merely prosecuting someone for damages or carrying out OLDs will not get any conservation work done. Natural England can now impose positive management by putting into place enforceable management schemes to deal with non-compliant landowners.[681] A management scheme is a formal notice which 'sets out, clearly and at the appropriate level of detail, the measures necessary for conserving or, where practicable, restoring the features of the land which make it an SSSI.'[682] Landowners are consulted but given the fact that this is a regulatory rather than a contractual measure, it would be expected that any terms and conditions would be largely non-negotiable.

What has great relevance for designing and implementing adaptive management plan is that, in principle, Natural England may formulate a management scheme at any given time it thinks it is appropriate to do so. Failure to reach a management agreement is not set as a statutory requirement for operating a management scheme, as it is for instance for compulsory purchase. However, being firmly committed to its preference for co-operation rather than coercion, Natural England would use this option only as a last resort.[683]

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[681] WCA 198 (n29) s.28J.

[682] DEFRA, *Sites of Special Scientific Interest: Encouraging positive partnerships. Code of guidance* (n558) para.30.

[683] According to DEFRA's guidance, ibid: 'In some cases however, and particularly where it is not possible to reach a voluntary agreement on management, English Nature may seek agreement on a management scheme. (An owner or occupier may also decide to ask that a scheme be prepared; but in these cases, it is more likely that it will be possible to reach a voluntary agreement on management)' This statement reflects the understanding of management scheme as a coercive means that should be employed only in cases where management agreements fail to be concluded or complied with. Interestingly enough, by 2008 only one management scheme had been put into place: *See* National Audit Office, *Natural*

The legal consequences of a management scheme are that Natural England is granted the discretion of a management notice.[684] Section 28K gives English Nature power to issue a management notice, if it has been unable to conclude, on reasonable terms, arrangements for implementing a management scheme, and if the special features for which the land was notified are being inadequately conserved or restored. A management notice will require the landowner to carry out specific works within a specified time. Failing to do so gives the right to the conservation body to enter the land, carry out the work themselves and subsequently recover the expenses from the landowner. The 1981 Act also empowers Natural England to prosecute those failing to comply with a management notice.

4.2.2.1.2 Management in the Wider Countryside

As discussed in Chapter Three, effective biodiversity conservation transcends legal designations of particular units of land. Neither species nor the abiotic elements of the ecosystems know human-made delineations on a map, moving freely from a designated area to a non-designated area and vice versa. Thus, the fragmented protection and management of designated sites discussed above, does not suffice; the focus of management then changes and becomes wider, exceeding targeted areas and encompassing the wider countryside.

Hence, in line with scientists' assertions on open, dynamic ecosystems, effective management is secured through the individual or combined implementation of cross-compliance requirements[685] and agri-environment

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England's role in improving sites of special scientific interest (HC 2007-2008, 1051) 21.

[684] WCA 1981 (n29) s.28K; The legislator's predilection to amicable conflict resolution is reflected on the fact that WCA 1981 will allow a management notice to enforce active management practices only when a management scheme has been put in place. It is also the Government's expectation that management notices would only be used in exceptional circumstances. *See* DEFRA *Sites of Special Scientific Interest: Encouraging positive partnerships. Code of guidance* (n558)7.

[685] Cross compliance refers to the requirement for farmers to comply with a set of SMRs (statutory management requirements) and standards for Good Agricultural and Environmental Conditions (GAECs) so that they can qualify for any payment made under the Common Agricultural Policy (CAP).

schemes (AES). Detailed analysis of the cross-compliance and AES mechanisms will follow in Chapter Six given that entering any of the schemes is voluntary rather than legally prescribed. However, I am briefly considering them in this chapter, since they in fact reflect science-driven management. Both comprise of science-driven management prescriptions that become binding when landowners decide to either claim payments under the Basic Payment Scheme (cross-compliance) or to enter into AES agreements.

More specifically, although neither are typical of a command and control approach, but rather incentive-based mechanisms, they do rely on the imposition of technical prescriptive requirements on landowners. Cross-compliance standards as well as AES management options are pre-fixed, predetermined obligations that the landowners must comply with, if joining the Basic Payment Scheme (BPS) (cross-compliance) or to receive payments for practice that goes beyond 'good agricultural practice' (AES schemes).[686] In this respect and perhaps somewhat ironically, they are more prescriptive than the individually negotiated SSSI management agreements.

The difference between designated and non-designated areas management, is that within the latter, science is given a prominent role through mutual agreement rather than legislation. Hence, the leverage for compliance is not the threat of criminal sanctions and/or administrative fines but the receiving of payments. Any landowner, can circumvent cross-compliance requirements by not applying for the BPS. However, given that most farms are not viable without the CAP payments, they are bound to commit to cross-compliance requirements.[687] Thus, the BPS might prove to be a stronger motivation than the rarely prosecuted offences of the WCA 1981. Another difference between traditional legislation and regulatory mechanisms

[686] The current AES scheme in England is Countryside Stewardship.
See<https://www.gov.uk/government/collections/countryside-stewardship-get-paid-for-environmental-land-management> accessed January 2018
[687] Personal communication with an NFU officer.

is that these requirements are not binding against all, but only those who wish to enter any of the CAP schemes. [688]

AES management options are more flexible when compared to cross-compliance requirements. Those claiming BPS payments must abide to all requirements pre-set by the government,[689] whereas those entering an agri-environment scheme are given the option to choose from a pre-set list, the management activities for which they wish to receive payments for. [690] However, this is as far as the flexibility goes, at least as regards the landowner. Beyond the fact that normally, Natural England will not allow for management options that are entirely incompatible with what it considers as appropriate management for the land in question, the agreement holders have no power to adjust the requirements of the 'options' they chose or amend their agreement as long as it is in place.[691] Especially, in terms of amendments Natural England considers that 'the continuity of management is important during the lifetime of the agreement if the environmental benefits sought are to be achieved'.[692] On the other hand, Natural England is allowed to vary the agreement to comply with changes in legislation or under exceptional circumstances; hence, in applying for the scheme the landowner accepts the possibility of unilateral future amendments. [693]

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[688] That does not apply to the SMRs of cross-compliance since they just echo mandatory environmental provisions.

[689] Exemptions and derogations are nevertheless provided. *See* DEFRA, *The guide to cross compliance in England 2017* (2017).

[690] *See* Natural England, *Countryside Stewardship: Mid Tier Options, Supplements and Capital Items* (2016) available at <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/597940/cs-mid-tier-options-supplements-capital-items-2016.pdf> accessed January 2018.

[691] Only in very exceptional circumstances may adjustments or amendments take place *See* Natural England, *Countryside Stewardship: Mid Tier Manual* (2016) para.7.9.1, 7.9.2 available at <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/657747/cs-mid-tier-manual-2016.pdf> accessed January 2018.

[692] ibid, para.7.9.1.

[693] ibid, para 7.9.2.

4.2.2.2 Environmental Assessments: the struggle for certainty

Besides decisions on land management through negative and positive measures, science has a central role within a second process with direct implications for nature conservation: the environmental assessment. Under the influence of the preventive and precautionary principles, several provisions are triggered under different circumstances to undertake assessments in relation to impacts of activities on the natural environmental. Given the general biodiversity duty that binds all public authorities to have regard to biodiversity while exercising their functions, some sort of assessment should normally take place before making any decisions. However, there are certain circumstances under which an impact assessment is mandatory. These are:

- The environmental impact assessment made under the Environmental Impact Assessment (EIA) Directive, [694] transposed by the EIA Regulations 2011[695]

- The strategic environmental assessment made under the Strategic Environmental Assessment (SEA) Directive, [696] transposed by The Environmental Assessment of Plans and Programmes Regulations 2004.[697]

- The appropriate assessment (AA) required under art.6(3), (4) of the Habitats Directive

All assessment procedures are placed, as Holder puts it, between the two worlds of fact and value.[698] While environmental assessments are viewed as objective scientific assessments, in fact they are inherently subjective: 'this supposed objectivity jars with central concepts of likelihood and

[694]EIA Directive (n509)
[695] EIA Regulations (n509)
[696] SEA Directive (n510)
[697] The Environmental Assessment of Plans and Programmes Regulations 2004 (SI 2004/633)
[698] Holder (n226) 94ff

significance'.[699] It was exactly these inherent limitations of environmental assessment that triggered the development of the adaptive management concept in the first place. The way the courts and decision makers have struggled with what on paper seems like a straightforward test, reveals the extent to which ecological complexity and value-laden judgement complicate nature conservation decision making.

Although all procedures aim to assess the impact of certain activities on the environment, there are several differences between the EIA and the SEA on the one hand and the AA on the other:

To begin with, the EIA and SEA are applied in relation to certain projects (EIA) or plans and programmes (SEA) regardless of where the plan/project/programme is carried out. The AA on the other hand, applies regardless of the nature of the activity as long as it '*is not directly connected or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or project'.*[700] In this respect, an AA might be initiated by the Environment Agency when granting permits, the Local Planning Authorities when granting planning permissions, Natural England when granting OLDs consents etc.

Second, the focus of the EIA and SEA is much wider[701] than that of the AA focus on the ecological features for which the site has been designated. Third, the EIA has a formal screening stage to determine whether a project should be considered an EIA development project; [702] according to the Supreme Court's ruling in *Champion* there is no such as formality in the AA.[703]

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[699] ibid 94; *See also* in *Waddenzee* (n671) Opinion of AG Kokott [107] encapsulates the subjectivity of the concept of 'certainty', infra n737.

[700] Habitats Directive (n34) art.6(3); However, the assessment is not restricted to plans and projects which exclusively occur in or cover a protected site but target developments that although situated outside the site they are nevertheless likely to have a significant effect on it: *see* Commission, *Managing Natura 2000 Sites: The Provisions of Article 6 of the 'Habitats' Directive 92/43/CEE* (n631) para.4.2

[701] EIA Directive (n509) art.3 includes the indirect and direct effects of a project on human beings, fauna and flora, soil, air, water, climate, landscape, material assets, cultural heritage and on the interaction of the above factors.; *See also* the SEA Directive (n510) annex I

[702] ibid (n509) art.4.

[703] *R. (on the application of Champion) v North Norfolk DC* [2015] UKSC 52; [2015] 1 WLR 3710; [2015] 4 All ER 169; [2016] Env LR 5; [2015], [34]-[42]

Third, the EIA and SEA set procedural requirements.[704] The only duty the public authority has is to initiate the assessment for all projects in Annex I and those Annex II projects *likely to have significant effects on the environment by virtue, inter alia, of their nature, size or location*[705] but it is not bound to refuse a development project on the basis of a negative assessment, neither to impose conditions or request mitigation or compensation measures. The aim of the procedure is for the competent authority to reach to well-informed decisions; to ensure that planning decisions are made under the light of as much information as possible. Science is essential to environmental assessments but is not the driver of the final decision-making and environmental impacts will be just one among a set of considerations the decision-makers will take into account.[706] Ost refers to the environmental assessment as 'the integration of technical and scientific information on the effects of development in what are essentially political processes'.[707] Although the EIA/SEA are largely procedural mechanisms, whose outcome is informative rather than decisive, they are very well structured and defined, imposing strict procedural requirements including public participation and review, thereby allowing the decision-making authority to reach out to a number of information sources.

On the other hand, art.6(3) of the Habitats Directive introduces substantial requirements. The competent authority shall approve the plan only after *having ascertained that it will not adversely affect the integrity of the site*. It introduces a threshold of confidence of 'no adverse effects' as a

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[704] Bell, McGillivray and Pedersen (n515) 454

[705] EIA Directive (n509) art 2(1); The fact that the EIA assessment would have not influenced the decision is irrelevant. The Directive establishes a procedural requirement: *See Berkeley v. Secretary of State for the Environment, Transport and the Regions* [2000] UKHL 36 [2000] 3 WLR 420 Lord Hoffmann holding that 'the Directive requires not merely that the planning authority should have the necessary information, but that it should have been obtained by means of a particular procedure, namely that of an EIA'

[706] Holder (n226) 107 'the evaluation is fed into decision-making but does not lead to a particular substantive outcome'

[707] F Ost, 'A Game Without Rules? The Ecological Self-Organisation of Firms' in Gunther Teubner, Lindsay Farmer and Declan Murphy (eds), *Environmental law and ecological responsibility: the concept and practice of ecological self-organization* (Chichester 1994) cited in Holder (n226) 83

requirement for a positive assessment that has been subject to consideration by both the ECJ and domestic courts.[708] The AA is introduced to avoid adverse effects on protected sites which will undermine the overall objective of the Directive to secure biodiversity through the conservation of natural habitats of wild fauna and flora. In this respect, decision-making is based on nature conservation interests alone; the final decision is of a more technical than political nature, although socio-economic considerations might override the interests of nature conservation on certain occasions under the derogation introduced in art 6(4).[709] What follows below is an analysis on the appropriate assessment laid down in art.6(3) and (4) of the Habitats Directive, a process where science has a decisive role in shaping the outcome of the decision.

4.2.2.2.1 The Appropriate Assessment

In cases where a proposed development is likely to affect a site designated under the Habitats and Birds Directives a high standard of protection is afforded by Article 6(3) and (4) that lay down an assessment requirement for plans and projects likely to have significant effects on a European site either individually or in combination with other projects:

> Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives[710]

Although both the EIA and AA are based on scientific information and methods to predict the impact of activities to the environment, there is a fundamental difference between the two that relates to their respective purposes, which ultimately define the way they operate. The purpose of the project-based EIA is to underpin qualitative decision-making. The purpose of

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[708] *See* the discussion in s.4.2.2.2.1.

[709] *See* infra ch6, s. 6.2.1.2.2.

[710] Habitats Directive (n34) art6(3); *These requirements are currently transposed into English Law through reg.61-67 of the Conservation Regulations 2010.*

the site-based AA is to prevent deterioration of the ecological features of SACs/SPAs. Hence, the AA is more technocratic and when compared to the EIA ultimately becomes a platform for information exchange, public participation and consultation.

Like the EIA, the AA is a required procedure but with an additional substantial outcome.[711] Art. 6(3) reads:

Procedural requirement	*Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives*.
Substantive outcome	*In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4 it is for the competent authority 'to agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public'.*

[711] *R. (on the application of Devon Wildlife Trust) v Teignbridge DC [2015] EWHC 2159 (Admin), [14]* Hickinbottom J held that with respect to the Habitats Directive that these provisions are therefore focused on outcome: they primarily concern, not procedure, but the substance of whether the plan or project adversely affects the integrity of the SAC'; *See also* Sundseth. Kerstin and Petr Roth, *EC Study on evaluating and improving permitting procedures related to Natura 2000 requirements under Article 6.3 of the Habitats Directive 92/43/EEC* (Ecosystems LTD, 2013) 11 arguing that 'the Article 6.3 procedure is more than just an ecological assessment – it is, in fact, an assessment combined with a legally binding decision-making process'.

The Directive is silent both as to what 'appropriate' means and as to what the format of the AA should be.[712] Advocate General Kokott stressed in Commission v Netherlands that it would appear that this term should also be understood in the sense of 'proper' or 'expedient'.[713] Thus, an assessment is not merely a formal procedural act, but rather it has to achieve its aims. The aim of the assessment is to establish whether a plan or project is compatible with the specified conservation objectives for the particular site. [714] Accordingly, all aspects of a plan or project which can, either individually or in combination with other plans or projects, affect the conservation objectives of a site must be identified in the light of the best scientific knowledge in the field:

> (…) an appropriate assessment of the implications for the site concerned of the plan or project implies that, prior to its approval, all the aspects of the plan or project which can, by themselves or in combination with other plans or projects, affect the site's conservation objectives must be identified in the light of the best scientific knowledge in the field. [715]

The assessment 'cannot be regarded as appropriate if it contains gaps and lacks complete, precise and definitive findings and conclusions capable of removing all reasonable scientific doubt as to the effects of the works proposed on the SPA concerned'.[716]

It follows that science and robust scientific knowledge have a decisive role within the AA assessment. This has further implications, since it bestows scientific into two processes: a) whether the AA should take place in the first place b) whether a plan/project should be allowed to proceed. On the other hand, and in sharp contrast with the EIA, here, public participation is not mandatory.[717] Thus, unless the competent authority opts to undertake a more

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[712] There is no formal process and hence no legal procedural requirements prescribed similar to that of the EIA Directive; Waddenzee (n671) [52]; *See R. (on the application of Champion) v North Norfolk DC* [2013] EWCA Civ 1657; [2014] Env LR 23, [41]

[713] *Case C-441/03 Commission of the European Communities v Kingdom of Netherlands* [2005] ECR I-03043, AG Opinion [11].

[714] ibid [12].

[715] *Waddenzee* (n671) [54].

[716] *Case C-404/09 Commission v Spain* [2011] ECR I-11853 [100].

[717] *R. (on the application of Devon Wildlife Trust) v Teignbridge DC* (n711) refers to Regulation 61(4) [98] 'it is clear that there is no statutory obligation to consult the general

'open' AA, an opportunity is lost for valuable, multiple source information input to be included in the assessment. This, however, undermines the 'best scientific knowledge' requirement in the Waddenzee ruling[718] and hardly helps to address the third type of Christensen's ecosystem uncertainty, the easiest of the three to resolve.[719]

- When is AA required?

The first step of the art.6(3) procedure is to determine whether an assessment is legally required, namely whether a plan/project is *likely to have a significant effect* on the site in question either individually or in combination with other projects. The first remark will be Truilé-Marengo's assertion that 'law takes account a scientific reality: every effect is not significant'.[720] At the same time law draws a line under how much damage is acceptable: the answer is 'significant'. This of course raises two questions: how do we legally define 'significant' and when we do, how do we determine whether 'damage' is significant or not?
The ECJ is *Waddenzee* held:

> Where such a plan or project is likely to undermine the conservation objectives of the site concerned, it must necessarily be considered likely to have a significant effect on the site. As the Commission in essence maintains, in assessing the potential effects of a plan or project, their significance must be established in the light, inter alia, of the characteristics and specific environmental conditions of the site concerned by that plan or project.[721]

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public, only an obligation to "take the opinion of the general public" if the authority considers it appropriate'.

[718] *Waddenzee* (n671) [54].

[719] In this context, the EIA Directive mandating a well-designed and structured procedure aimed at the collection of information from multiple sources, is better suited to address uncertainty, especially when it derives from a lack of or bad quality data.

[720] Eve Truilé-Marengo, 'How to cope with the unknown' in C.H. Born and others (eds), *The Habitats Directive in Its EU Environmental Law Context: European Nature's Best Hope?* (Taylor & Francis 2014), 339.

[721] *Waddenzee* (n671) [48].

However, as Truilé-Marengo suggests, 'the paradox is clear':[722] to determine whether a plan or project is likely to have significant effects, an impact assessment process is necessary. Hence, as Truilé-Marengo wonders, 'how can one determine a priori that a project will not have significant implications for a site without conducting beforehand an impact assessment?'[723]

The precautionary principle underlines the entire implementation of AA (and that of the Habitats and Birds Directives framework as a whole).[724] A strict interpretation of the principle is directly linked to the primary objective of the Directive.[725] The ruling in Waddenzee establishes a very high level of confidence in relation to the absence of significant effects as a threshold to the AA:

> In the light, in particular, of the precautionary principle, which is one of the foundations of the high level of protection pursued by Community policy on the environment, in accordance with the first subparagraph of Article 174(2) EC, and by reference to which the Habitats Directive must be interpreted, such a risk exists if it cannot be excluded on the basis of objective information that the plan or project will have significant effects on the site concerned.[726]

However, domestic litigation reduces the level of confidence required by the *Waddenzee. In Boggis,* the issue in question was a decision of English Nature to confirm a section of the Suffolk coastline as a SSSI, without an AA on the implication on the neighbouring area Benacre to Easton Bavents SPA. Ruling on the case against, Blair J took a precautionary approach in line with

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[722] Truilé-Marengo (n729) 340.
[723] ibid.
[724] *Santōna Marshes* (n581) [15] ruling that Member states obligations under art.3 and 4 of the Birds Directive exist before the risk of reduction in the number of birds materialises.
[725] Nicolas de Sadeleer, 'The Precautionary Principle in EU Law' (2010) 5 AV & S 173, 183 observing 'of course one should be aware that the strict interpretation endorsed by the ECJ is a consequence of the manner in which the authorisation regime of projects endangering threatened habitats has been formulated by the EC lawmaker; *See also* the ruling in *The Queen on the Application of An Taisce (The National Trust for Ireland v The Secretary of State for Energy and Climate Change* [2014] EWCA Civ 1111.
[726] *Waddenzee* (n671) [44].

the judgement in *Waddenzee*, first by a applying a wide interpretation of the term 'plan' to include the SSSI notification and confirmation which it found to include a formal statement on a intended course of action. [727] He further held that:

> My reading of the evidence I have seen is that Natural England may well be right to say that the effect on the SPA will be neutral whether or not the sea defences are maintained […] However I consider that on the evidence before the Court on this hearing, the risk cannot be objectively excluded. In case of doubt, an appropriate assessment must be carried out (see the decision in *Waddenzee* at para 44).

However, the decision was overturned in the Court of Appeals. [728] Sullivan LJ held that there is a precondition that the nature of the risk in Waddenzee is a "*real*" rather than a "*hypothetical*" risk before the AA is initiated, and that it was for Natural England to decide whether an AA was necessary:

> In judgement, a breach of Article 6.3 is not established merely because, some time after the "plan or project" has been authorised, a third party alleges that there was a risk that it would have a significant effect on the site which should have been considered, and since that risk was not considered at all, it cannot have been "excluded on the basis of objective information that the plan or project will have significant effects on the site concerned". Whether a breach of Article 6.3 is alleged in infraction proceedings before the ECJ by the European Commission (…) or in domestic proceedings before the courts in Member States, a claimant who alleges that there was a risk which should have been considered by the authorising authority so that it could decide whether that risk could be "excluded on the basis of objective information", must produce credible evidence that there was a real, rather than a hypothetical, risk which

[727] *R. (on the application of Boggis) v Natural England* [2008] EWHC 2954 (Admin); [2009] Env LR 20, [106].
[728] *R. (on the application of Boggis) v Natural England* [2009] EWCA Civ 1061; [2010] 1 All ER 159.

should have been considered.[729]

According to Sullivan LJ there was no evidence pointing to a real risk, either before or after confirmation. It simply did not occur to anyone that the SSSI confirmation would have implications for the SPA.[730] Scott comments in this respect that, 'by constructing a distinction between 'hypothetical' and 'real' risk, Sullivan LJ effectively reduced the level of confidence which any decision-maker was required to obtain in order to conclude that no appropriate assessment was required'.[731]

In any case, the application of the precautionary principle is undermined by the fact that the final determination rests with the competent authority whose decision is unlikely to be reviewed by the court on grounds other than Wednesbury unreasonableness. A further undermining factor can be the courts ruling that mitigation measures in the form of conditions can be considered during the 'screening stage' as to the 'likelihood' of effects.[732] As rightly Richards J points out in *Champion* the imposition of conditions to eliminate adverse effects implies that a risk exists and it is unlikely that without an assessment anyone could affirm with the confidence level required by the precautionary ruling in Waddenzee that the conditions are capable of eliminate or reducing the significance of the effects.[733]

- When a project is authorised?

As to the actual decision, the threshold of confidence is set very high reaching to a point of an almost 'no risk' requirement. The ruling in Waddenzee that following an appropriate assessment, a project could be

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[729] ibid, [37].
[730] ibid, [38].
[731] Peter Scott, 'Appropriate Assessment: A Paper Tiger?' in Gregory QC Jones (ed), *The Habitat's Directive A Developer's Obstacle Course?* (Hart Publishing 2012) 109.
[732] *R. (on the application of Hart DC) v Secretary of State for Communities and Local Government* [2008] EWHC 1204 (Admin); [2008] 2 P & CR 16; [2009] JPL 365; *Champion v Northfolk DC [2013] EWCA Civ 1657.*
[733] Richards J ruling in *R. (on the application of Champion) v North Norfolk DC* [2013] EWHC 1065 (Admin); [2013] Env LR 38 that was later overturn by *Champion v Northfolk DC [2013] EWCA Civ 1657.*

authorised only if the competent authority 'have made certain that it will not adversely affect the integrity of that site' set the required threshold of confidence to 'where no reasonable scientific doubt remains as to the absence of such effects'.[734] Scott argues that this carries an implication that there should be no reasonable doubt within the scientific community as whole.[735] However, he further continues that 'it is plain simply by a first reading of paragraph 61 of the Waddenzee that, where there are two reputable inconsistent scientific views amongst leading scientists as to whether there was a likelihood of significant adverse effect on the Special Protection Areas (SPA) integrity, the decision-maker would be bound to conclude that there was a reasonable scientific doubt'

Scott's observation is definitely aligned with addressing ecological complexity and uncertainty on the basis of a strict precautionary approach but given the discretion granted to administrative authorities and judicial deference on technical matters, this is also rather unlikely.[736] However, it should and has been accepted by the courts that a 'zero risk' approach and absolute objective certainty is not possible. As discussed in the first chapter, although lawyers show preference for definite judgements, certainty and scientific judgements cannot be bound together. Hence the text of the Directive and its precautionary interpretation set an ideal framework of scientific certainty seeking to eliminate as much risk as possible; it should however be well acknowledged that complete elimination is impossible. This recognition is reflected in AG Kokott opinion in *Waddenzee:*

> the necessary certainty cannot be construed as meaning absolute certainty since that is almost impossible to attain. Instead, it is clear

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[734] *Waddenzee* (n671) [59].

[735] Scott (n731) 107.

[736] *See R. (on the application of Akester) v Department for the Environment, Food and Rural Affairs & Wightlink Ltd* [2010] EWHC 232 (Admin); [2010] Env LR 33; [2010] ACD 44 [107]-[112] Although Natural England's advice carries considerable weight, it is not however binding for the decision-making authority, in this case the Wightlink ferry operator. It only has a duty to give regard to it. The fact that NE gave contrary advice does not in principle make the decision unlawful, although there has to be cogent and compelling reasons for departing from it. *See also* infra n740.

> from the second sentence of Article 6(3) of the habitats directive that the competent authorities must take a decision having assessed all the relevant information which is set out in particular in the appropriate assessment. The conclusion of this assessment is, of necessity, subjective in nature. Therefore, the competent authorities can, from their point of view, be certain that there will be no adverse effects even though, from an objective point of view, there is no absolute certainty.[737]

A final observation I would like to make in relation to the use of science within the AA is regarding the quality of information and the competence of certain authorities to undertake the AA assessment. The rulings of the ECJ courts have established that high quality information is needed to remove all scientific doubt.[738] However, as mentioned, neither the Habitats Directive nor CHSRs lay down procedural requirements for the assessment that would ensure that the best available information reaches the decision-making authority. The only statutory requirement is the Natural England consultation.[739] Contrary to the EIA assessment, the AA is a closed procedure and whether or not the AA becomes accessible to the public to participate, is at the competent authority's discretion to call for public consultation.

In most cases it is the local planning authorities that are called to implement art.6(3), (4) of the Habitats Directive. Usually, in practice, it will be the developer who provides the competent authority information to make an assessment. Thus, it would be prudent to consult with Natural England early at the screening stage if the development is likely to affect the site, to provide the planning authority the information needed for the assessment

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[737] *Waddenzee* (n 671) AG Kokott Opinion [107].

[738] *Case C-258/11 Peter Sweetman and Others v An Bord Pleanála* Digital Reports, 11 April 2013, [44] 'it should be pointed out that it cannot have lacunae and must contain complete, precise and definitive findings and conclusions capable of removing all reasonable scientific doubt as to the effects of the works proposed on the protected site concerned'. *See also*: *Case C-404/09 Commission v Spain* [100]; *Case C-304/05 Commission v Italy* [2007] ECR I-7495 [69]; *Waddenzee* (n671) [61] referring to the '*best scientific knowledge in the field'.* On the other hand, national courts usually refer to 'sufficiently clear' information, *R. (on the application of Devon Wildlife Trust) v Teignbridge DC* (n714) [75] and cited case law.

[739] Conservation Regulations 2010, s.61(3).

There are several points to be raised:

First, there is an issue of bias. The ECJ ruling in Waddenzee refers to objective information – and even if it didn't it would be difficult to see how biased information could be deemed 'best scientific knowledge in the field'. However, given the fact that a) all but one (Natural England) of the authorities that might be required to undertake an AA, raison d'etre is not nature conservation (it might well be the activity for which the permission is requested e.g house development for a local planning authority) b) Natural England's advice although with attached weight, is nevertheless not binding and c) the courts' usual reluctance to interfere with technical reports means issues of bias are likely to arise. The issue of bias and an inherent conflict of interest prevails in cases of competent authorities with double natures as regulators and potential beneficiaries of the approval permit. [740]

Second, unless the competent authority decides to allow the participation of the public, the only sources of information will be the developer and Natural England. Certainly, the planning authorities are entitled to external consultation and there is nothing to prevent them from looking for information in any place they deem appropriate. However, if they choose not to include the public, they will miss the opportunity to consult with independent researchers and most importantly nature conservation NGOs who have great knowledge and long-term experience in nature conservation. That AA is a science-driven process should exclude wide consultations a means to advance the data supporting their decision.

Third, it is questionable whether non-specialised authorities are indeed well-equipped and in a position to make such assessments. It has been found

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[740] This was an issue raised in *Akester* (n736) where it was found to have influenced the lawfulness of the decision. Wightlink Ltd was the ferry operator seeking to introduce a new class of ferry on a route between the mainland and the Isle of Wight, and competent authority for the purposes of the AA assessment. They followed the advice of their external consultants against the one submitted by Natural England and concluded that there was no doubt remaining as to adverse effects on the SPA and SAC in question Owen J hold that the lack of a reasoned decision to satisfy that NE's advice had indeed been given the weight it deserved together with commercial consideration influencing the decision, rendered the decision Wednesbury unreasonable.

that the lack of knowledge, skills and capacity of those undertaking the AA often lead to poor quality AA reports.[741] Alternatively, the reports might be adequate, but the competent authorities lack the capacity or training to effectively and efficiently review them before reaching a decision. Furthermore, given the precautionary approach of the Directive and the need to prove that there are no adverse effects, a decision based on poor evidence is likely to be quashed under judicial review,[742] causing even further delays.

Hence, it would be perhaps be more appropriate and in line with the technocratic spirit of the process to have an AA report undertaken by a specialised agency (Natural England)[743] whose final recommendations would be binding for the decision-making authority. The latter would then decide to grant or reject an application on the basis of that AA or decide whether the art.6(4) derogation applies.[744]

A last observation is that given that the focus of the assessment would be the impacts on the ecological features of the site, there needs to be enough information on the site and the species and habitats it hosts, which means that a database with up-to-date information on each site should be available. Otherwise, it will be extremely difficult for the competent authority to undertake an assessment that conforms with the rulings of the ECJ. In addition, aligning the AA procedure with that of the EIA by making public consultation a mandatory requirement would be a valuable contribution to reducing uncertainty, at least that deriving from adequate data. Information gathered for the purpose of the AA can be then fed back to the site's evidence database in order to underpin future management decisions

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[741] Kerstin and Roth (n711) 52.
[742] ibid, 49.
[743] In some jurisdictions such as Denmark, Malta, Slovenia) the procedure is undertaken by a single body (usually a specialized agency) who is responsible for the AA procedures and for issuing consent for the plan or project.
[744] Art. 6(4) Habitats Directive (n34) allows a project to proceed despite a negative assessment on the basis of reasons of overriding public interests and provided that compensatory measures are put in place.

4.3 Tracing adaptability within English nature conservation: Is there room for the adaptive management theory within the English nature conservation regime?

In this section I argue that the nature conservation legal framework in England allows and may support adaptive decision making. The remaining major overlapping themes emerging from the adaptive management literature, against which I test English nature conservation law and policy, correspond to the adaptive capacity of adaptive management and are b) adherence to the non-equilibrium paradigm c) research and learning d) flexibility and iterative decision making.

4.3.1 Recognition of non-equilibrium theory and scientific indeterminacy

The first step towards a solution to a problem is to accept and acknowledge the problem. If we are oblivious to it, then we will not feel the need to try to find ways to address it. Adaptive management stems from the recognition of the dynamic and complex character of ecosystems and the limitations of scientific knowledge. It was developed as an alternative decision-making approach to those grounded on earlier ecological theories, to address the problems that plague nature conservation law and policy.

The English nature conservation framework has matured enough to recognise and embrace ecological complexity. Despite being largely science-driven, it nevertheless acknowledges its inherent limitations in relation to predictability and objectivity. The non-equilibrium theory is reflected in legal instruments and approaches, judicial judgements and policy documents. The following paragraphs lay down some examples but are far from a conclusive list. The idea is to reveal the general philosophy that underpins nature conservation policy rather than how science is, for instance, perceived by the JNCC SSSI Selection guidelines or the Habitats Directive.

To begin with, looking at Natural England's Notification Strategy it becomes clear that theories born out of the non-equilibrium paradigm have found their way into nature conservation policy. Designated areas are not seen

as isolated static patches on the landscape providing sanctuary for rare plants and animals, but as dynamic, resilient parts of entire ecological networks.[745] Hence, SSSIs series:

- should comprise the **full diversity and range** of habitats, species (including the full range of natural and semi-natural ecosystems)
- should contain our **most valuable** nature conservation sites. Value is considered as both intrinsic (conservation needs (of habitats and species) and instrumental (value of ecosystems services to human societies)
- should be comprised of individual SSSIs that include entire management units, whole systems and (as far as possible) are able to respond **dynamically** to natural processes and the predicted effects of climate change.
- should contribute to **ecological networks to increase connectivity** and reduce habitat fragmentation and the series as a whole should be **resilient** in the face of pressures, including the predicted effects of climate change. Sites should be kept under review, to ensure the continued value of the series.

Indeed, the influence of the non-equilibrium paradigm is pervasive within the SSSI designation procedure. SSSI selection and notification is an ongoing dynamic process rather that a one-shot decision. There is no statutory limit on the number or size of the sites. Recognising ecosystem interactions is the court's judgement in Sweet v Secretary of State.[746] Schiemann J. held that an area can be of special interest and as such be notified as a SSSI if it constitutes part of a single environment for the species, the protection of which is sought by the site notification.[747] The Countryside and Rights of Way Act 2000 acknowledging the dynamics of natural systems introduced flexibility into the notification to match changing SSSI conditions by allowing Natural England to amend existing notifications, either by varying interest

[745] Natural England, *Sites of Special Scientific Interest (SSSI): a notification strategy for England* (November 2008). Although the Lawton Report found that they failed to do so, being part of a resilient network is a necessary feature of the SSSI designations.
[746] *Sweet v Secretary of State for the Environment and Nature Conservancy Council* (n662)
[747] ibid [21].

features,[748] including additional land[749] or both. It also provided for the denotification of an existing site or part of a site if Natural England is of the opinion that the site is no longer of special scientific interest.[750] In addition, a site being in unfavourable status, hence with an uncertain conservation future, does not mean that it is of no scientific interest as long as it meets baseline criteria.[751] It follows that sites are not designated in order to be frozen in time in their present condition, but in order to be managed, improved and/or be restored.

The dynamic character of ecosystems is acknowledged and appreciated by the JNCC revised guidelines: habitats change is anticipated and the 'special interest' of biodiversity is not expected to be fixed in time.[752] The Guidelines seek to 'enable the system to cope with dynamic change. As such, they lay down basic tenets for the evaluation and selection of sites but leave flexibility to deal with ongoing environmental change.'[753] It is also acknowledged that notwithstanding the need for consistency, in standards of SSSI selection it is not possible to specify the uniform application of criteria to any species across the country.[754]

Together with the dynamic character of nature, the Guidelines also appreciate that the scientific understanding and concepts of 'special interest' may change in time. Therefore, they conclude that

> […] the SNCBs are likely to keep the SSSI series under review to reflect our dynamic environment, changing natural heritage values and circumstances and changes in the context within which our site

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[748]WCA 1981 (n29) s.28A.
[749] ibid, s.28B, 28C.
[750] ibid, 28D;
[751]Natural England, *Natural England Standards. Sites of Special Scientific Interest* (2013), 5; In *R (Western Power Distribution Investments Limited) v Countryside Council for Wales* (n236) [26] it was held that a site whose special features are under threat can also be notified provided the notification is based on the value of the site and not driven by the threat of it. The Conservation Body would be failing its duty if it did not carefully consider any information which suggested that a site under threat was likely to qualify.
[752] JNCC Guidelines (n348) para 2.11.
[753] ibid, foreword.
[754] ibid, para 4.18.

conservation work is conducted. [755]

Second, following the amendments of CROWA 2000 and the Common Agricultural Policy schemes (Cross compliance and AES) the focus shifted to positive management. It is true that compared to other jurisdictions, nature conservation in England was never 'preservation' based for a number of reasons: first, England as has been mentioned before is a heavily populated area, with no places sealed off from the influences of civilisation. Excluding large parts from human interference would be extremely difficult if not impossible. Second and related to the first, English land has been intensively managed for years. There is very little unmodified land remaining distributed across the country and hosting near-natural or semi-natural habitats.[756] Third, contrary to countries like the United States, most English land is under private, fragmented ownership, [757] a great part of it managed for agricultural purposes.[758] Designating areas restricted to human access and/or take large parts of it out of production would have major implications for the lawful exercise of property rights[759] but also undermine domestic food production.

Nevertheless, until the CROWA 2000 amendments, the Conservation Body could only impose negative obligations on the land in the form of OLDs. But as we saw above,[760] any landowner could lawfully proceed after three months had passed from having given notice to the Conservation Body of his intentions. As a result, any management agreement the Conservation Body

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[755] ibid, para 2.12.

[756] ibid, para 3.5.

[757] 40% of SSSI is on land owned by private owners, 11% by Forest Enterprise/Forestry Commission, 9% by the Ministry of Defence, 8% by Natural England, 8% by National Trust, 6% by Water Companies, 4% by Local Authorities, 4% by Wildlife Trusts, 4% by the RSPB and 3% by Other, Natural England *Protecting England's Natural Treasures: Sites of Special Scientific Interest* (n557) 13.

[758] In 2016, the Utilised Agricultural Area in the UK accounted for the 71% of the land in the country. *See* DEFRA, *Agriculture in the United Kingdom 2016* (2017) 13.

[759] For the property rights implications of nature conservation law and policy *see* Rodgers *The law of nature conservation : property, environment and the limits of the law* (n6) 288-313; Christopher Rodgers, 'Property rights, land use and the rural environment: A case for reform' (n660).

[760] *See* s.4.2.2.1.1.

might have concluded would provide payments to the landowner in return for not proceeding with the operations. Following the 2000 amendments, this is not the case anymore. Landowners are threatened with criminal charges if they unlawfully carry out OLDs. Thus, payments are now only provided for positive management.[761] Additionally, Natural England has the powers to enforce positive management of a SSSI through the management scheme/management notice mechanism. As to the European designations, the 'result obligation'[762] put forward in art.2(1) of the Habitats Directive, 'to contribute towards ensuring biodiversity through the conservation of natural habitats and wild fauna and flora', leaves no room for anything other than active management of the sites.[763]

At the same time the concept of 'conservation' takes a wider and more dynamic meaning that goes beyond merely maintaining the 'status quo'. In *Boggis v Natural England* in the absence of a statutory definition of conservation, Sullivan LJ interpreted the term in the context of nature conservation, as 'allowing natural processes to take their course, and not preventing or impeding them by artificial means from doing so, would be a well-recognised conservation technique in the field of nature conservation.[764] The Habitats Directive also gives a wider meaning to conservation that goes beyond maintaining things the way they are. 'Conservation' is defined as a series of measures required to maintain or *restore* the natural habitats and the populations of species of wild fauna and flora at a favourable status'.[765]

Also, reflecting the influence of the non-equilibrium paradigm is a

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[761]DETR, *Guidelines on Management Agreement Payments and Other Related Matters* (DETR, 2001).

[762] A. Cliquet, K Decleer and H. Schoukens, 'Restoring nature in the EU' in C.H. Born and others (eds), *The Habitats Directive in Its EU Environmental Law Context: European Nature's Best Hope?* (Taylor & Francis 2014), 273.

[763] Agustín Garcia-Ureta and Iñigo Lazkano, 'Instruments for active site management under Natura 2000' in C.H. Born and others (eds), *The Habitats Directive in its EU Environmental Law Context: European Nature's Best Hope?* (Taylor & Francis 2015), 73.

[764] *Boggis* (n728) [18] Holding that a SSSI confirmation to ensure the continuing exposure and erosion of the cliffs in question was a lawful exercise of Natural England's powers.

[765] Habitats Directive (n34) art. 1(a).

gradual shift to ecosystem-based management and ecological coherence.[766] The creation of an ecological network is the ambitious aim of the Habitats Directive. As discussed above, the prescribed designation procedure that requires the active involvement of the European Commission has been established to ensure the coherence of the network.[767] Despite the fact that SSSI notifications have largely progressed on an ad hoc basis, it is now accepted that a more strategic approach to SSSI is required.[768] The JNCC Selection guidelines stress the need for ecological coherence and a gradual shift of focus from the 'jewels of the crown' to the wider countryside, with the 'jewels' being a central components of a wider, coherent ecological network:

> SSSIs are an important component of the protection of important and threatened habitats and species, of a habitat network approach to conservation, and latterly as part of a wider landscape-scale ecosystem approach to the sustainable management of our environment.
>
> The ecological interdependence of the SSSIs and this wider environment is crucial and, while designation necessitates drawing clear boundaries, it is important to integrate, as far as possible, the conservation measures for both protected sites and wider countryside in an ecosystem- based approach
>
> The concept of ecological coherence is currently concerned more with the incorporation of ecological network theory into site selection[..]Part of the selection process for SSSIs should therefore be to consider the functional importance of a site within the wider environment, at a range

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[766] Lawton and others (n36).

[767] *See* however Jonathan Verschuuren, 'Connectivity: is Natura 2000 only an ecological network on paper?' in C.H. Born and others (eds), *The Habitats Directive in Its EU Environmental Law Context: European Nature's Best Hope?* (Taylor & Francis 2014) questioning Natura 2000 connectivity; A typical example of an ecosystem-based approach to natural resources management is the European Parliament and of the Council Directive 2000/60/EC establishing a framework for Community action in the field of water policy [2000] OJ L 327/1 which, although not being per se nature conservation legislation, introduced provisions of great relevance to the conservation of species and habitats depending on the water.

[768] Natural England, *Sites of Special Scientific Interest (SSSI): a notification strategy for England*, 2.4 (n745).

> of scales. [..]SSSIs need to be seen within a wider context, as one component of a site-based approach to nature conservation, which is then integrated with and complements the developing wider environment approach [..].

However, the WCA 1981 remains species and habitats rather than ecosystem oriented. However, this does not mean that the interpretation cannot be shifted towards a more ecosystem-based approach. The WCA 1981 does not lay down specific habitats to be designated as SSSIs neither does it directly link land designations to whether they host endangered species. It rather refers to 'special interest by reason of any of its flora, fauna, or geological or physiographic features.'[769] Given the gradual recognition of the importance of ecological networks in policy documents such as the JNCC Guidelines, the wide discretion given to Natural England and judicial deference, it remains to see whether the interpretation of 'special scientific interest' can be stressed to include sites that are 'interesting' on the basis of their contribution to ecological networks, rather than on their hosting of vulnerable wildlife.[770]

That the legal system recognises the complexity of ecosystems is further evident in the wording of art.6(3) of the Habitats Directive, which requires an AA for any plan of project 'not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects'. The rationale of this provision is to take account of the incremental and cumulative effects of plans that if assessed individually would escape art.6(3) AA but in combination with other projects may have significant effects. Arguably, art.6(3) takes a wider approach in order to ensure that 'effects of incremental damage […] and damage from synergistic effects are not neglected'[771] to prevent nature's 'death by a thousand cuts'.

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[769] WCA 1981 (n29) s.28.

[770] The same can be argued for species schedules that could be amended to include key species for ecosystem functioning.

[771] Holder (n226) 130, discussing the cumulative and interrelated impacts of development projects in relation to the EIA Directive.

Other aspects of nature conservation law and policy reflecting non-equilibrium thinking include the continuous integration of biodiversity conservation to other policies,[772] the implementation of AES to manage the wider countryside, and a number of initiatives to manage land at the landscape level like the Nature Improvement Areas Scheme, the focus of Part III of this thesis.

Finally, it has come to be recognised that science cannot provide us with either certainty or objectivity and AG Kokott;s observation in Waddenzee clearly reflects this.[773] That the JNCC Guidelines recognises that special scientific interest is a matter of informed expert judgement rather than simply the rigid application of objective rules [774] and also advocates a less deterministic and value-laden view of science, consistent with the premises of adaptive management.

4.3.2 Learning and experimentation

Central to the adaptive philosophy is the concept of learning; learning as a trigger and outcome of adaptive management. Decision-making should take place in the light of the most up-to-date information. A static approach where data are very old or non-existent cannot be considered adaptive. Looking at nature conservation in England and its historically strong links to scientific research (not merely science) it is evident that learning and knowledge enhancement are central to the English culture of nature conservation.

First, as a general observation, conservation research on the English landscape and natural environment has been building up for centuries. It was in Britain that the first society of ecologists the world had ever seen was

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[772] A primary example is the introduction of agri-environment schemes within the Common Agricultural Policy, the general biodiversity duty introduced in NERC 2006 (n627) s.40, the assessments (EIA, SEA, AA) required during development or other permits and licences approval.

[773] *See supra* n737.

[774] *See supra* n564.

founded.[775] This was the British Ecological Society (BES), formally constituted in 1913, evolving out of the British Vegetation Committee.[776] The British Ecological Society whose first president was Sir Arthur Tansley, the pioneer scientist who coined the 'ecosystem' term,[777] contributed significantly to and influenced the development of the young science of ecology.[778]

During its very early stages of development, nature conservation policy in England was inextricably linked to scientific research to the extent that it could be argued it shared the basic philosophy of active adaptive management. It was just after the end of WWII that a group of scientists, members of the Wild Life Conservation Special Committee (WLCSC) under the chairmanship of Dr J. Huxley, mapped a nature conservation policy framework and laid down the foundations of UK Nature Conservation Policy to date.[779] In 1947 the Committee published a detailed report, *The Report on Conservation of Nature in England and Wales*, considered the selection process of protected sites together with their administration.[780] Hawksworth notes that 'the WLCSC was dominated by scientists and academics who, not unnaturally, saw research and education as the foundations of an effective nature conservation policy'.[781] There was even a reference to experimental work:

> [the Committee's] report, published in 1947, recommended a list of proposed nature reserves where wildlife would be **studied and protected**, the creation **of Sites of Special Scientific Interest (SSSI)[782]** for areas outside the statutory reserves, the undertaking

[775] William S. Cooper, 'Sir Arthur Tansley and the Science of Ecology' (1957) 38 Ecology 658, 659.
[776] Evans (n1) 51.
[777] Cooper (n775) 659
[778] Its mandate was to 'to advance the education of the public and advance and support research in the field of ecology as a branch of natural science and to disseminate the result of such research' in Evans (n1) 51.
[779] ibid 70.
[780] ibid.
[781] Hawksworth (n4) 3.
[782] The recommendations on SSSIs were taken up by the National Park and Access to Countryside Act (NPACA) 1949.

> of survey and **experimental work,** a **series of institutes of terrestrial ecology,** and **the setting up of an official biological service** to establish and maintain the reserves, to carry **out the necessary research**, and to advise on nature conservation generally[783]

Protected areas were thus viewed as nature laboratories, a place for conducting research and experimenting. [784] It was no surprise that administration of nature conservation was equally science-driven. The Huxley report led to the establishment of Nature Conservancy (NC) a science-based organisation to administer Nature Reserves. Nature Conservancy was a hybrid organisation, with research and conservation functions:

> Nature Conservancy was responsible for providing scientific advice on the conservation and control of the natural flora and fauna of Great Britain; establishing, maintaining and managing nature reserves in Great Britain, including the maintenance of physical features of scientific interest; and to organising and developing the research and scientific services related thereto.[785]

In 1973, Nature Conservancy succumbed to government pressure for more action and advice, and less research.[786] The Nature Conservancy Council was subsequently constituted by Act of Parliament. It was a positive development for nature conservation since the new Council was afforded

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[783] Administrative/biographical background of Nature Conservancy as seen in 'Records created or inherited by the Nature Conservancy, the Nature Conservancy Council and English Nature' at< http://discovery.nationalarchives.gov.uk/details/r/C134>.

[784] Evans(n1) 7; *See also* in Hawksworth (n4) 3 'the Huxley Report called for a national biological service with five main purposes conservation, biological survey and research, education and amenity "for the peaceful contemplation of nature"'.

[785] Administrative/biographical background of Nature Conservancy as seen in 'Records created or inherited by the Nature Conservancy, the Nature Conservancy Council and English Nature' at <http://discovery.nationalarchives.gov.uk/details/r/C134>.

[786] James Dixon, 'Nature Conservation' in Philip Lowe and Stephen Ward (eds), *British Environmental Policy and Europe* (Routledge 1998), 216; *See also* Hawksworth (n4) 7-10.

independent status[787] but at the same time it was shorn of its research functions, which remained with the NERC.[788] Nevertheless, the NCC was still largely staffed by scientists and its development throughout the 1970's and 1980's was on a scientific foundation.[789] What followed was a major upheaval in administration that saw nature conservation transitioning from the sphere of scientific research to somewhere in between research and politics – if not closer to the latter. What began as a research council based on firm scientific foundations was gradually evolved into a multi-focus agency (Natural England) with a wide remit.

Following its tradition of advancing scientific research, UK today hosts a number of organisations committed to the development of conservation science including research centres and institutions and several university departments,[790] which are jointly funded by the UK government and the European Union and capable of providing high quality scientific research to support all stages of decision making, from designation to day to day management and assessments. Natural England, although not the research-based institution Nature Conservancy once was, continues to undertake quality research, either themselves or commissioned to external contractors.[791] As a result, there is a wide range of information on English nature, continuously evolving from the Victorian era until today that allows for well-informed decisions and baselines for further explorations.

Information gathering as a prerequisite to well informed decisions is the aim of legal initiatives such as the EIA Directive. Although entirely procedural, the EIA provides an opportunity for extensive research and quality information - at the cost of the developer - that can be used to guide future

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[787] In 1965 Nature Conservancy was absorbed by the newly established Natural Environment Research Council (NERC), an umbrella organization for statutory bodies. It was the first blow to Nature Conservancy, which although it was not deprived of its research functions lost much of its independence especially in terms of funding. *See* Hawksworth (n4) 6.

[788] ibid 7.

[789] Dixon (n786)216.

[790] ibid 218.

[791]Natural England publications available at <http://publications.naturalengland.org.uk/category/7001> accessed November 2017.

decision-making. [792] Quality information is also the aim of the wide consultations all levels of administration usually undertake before reaching a decision with regard to policy changes, site designations, etc. As for SSSI, Natural England has issued a Monitoring Standard that will contribute to building up a baseline and constantly growing databases to inform management decisions and the condition of SSSI as a whole. [793]

Finally, experimentation is not an alien concept to English nature conservation legislation. Section 8 of the Natural Environment and Rural Communities act affords Natural England the discretion to run experimental schemes that (a) involve the development or application of new methods, concepts or techniques, or (b) the testing or further development of existing methods, concepts or techniques. Administrative agencies have initiated a number of pilot programmes to test the effectiveness of certain instruments (e.g the offsetting pilot programmes) [794] or approaches (e.g the Nature Improvement Area initiative for integrated large-scale restorative ecosystem management).[795] These initiatives, match experimental adaptive management in procedural terms, in the sense of implementing and testing a novel policy approach rather than management practices per se.

4.3.3 Flexibility and iterative decision making

The adherence to the non-equilibrium paradigm, the appreciation of learning and evolving scientific research establish a suitable environment for adaptive decision-making and management. Without these traits, e.g if nature was perceived as static and predictable, there would be no reason to initiate

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[792] Along the same lines, the AA can be a source of valuable information but the scope us much narrower.

[793] Natural England, *Natural England Standard SSSI Monitoring and Reporting* (Natural England 2013).

[794] J Baker and others, *Defra project code: WC 1051.Evaluation of the Biodiversity Offsetting Pilot Programme. Final Report Volume 1:* (Collingwood Environmental Planning Limited, 2014).

[795] See in general <https://www.gov.uk/government/publications/nature-improvement-areas-improved-ecological-networks>.

adaptive management on behalf of the decision makers. However, unless management is to be applied on lands whose owners are keen to undertake nature conservation,[796] adaptive iterative decision-making requires a flexible legislative and regulatory framework to make it happen.

The following paragraphs explore the extent to which the legal framework for nature conservation can foster adaptation of decision making. I am focusing my analysis on a) the potential for a combination of front-end/back-end decision making that can establish a monitoring-adjustment, adaptive management "loop" b) the potential for actual implementation of scientific adaptive management. A key concept for the first is monitoring and for the second, administrative discretion.

4.3.3.1 Monitoring, Review and Adjustment of decisions[797]

Reviews are a very common theme in nature conservation law and policy at national and European level. From management schemes to the entire Habitats Directive,[798] reviewing legal and regulatory approaches plays a central role in decision making. Below I have explored monitoring and reviewing opportunities along the different stages of nature conservation decision-making.

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[796] This is land owned by either Natural England (NNR) or Nature Conservation NGOs that can make use of the rights afforded by general law to landowners to practice adaptive management. However, even in these cases, given the complex web of laws and regulations it is likely that administrative decision making of some form might be required (e.g planning permission, environmental permits etc).

[797] Monitoring defined as a*n 'intermittent (regular or irregular) series of observations in time, carried out to show the extent of compliance with a formulated standard or degree of deviation from an expected norm', < http://jncc.defra.gov.uk/page-2268> accessed November 2016* is more dynamic than 'review' that refers to *a formal assessment of something with the intention of instituting change if necessary,* Oxford Online Dictionary. However, both can establish the 'loop' for adaptive decision making.

[798] See http://ec.europa.eu/environment/nature/legislation/fitness_check/index_en.htm for a major project to review and evaluate the Birds and Habitats Directives that led to the development of an Action Plan**,** which aims to address the shortcomings identified during the evaluation.

- Species Lists, Site Designation and Management

There is a statutory requirement of a five-yearly review of Schedules 5 and 8 of the 1981 Act (protected wild animals and plants respectively), undertaken by the Conservation Bodies acting through the JNCC.[799] Following the review, the Conservation Body has a duty to advice the Secretary of State of any animal should be added to, or removed from, Schedule 5 and any plant that should be added to, or removed from, Schedule 8. Any advice given shall be accompanied by a statement of the reasons which led to the advice.[800] However, deciding whether to amend the Schedules remains at the discretion of the Secretary of State; there is nothing in the Act to suggest that the advice of the JNCC must be followed.[801]

The Habitats Directive lays down 'surveillance' requirements with regard to the conservation status of species and habitats.[802] It also introduces a 'loop' by providing for measures to be taken if deemed necessary in the light of the assessment.[803] Surveillance should be continued during the implementation of the measures.[804] The Directive also requires that Member States to submit six-yearly reports on the implementation of measures taken under the Directive.[805] The recognition of the need for adaptation to the advances of technology and scientific knowledge provides for an amendment procedure for Annexes I,II,III and V.[806]

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[799] WCA 1981 (n29) s.24.
[800] ibid, s.24; DEFRA and the Welsh Government, *Summary of Responses to the Consultation on the Fifth Quinquennial Review of Schedules 5 and 8 of The Wildlife and Countryside Act 1981 and the Governments' Decisions* (2011).
[801] In fact, in the most recent review, DEFRA deviated from JNCC recommendations in more than one time. *See* DEFRA and the Welsh Government, *Summary of Responses to the Consultation on the Fifth Quinquennial Review of Schedules 5 and 8 of The Wildlife and Countryside Act 1981 and the Governments' Decisions* (2011).
[802] Habitats Directive (n34) art. 11.
[803] ibid, art.14.
[804] ibid.
[805] ibid, art.17.
[806] ibid, art.19.

On the other hand, there is no statutory duty for the assessment of the SSSIs. The JNCC introduced the Common Standards Monitoring for Designated Sites to provide for the assessment of the special features for which the SSSI was designated, in order to determine whether they are in a satisfactory condition.[807] The assessment is required every six years; however, the data suggest that a 24% of SSSI units have not been assessed within six years of the last assessment.[808]

Admittedly, as evident from the number of monitoring strategies, even when not legally mandated, monitoring is central to conservation in England.[809] The question that remains is whether the 'loop' can be closed by the readjustment of decisions. This will be explored in more detail in the next section.

- Environmental Assessments

Apart from the SEA Directive, neither the EIA Directive nor the Habitats Directive provide for mandatory monitoring of the impacts of the approved project. Especially with regard to the Habitats Directive, effective monitoring should be considered best practice in particular when the derogation of 6(4) has been applied and compensatory measures are in effect. Most of the Commission Opinions do require monitoring to be put into place[810] but given

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[807] *See* http://jncc.defra.gov.uk/page-2217.

[808] National Audit Office, *Natural England's role in improving sites of special scientific interest* (2008).

[809] Natural England, *Natural England Standard SSSI Monitoring and Reporting*; Natural England, *Environmental Monitoring in Natural England* (2012) ; see also < http://jncc.defra.gov.uk/page-3713> ; The UK has been one of the few countries that have assessed the effectiveness of agri- environment schemes, N Boatman and others, *A review of environmental benefits supplied by agri-environment schemes.* (NoFST20/69/041 Land Use Policy Group, London, 2008).
NGOs with their network of volunteers are also undertaking many surveys and monitoring exercises. See for instance RSPB's monitoring programme for the Agri-Environment Agreements at https://www.rspb.org.uk/our-work/conservation/conservation-projects/details/362900-agrienvironment-monitoring.

[810] See for instance Commission 'Opinion delivered upon request of Germany pursuant to Art. 6(4) sub par. 2 of Council Directive 92/43/EEC concerning the deepening and widening of the ship fairway of the river Main at the sections Wipfeld, Garstadt and Schweinfurt' COM (2013) 1871 final.

the non-binding nature of the Opinion whether monitoring is required, it will largely be left with the Member State to decide. Monitoring requirements can nevertheless be imposed in the form of a condition of planning permission.[811] Along the same lines Natural England may impose monitoring requirements on a consent given under s.26E(4) of the WCA 1981.

4.3.3.2 Adjustment of decisions

The adaptive 'loop' is completed with the adjustment of original decisions, or in case of legislation by the amendment of their provisions through democratic parliamentary procedures, and in the case of EU legislation by the procedure provided in the legal instrument in question. It follows that rules established in primary legislation are less flexible than regulations and decisions made by the administration.

The English system of nature conservation administration is characterised by de-centralisation, considerable delegation to nature conservation bodies and local authorities, wide discretion and judicial deference.[812] Perhaps ironically, for science driven, adaptive decision-making to happen, what is needed is a combination of flexibility – so that the authority is allowed to amend the decision - and 'command and control' types of legislation to impose its implementation. To illustrate, let's assume that Natural England seeks to change a SSSI OLD; it needs the support of statutory legislation in order to be able to impose the new obligations. Hence, science-driven adaptive decision-making is possible only within procedures where science is the only consideration (so that the administrative authority is not bound to take into account other considerations) or one among multiple considerations but the administrative authority has the discretion to only give regard to scientific recommendations and the administrative authority is given the power to amend their decision.

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[811] Town and Country Planning Act 1990, s.60.

[812] *See supra* s.4.1.

4.3.3.2.1 Notifications, Consents and Planning Permissions

As mentioned above, with the introduction of CROWA 2000 Natural England was afforded powers to notify additional land, enlarge or denotify a SSSI.[813] As with the original notification any amendment is at the discretion of the Conservation Body. As to the management of the SSSI, the 1981 Act provides with opportunities for science driven, adaptive management. Natural England does have the power to vary the OLDs under s.28A of the WCA 1981. The Conservation Body has the power to modify or withdraw a consent. This allows for Natural England to amend management practices e.g in light of new data or following a site's assessment.[814] However, they shall make a payment to any owner or occupier of the land who suffers loss because of the modification or withdrawal.[815] Likewise, the withdrawal of consent is also provided in s.28E(6) of the WCA 1981 but the Conservation Body will need to compensate the landowner for any loss incurred due to the withdrawal.[816]

Similarly, s.97 (1) of the Town and Country Planning Act 1990 reads:

> if it appears to the local planning authority that it is expedient to revoke or modify any permission to develop land granted on an application made under this Part, the authority may by order revoke or modify the permission to such extent as they consider expedient.[817]

From the wording, the section appears to afford the planning authority considerable freedom to modify or revoke a planning permission. This freedom is nevertheless restricted by s.97(3):

> 3) The power conferred by this section may be exercised—
>
> (a) where the permission relates to the carrying out of building or

[813] WCA 1981 (n29) s. 28D.
[814] ibid, 28E (6).
[815] ibid, 28M.
[816] ibid.
[817] The Town and Country Planning (Development Management Procedure) (England) Order 2015 (SI 2015 No.595).

> other operations, at any time before those operations have been completed;
>
> (b) where the permission relates to a change of the use of any land, at any time before the change has taken place.

However, s.102(1) provides for orders requiring discontinuance of use or alteration or removal of buildings or works:

> 1) If, having regard to the development plan and to any other material considerations, it appears to a local planning authority that it is expedient in the interests of the proper planning of their area (including the interests of amenity)—
>
> (a) that any use of land should be discontinued or that any conditions should be imposed on the continuance of a use of land; or
> (b) that any buildings or works should be altered or removed,
> they may by order—
>
> (i) require the discontinuance of that use, or
>
> (ii) impose such conditions as may be specified in the order on the continuance of it, or
>
> (iii) require such steps as may be so specified to be taken for the alteration or removal of the buildings or works,
> as the case may be.

Hence, in principle, a planning permission can be amended. Together with the power given to the local authority to impose conditions (e.g monitoring conditions) [818] the planning regime can arguably be used to support adaptive management. However, as with the Natural England's withdrawal of consent, compensation payment is required.[819] Hence, it will be at the discretion and willingness of the planning authorities to incur the cost of compensation to favour the interests of biodiversity.

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[818] *See supra* n817.

[819] The Town and Country Planning (Development Management Procedure) (England) Order 2015 (SI 2015 No.595) s.107, s.115.

4.3.3.2.2 Adaptive land management

As will be discussed in more detail in Chapter Six, the primary tool for nature conservation management is the contractual management agreements. Hence whether effective adaptive management can be practiced will largely depend on the degree of flexibility built into such agreements.

Implementing adaptive management through management agreements creates certain difficulties that relate to the somewhat prescriptive nature of the scheme discussed above in s.1.2.2.1.2.

First, only SSSI agreements can be individually negotiated and thus, tailor- made to local conditions and the needs of local biodiversity.[820] AES agreements are agreements on pre-determined management options and cannot be tailored to the needs of the land, neither can they be modified to support experimental management (e.g to apply different management practices on different pieces of land).

Second these are fixed duration agreements. Older agreements schemes used to have a duration of ten years; current schemes provide for five year agreements. Only after this can Natural England amend the terms to account for ecological changes or new information. [821] Additionally, continuation of management depend on the willingness of the landowner to enter into a new agreement. Provided this is not the case, there can be no opportunity either for management or adaptation.

Third, there are very limited – if any options - to enter into multilateral agreements. The scheme is property oriented and as such cannot underpin coherent ecosystem-based management unless all landowners agreed on the same management options, which given that Natural England does not have any power to enforce specific options, is rather unlikely. Experimental (active)

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[820] However, it has been quite some time since SSSIs agreements started to be made and funded under the higher tiers of AES, rather than under S. 15 Countryside Act 1968 and schemes such as the now closed Wildlife Enhancement Scheme (WES). So even the flexibility of SSSI agreements has been considerably restricted.

[821] Although Natural England has the power to amend the agreement England, *Countryside Stewardship: Mid Tier Manual* (n692) 7.9.2 given that they have shown a preference for the partnership/consensus-based approach (*see* Chapter 6 below) it is highly unlikely they will take advantage of this power very often.

adaptive management becomes even more challenging, since it would require that agreements among the landowners of the lands in questions would start concurrently.

Nevertheless, this does not mean that management agreements as a conservation instrument are inherently inflexible. The management options and terms of agreements albeit pre-set and pre-determined by administration, can be modified by the latter, who has the power to make it less prescriptive and more flexible and thereby capable of underpinning the adaptive management of wider countryside.

4.3.4 Conclusions

In the light of all the foregoing, it can be argued that the English framework for nature conservation is not an alien, hostile environment for science-driven adaptive management. Both the 'scientific' and 'adaptive' part of this management approach can find - although certainly not without some limitations - space to operate. As mentioned above, in order for scientific adaptive management to happen a) science must be the only consideration driving the decision-making or one of many and the decision-maker willing to exercise its discretion in its favour b) the legal framework must be flexible enough to allow the administrative authority to amend a decision and afford it the power to enforce it.

As to the first, the analysis showed that science has a central role within nature conservation law and policy by being the primary driver of nature conservation decision-making in several procedures. At the top, we find site designation, which must take place exclusively on scientific grounds; no other considerations are allowed to influence decision making. What should be placed under legal protection remains a scientific matter and not a matter of politics or one of political expediency.[822] This works in favour of nature conservation.

[822] Although it needs to be acknowledged that political and ideological considerations usually lie behind Bill proposals.

However, there are certain disadvantages which have practical implications for aligning conservation efforts with ecological theories of complex ecosystem interactions, when we apply a narrow interpretation of scientific grounds based on concepts of rarity and vulnerability of species and habitats. A major implication of such an interpretation is that it will prevent Natural England from notifying areas that while not hosting any rare species or habitats, could nevertheless contribute to the creation of ecological networks, reduced fragmentation and better management and restoration of ecosystems.[823]

As to the second, the discussion revealed that legislation gives wide discretion to administration and at the same time power to enforce its decisions. Delegation of decision-making coupled with wide discretion and underpinned by judicial deference means that administration can tailor decision-making as it deems appropriate. Had the administration been bound by primary legislation to certain action, there would be no room for trying out different management approaches. At the same time, the regime is rather technocratic, adopting a top-down approach where decisions made by experts agencies are imposed either through the threat of prosecution or through contractual agreements.[824] However, this top-down approach ensures that natural England will be able to implement their original or modified decisions.

As for adaptation, the legal framework leaves room for the amendment of original decisions. In many cases there is much flexibility even as to when such amendment can take place; this is of great relevance to aligning adaptive decision-making with ecological cycles.[825] To name a few examples, English nature conservation law allows for the modification of an SSSI notification, for the amendment of the OLDs and provides for the review (and subsequently amendment of environmental permits.[826] The use of quality standards and

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[823] Natural England, *Natural England Designations Strategy* (July 2012) 13

[824] I am referring to AES agreements, since SSSI agreements can be negotiated between Natural England and the landowners.

[825] *See* ch. 3, s.3.3.1.1 on the mismatch of political and ecological timescales.

[826] The 'Environmental Permitting Regulations 2010 SI 2010/675 reg.34, require that the permits be reviewed periodically but do not define when the regulator should carry out a

open definitions give even greater flexibility to the regime. So, for instance, in relation to SSSI designation it would perhaps allow a wider interpretation of 'scientific' to include area of 'ecological interest' that could contribute to the creation of ecological networks. On the contrary, the prescriptive character of the WCA 1981 on species protection leaves no opportunity for extending protection to non-threatened but ecologically important species. Additionally, the lack of statutory monitoring duties in relation to SSSIs means that it is at the discretion of the competent authority to monitor and subsequently asses their condition or not. Without monitoring however, any adjusting management decision is not possible given that the 'adaptive loop' cannot close. On the other hand, it is likely that even initial planning is hindered, given that without monitoring there is no much baseline information. Hence, at least with regard to SSSIs, statutory monitoring requirements should be introduced along the same lines with 'surveillance' requirements in relation to European designations.

It follows that, at least within protected areas, whether conservation decision-making adheres to a static or dynamic and adaptive science-driven management is very much at the discretion of administration. Policy documents such the JNCC SSSI Selection Guidelines, making references to 'informed judgement', the SSSI notification strategy documents referring to SSSIs as parts of ecological networks and the Natural England Monitoring Standard suggest that at least on paper there has been a tendency towards the latter.

Hence, a minimal adaptive approach is possible, at least at an ad hoc basis, in smaller and better controlled areas like SSSIs. However, larger scale adaptive management will be more challenging. Even though introducing

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permit review. According to the guidance issued by DEFRA, the Environment Agency will determine when to carry out reviews, with regard to its experience of regulating the various sectors. The permits will be reviewed 'in the light of new information on environmental effects, best available techniques or other relevant issues'. *See* DEFRA available online at < https://www.gov.uk/government/publications/environmental-permitting-guidance-core-guidance--2>.

collaborative elements to substitute for legislation so as to allow for conservation management of the wider countryside, as discussed, AES agreements, although contractual are somewhat rigid and horizontal. At the same time, the multitude of regulations that relate - even remotely - to the implementation of an adaptive management plan adds an additional barrier to the implementation of large-scale adaptive management. Here, decentralisation, despite usually being associated with flexibility, becomes somewhat problematic. More specifically, the implementation of a large-scale adaptive management plan - especially in more structured, experimental forms - would require a number of permits, permission, consents and licenses. That would require the temporal coordination of all authorities participating in decision-making procedures relevant to the implementation of the plan so that all decisions are reviewed and if needed, amended according to the plan's monitoring and decision-adjustment stages. It would also require a shift in decision-making timescales to match that of the ecological system in question.

5 Adaptive management as a mechanism for conflict resolution

The ecological basis for adaptive management has been the recognition of ecosystems as complex, dynamic, ever changing systems. However, as became clear in the first chapter of this thesis, ecological change, complexity and inconclusive knowledge are not the only challenges in designing and implementing effective management plans for nature conservation. Human relationships and relationships between humans and the ecosystems are also complex. Social-ecological complexity becomes a major obstacle as conservation moves beyond areas of wilderness and expands to areas where people leave and interact.

This is particularly true of the European landscape, which is largely the result of centuries of dynamic interaction between humans and nature.[827] It is even more relevant for the English countryside, whose land has been farmed and been exploited for centuries. Humans and the natural environment have been in constant interaction on this densely populated island, so that most English semi-natural rather than natural habitats have been modified if not created by humans. [828] This close interaction between man and nature essentially means that biodiversity conservation management will necessarily involve land inhabited or used by humans, and in particular in the case of England, large areas of land under private ownership. Thus, it is highly likely that conservation measures, regardless of whether they are legally mandated or not, will touch upon interests of a wide array of stakeholders. Technocratic, science-based approaches such as adaptive management are efficient enough in addressing ecological and scientific uncertainty but less capable of handling social complexity and resulting conflict.[829]

This chapter looks at adaptive management as a 'management logic' that steps away from the adversarial approach to conflict resolution taken by

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[827] E. M. Bignal and D. I. McCracken, 'The nature conservation value of European traditional farming systems' (2000) 8 Environmental Reviews 149, 149.
[828] Lawton and others(n36) para.2.1.2.
[829] G Walkerden, 'Adaptive Management Planning Projects as Conflict Resolution Processes' (2005) 11 Ecology and Society art.48.

traditional legal instruments, which tend to prioritise one or the other of competing interests. The degree of complexity characterising social and natural processes allows little room for a 'right answer approach'.[830] Adaptive management can be seen as supporting trade-offs and compromises within a framework that underpins negotiation and mediation rather binary resolution. To achieve this, the adaptive management model explored in this chapter, stresses the need for cooperation and broad stakeholder involvement within the different stages of the decision-making process. Such an approach falls within the wider range of governance models that developed as a response to criticisms over the traditional top-down administrative law-making for being too 'rigid, too hierarchical and too contentious to achieve its goals' [831] within a complex society 'where laws designed for particular purposes can have unanticipated consequences'.[832] Such an assertion is even more relevant to nature conservation decision-making given the exacerbation of existing social complexity when combined with ecological unpredictability and uncertainty.

In this chapter, adaptive management is viewed as a mechanism to address social complexity by enabling private actors to get involved with processes traditionally belonging to the public sphere of bureaucracy.[833] In literature it is found under the operational definitions of adaptive collaborative management and adaptive co-management.[834] As such, adaptive

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[830] Reed and Sidoli Del Ceno (n60) 226.

[831] Annecoos Wiersema, 'Train without Tracks: Rethinking the Place of Law and Goals in Environmental and Natural Resources Law' (2008) 38 Envtl L 1239, 1241.

[832] Ibid.

[833] D. Armitage, F. Berkes and N. Doubleday (eds), *Adaptive Co-Management: Collaboration, Learning, and Multi-Level Governance* (UBC Press, 2010).

[834] F. Berkes, 'Adaptive Co-Management and Complexity. Exploring the Many Faces of Co-Management' in D. Armitage, F. Berkes and N. Doubleday (eds), *Adaptive Co-Management: Collaboration, Learning, and Multi-Level Governance* (UBC Press, 2010); Christo Fabricius and Bianca Currie, 'Adaptive Co-Management' in C.R. Allen and A. Garmestani (eds), *Adaptive Management of Social-Ecological Systems* (Springer 2015); Plummer and others (n114); P.Olsson , C. Folke and F. Berkes , 'Adaptive co-management for building resilience in social-ecological systems' (2004) 34 Environ Manage 75; Lynn Scarlett, 'Collaborative Adaptive Management: Challenges and Opportunities' (2013) 18 Ecology and Society art.26; However, it needs to be stressed that even when reference is made to 'adaptive management'

co-management can be seen as a conflict resolution mechanism providing a platform for bottom-up decision-making based on negotiation, mediation and trade-off among regulatory agencies and private actors who despite their differences share a common objective: conserving nature.

5.1 Adaptive Collaborative Management: blending iterative learning with collaboration

The first experiences with adaptive management implementation revealed the incompetence of a technocratic, 'experts know best' management approach[835] to handling social complexity.[836] For instance, McLain and Lee assert 'the scientific adaptive management approach has failed to provide adequate forums for the creation of shared understanding among stakeholders'.[837] A science-based process like adaptive management could address ecological uncertainty more efficiently than it could address social complexity.[838] In response, a novel form of environmental governance emerged emphasizing the social aspect of complexity as identified by Kai Lee in his work *Compass and gyroscope : integrating science and politics for the environment*[839]. This newly emerged approach is viewed in the literature as having the potential to 'deal with the complexity of independent social-ecological systems (SES) and enhance the fit between ecosystem dynamics and governance systems'.[840]

The new approach is known as adaptive co-management or adaptive collaborative management. Adaptive co-management bridge and blends the

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stakeholder participation is often seen as an essential component: *See* National Research Council, *Adaptive management for water resources project planning* (n353).

[835] Berkes (n834) 29.

[836] Lee, 'Appraising Adaptive Management' (n72).

[837] Rebecca J McLain and Robert G Lee, 'Adaptive management: Promises and pitfalls' (1996) 20 Environmental Management 437.

[838] Walkerden (n829) 1.

[839] Lee, *Compass and gyroscope: integrating science and politics for the environment* (n71)

[840] P. Olsson, Ö Bodin and C. Folke, 'Building transformative capacity for ecosystem stewardship in social– ecological systems.' in D. Armitage and R. Plummer (eds), *Adaptive Capacity and Environmental Governance* (2010), 263.

epistemologies of adaptive management and collaborative management to generate a distinct, hybrid approach.[841] More specifically, citing Plummer et al:

> Adaptive management focuses on learning-by-doing, takes place over the medium to long term through cycles of learning and adaptation, and concentrates on the relationships, requirements, and capacity of managers. Co-management establishes vertical institutional links, tends to produce snapshots with short to medium timeframes, bridges local level and government level(s), and is concerned with the capacity of resource users and communities. Adaptive co-management thus forges links (both horizontal and vertical) for shared learning-by-doing between various actors, over a medium to long time horizon. It is multi-scale in spatial scope and concerned with enhancing and including the capacity of all actors with a stake for sustainably managing the resource at hand.[842]

The new approach is an expanded version of adaptive management into collaboration and partnership theories and of co-management towards complexity science and resilience thinking.[843] Given the fact that the scientific, experimental model of adaptive management is a response to scientific and ecological uncertainty and the collaborative model a response to social complexity, the amalgam of adaptive collaborative management can be seen as a bridge that connects social institutions and biophysical systems,[844] and therein as a process to address both facets of social-ecological complexity. Within this context, learning is still crucial, but it differs qualitatively from learning within scientific adaptive management. It is the social and collaborative learning approaches that prevail.[845] By broadening the scope of knowledge contributions, the technocratic character of scientific adaptive management is significantly weakened.[846] Injecting collaborative elements widens the scope of the adaptive approach and opens up new perspectives for

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[841] Plummer and others (n114)1.
[842] ibid.
[843] ibid.
[844] ibid.
[845] Jacobson and others (n73) 487.
[846] ibid.

its utilisation.[847] Hence, largely undermined forms of knowledge, such as traditional and local, and new variables such as local needs, interests and circumstances, find their way into biodiversity conservation management.

Plummer and FitzGibbon understand co-management 'to include learning by doing, integrate multiple knowledge systems, emphasizing flexibility on management structures, and advancing collaboration through power sharing at multiple scales'.[848] Under this interpretation adaptive management can be seen as a mechanism that can accommodate conflict resolution techniques for resolving or perhaps more accurately reducing conflict that first and foremost require active stakeholder engagement.[849] This chapter focuses on the collaborative part of adaptive management in a conflict resolution context drawing from literature on adaptive collaborative management, conflict resolution and participatory decision making.

5.2 Adaptive collaborative management as a conflict resolution mechanism.

Plummer's et al systematic review and analysis of adaptive co-management literature, revealed 'imprecision, inconsistency, and confusion with the concept.[850] The analysis, revealed discrepancies in definition. Bridging the learning component of adaptive management and the linking function of collaboration has been found to be the most cited purpose.[851] An equally recurrent theme was adaptive co-management as 'encompassing collaboration, the capacity to adapt and some additional aspect'[852] such as

[847] Berkes (n834).
[848] R. Plummer and John FitzGibbon, 'Connecting Adaptive Co-Management, Social Learning, and Social Capital through Theory and Practice' in D. Armitage, F. Berkes and N. Doubleday (eds), *Adaptive Co-Management: Collaboration, Learning, and Multi-Level Governance* (UBC Press 2010), 39.
[849] Steve M. Redpath and others, 'Understanding and managing conservation conflicts' 28 Trends Ecol Evol 100.
[850] Plummer and others (n114) 1.
[851] ibid, 5.
[852] ibid.

knowledge, resilience, enhanced management etc.[853] Several adaptive co-management components emerge in the literature together with a large number of actual and potential outcomes.[854] Knowledge and learning are the two primary themes in the adaptive co-management literature but as indicated above not in their narrow technocratic sense.[855]

Although not among the most commonly cited purposes of adaptive management, conflict resolution is a frequently emerging theme in literature on the collaborative adaptive management model.[856] Conflict and conflict resolution have a multi-faceted relationship with adaptive co-management. Balancing interests and resolving conflicts can be seen as a purpose, a desirable outcome or a factor contributing to the success of adaptive co-management.[857] From the policy maker's perspective, adaptive management is a means for designing effective policy frameworks. Therefore, dispute resolution is not the overall purpose of adaptive management in the same sense it is the primary objective of other processes such as litigation. Like adaptive management itself, conflict resolution is a means to an end. It is a prerequisite for reaching to decisions that can be effectively implemented. In this sense, conflict resolution can be seen as an interim objective and potential outcome of the adaptive, collaborative process.

The collaborative component of adaptive co-management is the one more relevant to the resolution or reduction of conflict. Collaboration is defined as 'the situation of two or more people working together to create or achieve the same thing'.[858] In this case, the common objective is nature conservation. In that sense, collaboration entails participation, thus, falling within participatory procedures which are deemed instrumental in *i.a.*

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[853] ibid.
[854] ibid, 6-7.
[855] ibid, 6.
[856] Robert S. Pomeroy and Fikret Berkes, 'Two to tango: The role of government in fisheries co-management' (1997) 21 Marine Policy 465; Walkerden (n829); J. R. A. Butler and others, 'Evaluating adaptive co-management as conservation conflict resolution: Learning from seals and salmon' (2015) 160 Journal of Environmental Management 212.
[857] Plummer and others (n114).
[858] Cambridge Online Dictionary.

resolving conservation conflicts.[859] Although participation is a *sine qua non* of collaboration, participation may occur without the latter; participating in a process does not necessarily mean working together with other participants in a joint manner towards a common objective. In this sense collaboration can be seen as the result of an active, meaningful participatory based processes. As I argue in the next section, processes belonging to lower levels of participation (e.g. information) should not be seen as reflecting collaborative management.

More specifically, the collaborative learning process allows for affected stakeholders to work together and reach mutually agreeable solutions. Adaptive co-management provides a context for ongoing dialogue, among scientists, public authorities and private interests,[860] facilitates the building of trust-based relationships [861] and allows bargaining processes such as negotiation and mediation to enter the field of policy making. [862] How collaboration is structured and who collaborates with whom depends on the desirable outcome of the process. Hence, seeing collaborative management through a knowledge generation lens is different to adaptive collaborative management as a conflict resolution process.

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[859] Mark S. Reed, 'Stakeholder participation for environmental management: A literature review' (2008) 141 Biological Conservation 2417.
Although the focus of this study is conflict resolution, claims from participatory approaches are not limited to resolving tensions among stakeholders. From a normative perspective, it provides democratic legitimacy to what are largely science based decisions. A broader range of actors are given the opportunity to participate in decisions that affect them, and active citizenship is promoted. *See* ibid, 2420. For some scholars, these democratic values underpin a less elitist form of wider public participation. *See* Susanne Stoll-Kleemann and Martin Welp, 'Towards a More Effective and Democratic Natural Resources Management' in Susanne Stoll-Kleemann and Martin Welp (eds), *Stakeholder Dialogues in Natural Resources Management: Theory and Practice* (Springer Science & Business Media 2007); From a pragmatic perspective, claims focus on the quality of decisions given the wider knowledge pool available. Stoll-Kleemann and Welp argue in that respect: 'Problems in today's world are increasingly complex, and proposed solutions demand knowledge from many different domains; no single agent possesses all relevant knowledge. Rather many different actors have specialised knowledge bases which need to be brought together'. Ibid, 18

[860] Scarlett (n834) 5.

[861] John Schelhas, Louise E. Buck and Charles C. Geiser, 'Introduction: The Challenge of Adaptive Collaborative Management' in Louise E. Buck and others (eds), *Biological Diversity: Balancing Interests Through Adaptive Collaborative Management* (CRC Press 2001), xxx

[862] Walkerden(n829).

Notwithstanding the crucial contribution of collaboration in defusing tension, the dynamic and iterative nature of adaptive co-management is also of relevance. Conflicts do not occur in a vacuum 'but in a context, local, regional, or international, a context that may be changing over time and has often unforeseen effects on the conflict's structure and parties'.[863] Conflict is itself complex and as such also requires flexible approaches.[864] In this respect, management decisions are not only adapted to the evolving scientific knowledge but also to social changes and priorities and constantly changing interests that may form potential sources of conflict. In relation to conflict resolution, adaptation and collaboration have an intertwined dynamic relationship with the processes of creating knowledge that feed the iterative learning process of adaptive management, which is likely to result in the adjustment of decisions to better accommodate the changing and diverse interests.

Fabricius and Currie identify four cornerstones of adaptive co-management:[865]

1. An enabling environment through institutional arrangement (norms and rule), leaderships, policies and legislation (e.g. incentives)
2. Learning through experimentation, monitoring and evaluation in a real-world setting
3. Collaboration across a diversity of stakeholders sharing a resource, rights and responsibilities at multiple levels and scales
4. In a cyclical iterative process

The second and fourth characteristics are features of the adaptive component that has already been discussed. The following paragraphs explore

[863] Giorgio Gallo, 'Conflict Theory, Complexity and Systems Approach' 30 Systems Research and Behavioral Science 156, 156.
[864] Ibid.
[865] Fabricius and Currie, (n834) 147-148.

adaptive co-management focusing on the component of collaboration through the lens of conflict resolution. Although the general principles underlie all aspects of adaptive management, the objectives and desirable outcomes from its implementation, as one would suspect, dictate the way it is structured and implemented. Finally, I discuss the how legal and institutional frameworks may prevent or enable the implementation of adaptive co-management.

5.2.1 Unravelling the collaborative component of Adaptive Co-Management

As with many of the concept used in this thesis, there is no single definition of collaborative management.[866] Common ground to all definitions is some degree of interaction and collaboration among various stakeholders.[867] What is of interest is that although collaborative management is part of the wider body of literature on environmental governance[868] and a general trend to move away from conventional forms that emphasize the traditional distinction between the state and the regulated, this implicit dichotomy nevertheless underlies the typical definition of co-management as some kind of 'power sharing arrangement between the State and community users.'[869] Carlsson and Berkes assert that 'this picture is based on an ideal image of the State as some kind of monolithic structure, and neglects the fact that not only communities but also the State itself has many faces'.[870] In fact, a

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[866] F Berkes, P George and R Preston, 'Co-Management: The Evolution in Theory and Practice of the Joint Administration of Living Resources' (Second Annual Meeting of IASCP University of Manitoba, Winnipeg, Canada, Sept 26-29, 1991), 6 available at http://dlc.dlib.indiana.edu/dlc/bitstream/handle/10535/1506/Co-Management_The_Evolution_in_Theory_and_Practice_of_the_Joint_Administration_of_Living_Resources.pdf?sequence=1&isAllowed=y, accessed November 2016.

[867] D. Armitage, F. Berkes and N. Doubleday, 'Introduction: Moving Beyond Co-Management' in D. Armitage, F. Berkes and N. Doubleday (eds) (n833) 5-6 laying down several definitions and features of adaptive co-management found in literature.

[868] In the literature adaptive co-management is frequently understood as a mechanism i.e. model, approach, strategy, method, system, tool for making governance operational. *See,* Ryan Plummer and others, 'Adaptive Comanagement and Its Relationship to Environmental Governance' (2013) 18(1) Ecology and Society art21, 4.

[869] L. Carlsson and F Berkes, 'Co-management: concepts and methodological implications' (2005) 75 Journal of Environmental Management 65, 65.

[870] ibid.

number of agencies, authorities and institutions belonging to the public sphere, often with conflicting mandates, fall within the notion of 'State', in a similar way a number of diverse interests fall within the notion of 'resource users'.[871] Therefore, a mere dichotomy between the 'State' on the one hand and the 'resource users' on the other is somewhat simplistic representation of the degree of complexity of interlinking interests.[872]

Borrini-Feyerabend and Buchan refer to partnership formation with state actors having a leadership role, sharing the management functions but retaining the decision-making power:

> The term "collaborative management" (also referred to as co-management, participatory management, joint management, shared management, multi-stakeholder management or round-table agreement) is used to describe a situation in which some or all of the relevant stakeholders in a protected area are involved in a substantial way in management activities. Specifically, collaborative management process, the agency with jurisdiction over the PA (usually a state agency) develops a partnership with other relevant stakeholders (primarily including local residents and resource users) which specifies and guarantees their respective functions, rights and responsibilities with regard to the PA.[873]

Definitions such as those of the World Bank and the World Conservation Congress view co-management as a collaborative process where all stakeholders are treated equally, regardless of whether they represent the State or private interests:

Under the World Bank definition co-management is:

> the sharing of responsibilities, rights and duties between primary stakeholders, in particular, local communities and the nation state; a

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[871] For instance, local planning authorities and nature conservation bodies when the former is expected to provide for adequate housing and the latter to conserve biodiversity; or when Natural England might need planning permission to carry out management activities to which local planning authorities might not consent. The case study that follows provides an example of various stakeholders' interaction.

[872] *See infra* figure 4 of a co-management network.

[873] Grazia Borrini-Feyerabend and Dianne Buchan (eds), *Beyond fences: seeking social sustainability in conservation Vol.I* (IUCN 1997) 16

> decentralised approach to decision-making that involves the local users in the decision-making process as equals with the nation-state.[874]

The World Conservation Congress defines co-management as:

> a partnership in which government agencies, local communities and resource users, non-governmental organisations and other stakeholders negotiate as appropriate to each context, the authority and responsibility for the management of a specific area or set of resources[875]

The key element of all depictions of co-management is collaboration among diverse stakeholders. Theories of participatory involvement in decision-making are introduced into natural resources management. Several scholars have identified different types and degrees of stakeholder engagement and ultimately power-sharing with state actors.[876] Over the years several participation typologies have been developed in the literature based on the degree of involvement and the nature of engagement, on their theoretical basis and on the objective for which participation is used.[877]

One of the most prominent works has been that of Arnstein's 'ladder of citizenship participation'[878] within which, as the title suggests, the author depicts the different levels of participation as ladder rungs. The two bottom rungs, referred to as "manipulation" and "therapy", 'describe levels of "non-participation" that have been contrived by some to substitute for genuine participation' and are associated with participants' education by "powerholders".[879] The three middle tiers are "informing", "consultation" and "placation" and allow participants to be heard but decision-making authority is retained by the "powerholders". Finally, the three upper rungs are levels with increasing degrees of genuine shared decision-making power. These are:

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[874] Plummer and others (n114) 1.
[875] ibid.
[876] Sherry R. Arnstein, 'A ladder of citizenship participation' (1969) 35 Journal of the American Institute of Planners 216; Jules N. Pretty and International Institute for Environment and Development. Sustainable Agriculture Programme., *A trainer's guide for participatory learning and action* (Sustainable Agriculture Programme, International Institute for Environment and Development 1995).
[877] Reed (n859) 2419.
[878] Arnstein (n876).
[879] ibid 216.

"partnership" that enables [citizens] to negotiate and engage in trade-offs with traditional power holders and the two the topmost rungs, "Delegated Power" and "Citizen Control", where participants acquire full managerial power. [880] Rowe and Frewer distil participation on the basis of the direction that information flows between parties. [881] They distinguish between "communication", which is 'information dissemination to passive recipients', "consultation" including 'gathering information from participants' and finally "participation", which is conceptualised as 'two-way communication between participants and exercise organisers where information is exchanged in some sort of dialogue and negotiation'.[882] Although they look at participation from a different perspective, Rowe and Frewer's typology broadly coincides with Arnstein's "ladder" in the sense that they both start from a passive dissemination of information towards increasing stakeholder engagement and increasing information flow. The two are closely related since active stakeholder engagement cannot happen without information exchange and two-way information flow cannot happen without some form of active stakeholder engagement.

As Reed notes, other typologies focus on the theoretical basis and distinguish between: "normative participation" which 'focuses on process, suggesting that people have a democratic right to participate in environmental decision-making and "pragmatic participation" which looks at participation as 'a means to an end, which can deliver higher quality decisions.'. [883] Participation is also categorized on the basis of the objective that is being used for. This is for example Okali et al's distinction between "research-driven" and "development-driven" participation.

Modelling onto Arnstein's participation ladder, Berkes et al built the co-management ladder with levels of collaboration based on stakeholders' engagement on a continuum from 'informing' to 'joint decision making'.

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[880] ibid.

[881] G. Rowe and L Frewer, 'Public participation methods: a framework for evaluation.' (2000) 25 Science, Technology and Human Values 3, cited in Reed (n859) 2419.

[882] ibid.

[883] Reed (n859) 2419.

Moving towards the upper rungs of the ladder, decision-making transitions from top-down to bottom-up, gradually bridging the gap between the regulators and the regulated:

Informing	Information is supplied to them [users] on existing rules and regulations, schedules and changes. At this stage, response of users may be sought and facilitated but more likely there will be one-way communication, often in technical jargon.
Consultation	Involves an explicit attempt to obtain the views of users. The community may be consulted about a development project, or change in hunting regulations, or there may be feedback of research results. There is face-to-face contact. Resource users may be heard but not heeded, and perhaps not even understood.
Cooperation	The stage at which there is more than just talk; parties may work on a conservation brochure together. The use of local environmental knowledge and of native research assistants falls into this stage. But typically, the research being carried out follows the government agenda. Locals are involved at a low level as assistants or guides. Nevertheless, the mere fact of cooperating on a project means that there is a softening of attitudes. Mutual disrespect that often characterizes the lower rungs gives way to some appreciation of the abilities of the other party.
Communication	This stage marks the start of two-way information exchange. Research agendas or resource management decisions begin to take into account the expressed needs of the community. Local concerns are deemed legitimate and taken seriously. Local knowledge is not merely used to aid research but also to respond to community concerns. Nevertheless, the government agency still retains all powers of decision-making.

Advisory Committee	This is the stage at which effective partnership in decision-making starts. There is an agreement to share both power and responsibility for resource management through joint boards or committees. Such joint bodies often come about as a result of a land claims agreement or to try to resolve a resource management impasse. At this stage, there is a search for common objectives, as often happens in negotiation and mediation. But co-management is often ad hoc and sectoral. The joint committee has advisory powers only; it recommends rather than makes decisions.
Management Boards	Represent a higher rung if they have more than a merely advisory function. At this stage, the community is not only searching for common objectives but also acting on them. Further, local users are involved in policy-making as well as in decision-making. Board decisions are usually binding.
Joint Decision Making: Community Control and Partnership	Joint decision-making is institutionalized and there is a partnership of equals. In situations in which resources are manageable locally (e.g. beaver), most or all management power is delegated to the community. With such local resources, there is full community control which is legally legitimized by central government. In other situations, in which resources cannot be managed locally, as for example with migratory species, resource users participate in decision-making as equal partners. This last stage in the co-management ladder follows the principle: "as much local-level management as possible; only so much government regulation as necessary".

Table 1, Ladder of Co-Management, (from Berkes et al)[884]

While Berkes et al consider mere information as the first level of collaborative management, for other authors collaborative management involves higher levels of engagement with more active involvement where information and views are exchanged among participants. [885]

[884] Berkes, George and Preston (n866) 36.

[885] L.C Stringer and others, 'Unpacking "Participation" in the Adaptive Management of Social–ecological Systems: a Critical Review' (2006) 11 Ecology and Society art. 39; Robert J. Fisher, 'Experiences, Challenges, and Prospects for Collaborative Management of Protected Areas: An International Perspective' in Louise E. Buck and others (eds), *Biological Diversity: Balancing Interests Through Adaptive Collaborative Management* (CRC Press 2001).

Given the complex nature of socioecological systems and the diverse uses and implementation contexts of adaptive co-management, it is not possible to draw generalised conclusions on the optimum level of involvement along the continuum. This will largely depend upon adaptive co-management's wider purpose, the specific objectives and expected outcomes. Inconsistency should also be expected when adaptive management transits from theory into practice. It is rather unlikely to come across the same social and ecological conditions and management problems. Arguably there might be as many adaptive co- management models as the cases of its implementation. Besides, adaptive co-management is dynamic and adaptive itself. The ability to adapt should be seen not only in relation to decision-making but the process itself.[886] Having said that, what follows below is a discussion on an adaptive co-management model as a conflict resolution process. The discussion takes places against three elements: a) the actors involved in the process b) the level and nature of stakeholder engagement and c) legislative and regulatory arrangements. Before however looking into the specifics, I seek to answer the 'why' question: why adaptive management is better suited to address conservation conflict than traditional adjudication; what makes this approach appealing to decision-makers and why it should be preferred to traditional administrate regulatory systems.

5.2.2 Why use adaptive (co)-management to resolve conservation conflicts?

Being complex, social-ecological problems, conservation conflicts are not always straightforward but rather polycentric multi-partied and multi-issued disputes.[887] Additionally, the need to develop an ecosystem approach

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[886] Carlsson and Berkes (n869) 67 stress in this respect: 'in contrast to the ideal image of formal organisational hierarchy, co-management should not be conceptualised as 'one shot' only…the system should be understood as a process in which the parties and their relative influence, positions and activities are continuously re-adjusted'.

[887] Reed and Sidoli Del Ceno (n60) 229; A typical such example is provided by Karkkainen in Karkkainen, 'Adaptive Ecosystem Management and Regulatory Penalty Defaults: Toward a Bounded Pragmatism' (n74) 946 who describes the number of interests and stakeholders involved in a typical estuarine ecosystem.

implies that focus should shift from species and protected areas to larger scale management, which essentially means that more parties, thereby more interests, are likely to be affected. Against this background, top-down binary, conflict resolution approaches that seek to identify and impose the 'right answer' – such as conservation laws and regulations - fall sort of their expectations[888] and it is often the case that they aggravate rather than reduce existing conflict.[889] Combing the iterative learning and knowledge creation with power sharing and collaboration, adaptive co-management can be seen as a means to address conservation disputes.

To begin with, adaptive collaborative management underpins the participatory bottom-up approaches that are increasingly seen as more suitable to 'avoid, cope with or resolve conflicts'.[890] It provides a context for ongoing dialogues among all those with a potential interest such as scientists, regulatory agencies and public authorities, the private sector, local communities and conservation NGOs. An opportunity arises for those involved to develop a shared understanding of the problem, and from there to work together to resolve it.

Adaptive co-management breaks through the traditional bureaucratic hierarchical systems of organisation and establishes links across the different levels and types of organisations allowing their representatives to coordinate their work in relation to a specific area or resource system.[891] It also establishes horizontal links among resource users and vertical links between the state and the regulated. Carlsson and Berkes formulated a version of co-management network to reflect the pdynamic but also hierarchical relations between resources users[892]

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[888] Reed and Sidoli Del Ceno (n60) 226-228.
[889] *See* discussion in chapter 2, s.2.3.2.
[890] Reed and Sidoli Del Ceno (n60) 226.
[891] Carlsson and Berkes (n869) 72.
[892] ibid 69.

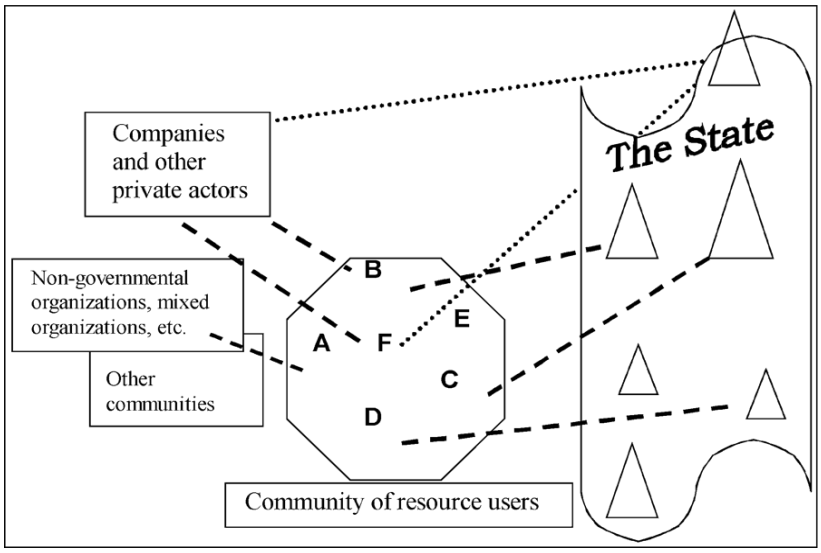

Figure 4 Example of a co-management network (from Carlsson and Berkes)[893]

Carlsson and Berkes write with respect to the 'network' version of co-management illustrated in the figure above:

> [..]different types of management tasks are illustrated by the labels A–D. For example, one state authority is involved in one type of task while another might be related to a different one. The dotted lines indicate that relations between actors might be dissimilar, both in terms of content and intensity. For example, within the same community of resource users, private companies might be involved in the planning of harvesting (perhaps the community has bought this service from company) at the same time as **State authorities have an important say** on how the activities should be performed. […] these sets of relations are illustrated by the differently dotted lines to the same task, e.g. 'F'. This is how many social networks work. The network approach to co-management appreciates that it is the totality of such relations that make up the system, the co-management network.[894]

Carlsson and Berkes diagramme of a commangement network manages to depict, the diverse range of multi-level interactions and the web of relation among resource users and the heterogeneity of users perceived to be a unity e.g the State – which however might include central government, local authorities, statutory agencies whose priorities more than often might be

[893] ibid; *See also* s. 9.2.1 an adaptation of the scheme to represent the network of relations in the Humberhead Levels (figure 14).
[894] ibid (my highlighting to emphasize the fact that the state retains a superior role).

different. Even the different 'fragmentations' of the state might have internally, conflicting priorities. The Environment Agency is such an example; being both an environmental agency with a duty to enhance the environment but also responsible for managing flooding risk. It is more than likely that the latter might require measures with negative impacts to the nature environment.

Accordingly, adaptive co-management provides a format within which a genuine reflexive relationship between the regulator and the regulated is allowed to flourish. Contrary to laws and regulations, adaptive co-management does not seek to clearly prioritise certain aspects of the controversy but rather to develop mutually agreeable solutions. It does so by setting out a framework for collaborative and problem-solving processes like negotiation and mediation rather than adversarial and competitive adjudication.[895] The 'right answer', winner-loser approach gives way to compromise and settlement agreements.

- Identify (potential) conflicts

More specifically, to begin with, as with all participatory processes, adaptive co-management allows stakeholders to get involved throughout all management stages from planning to implementation, monitoring and evaluation.[896] When aimed at conflict resolution, interested stakeholders should be identified and participate very early in the process, ideally at the planning stage. In this way, all interested parties will be given the opportunity to express their interests, needs, priorities and views on the issue in question. Thus, participants can come to a realisation as to the extent which their interests may converge, or entirely diverge, and potential sources of conflict can be identified. What is important is that at this stage conflicts are still latent; they are yet to arise. Adaptive co-management is in this sense and contrary to law, a proactive rather than reactive way to deal with conservation

[895] Walkerden (n829) 2.
[896] Reed (n859) 2422.

conflict. It follows that adaptive co-management can been be seen as a conflict prevention mechanism.

Participating stakeholders are given the opportunity to identify their non-negotiable positions and to what extent they are willing to compromise. This will help establish a baseline for negotiations, bargaining and ultimately consensus building. Some of the interests put forward are expected to overlap and some to be mutually exclusive. For example, common ground and agreements can be reached between farmers managing land for agricultural purposes and nature conservation organisations and/or bodies that seek to manage the land for its conservation interest. In these cases, an agreement is possible. On the other hand, development works and infrastructure projects likely to destroy natural habitats are often incompatible with nature conservation objectives. In this case, adaptive co-management becomes a system of interlinked quid quo pros where balancing interests is sought through trade off instruments.

- Relationships of trust

Second, by establishing a framework for effective inter-communication, adaptive co-management has the capacity to build relationships of trust among those involved as well as align stakeholders' perceptions and perspectives that are often only superficially contradictory. Oftentimes, conflicts arise as a result of subjective and personal perceptions, misinformation and misunderstandings rather than actual discrepancies.[897] Engaging in constructive dialogues enables participants to listen with less prejudice to other perspectives, acknowledge the legitimacy of other participants' interests and re-evaluate their own assumptions and positions.[898] Adaptive co-management allows for well-informed, educated

[897] A typical example are disputes following the designation of protected areas due to misunderstandings as to the impacts of designation on land uses. Bouwma, Apeldoorn and Kamphorst para. 4.4.1.

[898] Reed and Sidoli Del Ceno (n60) 230; *See also* Walkerden (n829) 2 discussing how adaptive management workshops manage to shift the attention from positions that '*express no negotiable commitments about how the position-taking party will behave, and/or*

participants and becomes more about 'joint exploration' rather than 'compromise'.[899]

- Facilitating Implementation

A third reason why conservation conflicts are better dealt with through adaptive collaboration rather than traditional command and control relates to the quality of the decisions made. Besides the fact that the outcome of the process are well-informed decisions drawing from a wide range of information inputs, these decisions also reflect the views of involved parties who, provided that there has been a thorough participants' selection procedure, are required and expected to implement them. As such, reaching the stage of implementation, they will be more willing to implement decisions for which they feel partially responsible and are the result of genuine deliberation rather than top-down imposition and coercion.[900]

A dispute-free, smooth implementation means greater conservation benefit but also fewer delays to development projects and obstacles to socio-economic interests. For instance, following the development of a mutually accepted management plan, all those involved are aware of the limitations and expectations they may have when the time comes for its implementation. Knowing for instance that the exclusion of certain activities or land uses from a certain area has been agreed, will discourage individuals or organisations from applying for approval of such an activity; and vice versa when for instance certain areas have been allocated for house developing as part of a management plan, relevant planning permissions should be expected to be granted and in even shorter timetables since many of the procedures that are often source of delay on these occasions – knowledge generation,

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prescription for the behaviour of other parties' to interest that often have a legitimacy that others can recognize, notably, when they embody basic needs that we all share.

[899] Walkerden (n829) 3.

[900] Reed and Sidoli Del Ceno (n60) 230;
For a country like England, where conservation management activities are carried out largely by private landowners, volitional implementation of management decisions is paramount.

controversies, balancing of interests - will have already taken place during the planning stage of adaptive co-management.

- Technical solutions to resolve conflicts

Finally, adaptive co-management facilitates conflict resolution through technical and science-based means. A technical approach is necessary to address what Niemela et al refer to as the 'substance' dimension of the conflict. [901] Stakeholder participation is necessary but without the underpinning of scientific research and/or local people, expertise cannot lead to feasible solutions.[902] The relevance of adaptive co-management is twofold, drawing from both the adaptive and collaborative components. It has already been extensively discussed how adaptive management emphasizes evolving scientific knowledge as the basis for natural resources management. In relation to conflict, scientific research can lead to technical solutions that reduce the impact of human activities to conservation and vice versa.

At the same time, adaptive co-management provides a platform for communication between scientists and affected stakeholders. Hence, scientists are not working in isolation but with interested parties to provide specific solutions to particular problems. Adaptive co-management provides a platform for scientists to communicate these solutions to affected parties and test their effectiveness in reducing the impacts that become sources of conflict. The interaction between scientists and resource users also provides an opportunity to integrate formal science and traditional knowledge towards even more effective technical solutions. Collaborative interactions among stakeholders are not fixed in time but taking place within an iterative circle of learning, according to the adaptive management principle. Here it is the

[901] The 'substance' dimension of conservation conflicts refers to 'how things are' rather than 'how things are done', and 'how people behave' referred to as 'procedure' and 'relationships' dimensions respectively and are better dealt through collaboration, communication and exchange of views and perspectives. Jari Niemelä and others, 'Identifying, managing and monitoring conflicts between forest biodiversity conservation and other human interests in Europe' (2005) 7 Forest Policy and Economics 877, 881.
[902] ibid, 883.

'conflict resolution' learning and approaches that are being tested on a dynamic model of adaptive 'conflict resolution' collaborative management.

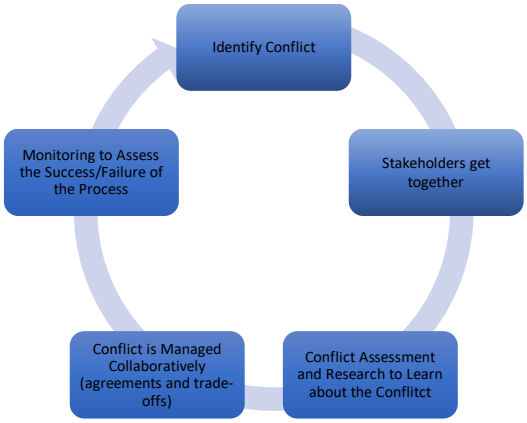


Figure 6 Reactive 'Conflict Resolution' Management Model (adapted from Niemela et al) [903]

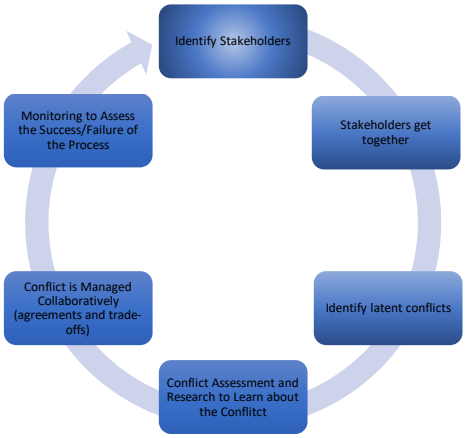


Figure 5 Proactive 'Conflict Resolution' Management Model

5.2.3 Identifying Stakeholders

It is very important to ensure that influential and affected parties are included in the collaborative process of adaptive co-management.[904] This is true of all models of adaptive co-management, but even more relevant for a conflict resolution; failure to include stakeholders likely to affect or be affected by conservation decisions makes it extremely difficult, if not downright impossible to effectively address conflict.[905] As to when participation should take place, the literature and practice indicate that it can occur at different stages of implementation.[906] Reed refers to identifying stakeholders as an 'iterative process, where stakeholders are added as the analysis continues'.[907] However, for optimal decision-making stakeholders should be actively engaged from as early as possible.[908] In particular, when diffusing tensions

[903] ibid, 886.
[904] Lawrence Susskind, Alejandro E. Camacho and Todd Schenk, 'Collaborative Planning and Adaptive Management in Glen Canyon: A Cautionary Tale' (2010) 35 Colum J Envtl L 1, 32
[905] Walkerden, (n829) 2.
[906] Stringer and others (n885) 4.
[907] Reed (n859) 2423.
[908] ibid 2422.

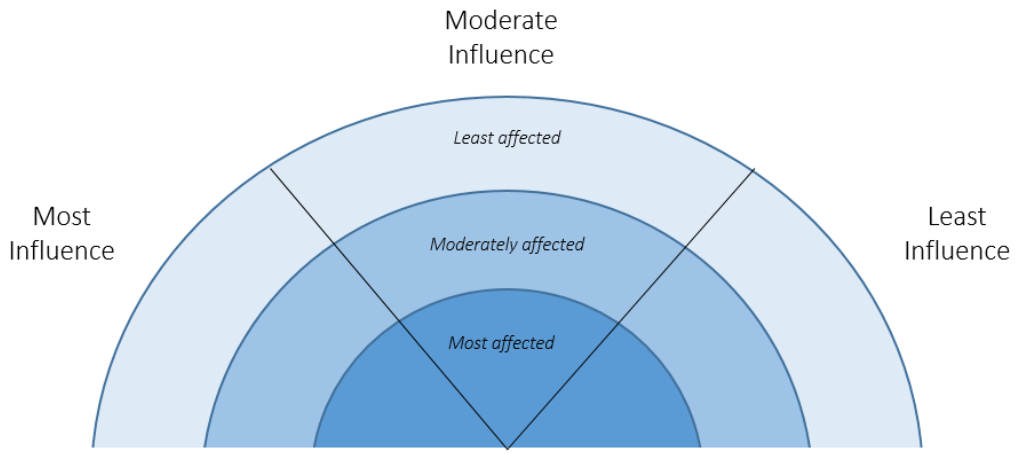
becomes an issue it is crucial that stakeholders are identified and involved from the outset. If stakeholders are only involved at later stages, as is often the case, the capacity of adaptive co-management to resolve conflict weakens, as the opportunity for proactive consensus-building is missed. Following the conclusion of a plan without their active involvement, stakeholders are then required to engage with a project that might be 'at variance with their own needs and priorities'.[909]

The stakeholder analysis literature has developed several methods to identify affected or influential individuals and groups, to prioritise these individuals for involvement in the decision-making process, to differentiate and categorising stakeholders and investigate relationships between stakeholders. [910] Identification methods include i.a. focus groups, semi-structured interviews, snowball sampling each with its own strengths and weaknesses.[911] Chevalier and Buckles provide a list of other ways to identify relevant stakeholders:[912] *a)identification by experts,[913] b) identification by self-selection,[914] c) Identification by other stakeholders, d) identification using written records and population data[915], e) identification using oral or written accounts of major events, e) identification using checklists.[916]* Following the identification Chevalier and Buckles suggest placing stakeholders in a

[909] ibid 2422.
[910] Ibid.
[911] Mark S. Reed and others, 'Who's in and why? A typology of stakeholder analysis methods for natural resource management' (2009) 90 Journal of Environmental Management 1933, 1937.
[912] J.M. Chevalier and D.J. Buckles, *SAS2 Social Analysis Systems: A Guide to Collaborative Inquiry and Social Engagement* (SAGE Publications 2008), 165-167
[913] These include staff, key agencies (such as non-governmental organizations), local people, or academics who have a lot of knowledge about the situation to identify stakeholders.
[914] Use announcements at meetings, in newspapers, on local radio or other media to invite stakeholders to come forward. This will attract those who believe they will gain from communicating their views and are able to do so.
[915] Through the use of census and population data that may provide useful information about the numbers of people by age, gender, religion and residence.
[916] The authors provide a checklist of likely stakeholder categories and a checklist with questions for stakeholder identification. These are to be modified according to management needs.

'rainbow diagram' to classify them according to the degree that they can influence or will be affected by a problem or action:

Figure 7 Rainbow diagram for stakeholder classification according to the degree they can affect or be affected by a problem or action (from Chevalier and Buckles) [917]



In a conflict resolution context, Chevalier and Buckles' rainbow diagram can be very enlightening given the fact that tension tends to arise when certain interests are affected.

As regards nature conservation management, the usual 'checklist' includes representatives from the private sector, conservation NGOs, public authorities and scientists. [918] They all have different motivations for participating: for instance, public authorities seek to fulfil their legal mandate, the private sector (landowners/managers, resource users and developers) are motivated by economic profits (e.g financial incentives for conservation management) or the need to maintain a positive public profile or deterrence of direct regulation. Local communities are also identified as a stakeholder.[919] McNeely refers to the private sector, NGOs, research institutions and local communities as the four major 'civil society sectors'.[920] All share a common

[917] Chevalier and Buckles (n912) 167.
[918] Scarlett (n834); Jeffrey. A McNeely, 'Roles for Civil Society in Protected Area Management: A Global Perspective on Current Trends in Collaborative Management' in Louise E. Buck and others (eds), *Biological Diversity: Balancing Interests Through Adaptive Collaborative Management* (CRC Press 2001).
[919] McNeely (n912) 30-31.
[920] ibid.

objective which is the conservation of nature and this objective becomes the underlying basis for negotiation.

In a conflict resolution context, independent scientists are deemed a distinct category in the literature, not sensu stricto stakeholders, being neither resource users or decision-makers. [921] They are not part of the conflict themselves, but work together with stakeholders in finding ways to resolve it.[922] On the other hand, given the extent to which scientific research guides nature conservation policy, it likely that science indirectly becomes a source of tension when it becomes grounds for the justification of administrative decisions. In this respect, when engaged in real world conservation scientists are given the opportunity to better understand how their research is applied and what the implications are.

Adaptive co-management processes should be inclusive of as many stakeholders as possible to gain wide support and ensure common acceptable outcomes, but it needs to be understood that there is always the risk that some stakeholders will be omitted, especially in systems whose boundaries are not clearly defined.[923] Universal stakeholder participation might not be practically feasible, particularly with regards to large scale management projects, where the number of interested parties will be too big for adaptive management processes.[924] In these cases preference should be given to 'key stakeholders', those with high interests or influence to the decision-making. [925] In all cases, special care should be taken for adaptive co-management to be 'qualitatively

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[921] Niemelä and others (n901) 878 referring to a project aiming to address conflicts that would be a forum for the dialogue 'between scientists and stakeholders concerned with biodiversity'.
[922] ibid.
[923] Reed (n859) 2423.
[924] Walkerden (n829) 9 argues in this respect: '[adaptive management processes] depend upon intensive discussion amongst a relatively small number of people, i.e 30 or 40 people at the most, and that entails some limitations. If many more people need to be involved, the negotiation processes can be used, and adaptive management planning can play a supporting role'.
[925] Literature refers to these stakeholders as 'key players' and they are 'stakeholders who should be actively groomed, because they have high interest in and influence on a phenomenon. The remaining categories in a continuum of decreasing interest and influence are: 'Context Setters', 'Subjects' and the 'Crowd', *see* Reed and others (n911) 1939.

inclusive' in the sense of including representatives of all interests so that it maintains its pluralistic features.

5.2.4 A framework for adaptive 'conflict resolution' collaborative management.

As mentioned above, the level of participation in collaborative management in the literature varies from the communication of information to joint-decision making through partnership.[926] A 'best practice' conflict resolution adaptive management would normally be seen operating at the higher levels of Arnstein's ladder. Bargaining procedures such as negotiation, mediation and resulting agreements and trade-offs require a dynamic exchange of views and information through continuous dialogue that only genuine collaboration can provide.

Thus, stakeholder participation needs to be looked upon as a process that promotes trust building to help stakeholders develop mutual respect and understanding, reduce hostilities and foster dispute settlements and ultimately lead to conflict resolution or management, and ideally prevention. This is what the literature refers to as the 'service contract' view of participation, which emphasizes empowerment, equity, trust and learning.[927] According to Reed, empowerment takes two forms: a) ensuring that participants have the power to really influence the decision and b) ensuring that participants have the technical capability to engage effectively with the decision.[928] Therefore, participants need to feel that their views count and are influential. All parties need to be willing to actively participate, settle disputes

[926] *See* Arnstein's ladder of participation s*upra* n.876.
[927] Reed (n859) 2422; *See also* Borrini-Feyerabend and Buchan (n873) 153-156 identifying a number of conditions affecting the success of negotiation and/or mediation as conflict management procedures that largely reflect the 'service contract' view of participation.
[928] Reed (n859) 2422.

and compromise.[929] If the decision is already taken or anticipated, then there is nothing to be put on the negotiation table.[930]

Therefore, the 'information' rung of the ladder should not be considered either adaptive or collaborative since those to whom the information is communicated have no power to change the outcome of decision. Consultations can be more influential since there is increased two-way flow of information – usually the consultation document is made available to the consultees who then respond with their views. However, it is also not genuine collaboration since there are no opportunities to establish ongoing dialogues among all interested parties. Even in cases where interactive activities such as workshops and other joint events take place, these are more 'informative' than 'decisive' in nature. In the end it will be the policy/rule makers that will return to their workplace and make decisions. But even at its best the consultation procedure is a two-way process with information flowing between the public authority and each of the respondents. As such, it fails to reflect the complexity and interlinked relationships among socio-ecological interests that should be visualised as 'networks' rather than linear interactions. It can nevertheless prevent conflict from arising since it provides the decision-making authority with potential sources of dispute before making the actual decision, so that it can take stakeholder concerns into consideration

Accordingly, adaptive co-management should operate at the higher levels of participation to foster genuine collaboration and continuous dialogue and ultimately shared-decision making. Building partnerships among state actors, private individuals, NGOs, research institutions is central to conflict resolution management. Partnerships do not have to be formally established

[929] Borrini-Feyerabend and Buchan (n873) 154-155; The unwillingness of opposing stakeholders to compromise was the main reason for the failure to resolve the Red Grouse Conflict in the UK upland after a 7-year stakeholder dialogue process. Amar and Redpath (n293) 46-47.

[930] Reed (n859) 2422.

– this might not be legally possible - as long as they enable true and substantial involvement,[931] thereby making the process genuine accessible.

To begin with, all social, economic and scientific data should be available to all participants to acquire a comprehensive understanding of the problems and of other stakeholders' perspectives. This is where the learning component and collaborative components of adaptive co-management interlink. Highly technical discussions are a barrier for meaningful participation of non-experts' stakeholders. [932] The role of scientists is instrumental in this respect; they have to convey information that is of relevance to each group of participants in a clear, understandable way without using scientific jargon that will make lay stakeholder feel excluded from the process. Alternatively, stakeholders' training and education on certain technical aspects might prove valuable to the process. Training can take place through organised workshops and training events, which are more likely run or attended by the scientific staff of conservation NGOs than research institutions.[933]

Setting clear objectives is paramount for any management planning procedure. When additionally seeking to resolve conflicts, it is very important that a) a common, shared objective is identified (pertaining to nature conservation) b) that the underlying structure of the conflict is identified: if enacted, why it has evolved, if latent what is likely to inflame it c) to assess the stakeholders' interests and positions are assessed d) to set conflict resolution objectives in the sense of what stakeholders expect from the process.[934]

Pre-determined and defined criteria to classify interests and identify roles will not always be possible. Adaptive management is a flexible, tailor-

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[931] Robert J. Fisher, 'Collaborative Management of Protected Areas: An International Perspective' in Louise E. Buck and others (eds), *Biological Diversity: Balancing Interests Through Adaptive Collaborative Management* (CRC Press 2001), 84.

[932] Reed (n859) 2422.

[933] Traditionally in England, NGOs scientists are working in partnership with local communities and individuals from the private sector applying their scientific expertise at the field, and as such are more likely to engage in training activities rather than academic researchers. As revealed in the case study, stakeholder engagement by NGOs was central in the management of the HHL NIA.

[934] Niemelä and others (n901) 887-888.

made mechanism and as such its structure will differ from case to case. General lines can be drawn; for instance, the private sector prioritises economic interest and conservation NGOs prioritise nature conservation. However, for stakeholders falling under the umbrella term 'public or administrative authorities' a distinction should be made since their mandates and therefore interests differ.

More specifically, in England authorities that might be included in an adaptive co-management initiative comprise of Natural England whose primary interest and objective is nature conservation,[935] but also bodies such as the Forestry Commission, the Environment Agency, Drainage Boards as well as Local (Planning) Authorities and several other authorities that might influence decision-making[936] whose interest may be aligned or may compete with nature conservation, depending on the specifics of the case. Therefore, how interests align or compete, and how the group dynamics and coalitions evolve, will be determined after all interests are assessed. Additionally, it will often be the case that even when two stakeholder categories share the same interest, values and priorities, they might disagree on methods and approaches. Methods disagreements might arise both as a result of scientific ambiguity (disagreement among scientists on which is the more effective technical solution), social complexity (disagreement among research

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[935] Although often due to commitments to rural development and/or socio-political pressures, Natural England's adherence to conservation might be not as strong as that of NGOs, especially outside of protected areas. See George Monbiot writing in The Guardian on how Natural England's adherence to nature conservation is weakened due to commitments on countryside development and political pressures. <https://www.theguardian.com/environment/georgemonbiot/2012/jun/07/natural-england-wildlife-landowners> accessed January 2018;
There have even been times where NGOs have opposed Natural England's. In one case, RSPB submitted a formal complaint to the European Commission seeking to overturn Natural England's decision over the management and protection of the part of the South Pennine Moor SAC that led to the Commission instigating legal action against the UK Government. https://www.rspb.org.uk/our-work/our-positions-and-campaigns/campaigning-for-nature/casework/details.aspx?id=tcm:9-326701 accessed January 2018.

[936] Other authorities (public or private statutory undertakers) that might affect decisions related to nature conservation include statutory consultees on planning permission applications such as Highway Authorities, Water and Sewerage Undertakers, Historic England etc.

academics and conservation scientists on taking a more or less technocratic approach) or usually a combination of both.

Similarly, often stakeholders may enter the negotiation table under multiple capacities. For instance, NGOs are stakeholders, experts and in many cases, serve as facilitators between the state, the private sector and occasionally local people. Likewise, the roles, which according to Niemela et al 'can be made difficult, as they often have to be a combination of a source of information, stakeholder, and mediator.'[937] State actors too can be one among a set of stakeholders or the competent authority (for instance, within a protected area Natural England has increased powers). Moreover, there might be cases an authority is at the same time a developer or resource user and decision-maker.[938]

Stakeholder powers and dynamics will largely depend on the legal and institutional arrangements. Introduced in the beginning of this chapter were definitions of co-management. One approach implied the classic dichotomy between the state and the regulated, the other regarded the State as only one among a set of stakeholders. Genuinely equal participation among administrative authorities and private interests is rather unlikely. The ultimate implementation will be effectuated by administrative decision–making (e.g the approval of a planning application). Therefore, unless the outcome of the planning stage is binding for all participants including the decision makers, there is *de facto* superiority of public authorities. Nevertheless, adaptive co-management under the second understanding might be possible. It would require the formal establishment of a Partnership and the subsequent delegation of decision-making authority. But issues of accountability and legitimacy are likely to arise by delegating decision-making power to a body comprising *inter alia* by non-elected private profitable organizations and individuals. [939] Additionally, adaptive co-management

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[937] Niemelä and others (n901) 888.

[938] *See Akester* (n740).

[939] There has been significant research questioning the legality of collaborative decision making: *See* A. Dan Tarlock, 'Putting Rivers Back in the Landscape: The Revival of Watershed Management in the United States' (1999-2000) 6 Hastings W-Nw J Envt'l L & Pol'y 167, 193-

would lose much of its flexibility as regards the involvement of interested parties, since if legally possible it should at least achieve a baseline legitimacy and accountability and as such would have to set pre-determined and well-defined criteria for participating stakeholders.

These complex interrelationships among participants reflect and are the direct result of increased socio-ecological but also administrative complexity.[940] The part played by each of the participants cannot be pre-determined as it will vary considerably from place to place. However, it should be made clear to all stakeholders at the start of each process. There is much literature on how to design and facilitate consensus building focusing on stakeholder empowerment, the value of design and of well-trained facilitators/mediators who can significantly influence the outcome.[941] Given the complexity of conservation problems, adaptive co-management although not without challenges, might be the only pragmatic approach to conservation.[942] However, caution and care are necessary since there is a very fine line between taking a pragmatic approach to conservation and sacrificing

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195 stating that decisions made through collaborative processes governance arrangements 'are vulnerable to legal challenge as ultra vires' and continues *'If local groups had the authority to bind federal and state governments to place-based solutions to specific implementation plans, it would raise serious separation of power and due process issues';* George Cameron Coggins, 'Of Californicators, Quislings and Crazies: Some Perils of Devolved Collaboration' in P. Brick, D. Snow and S. van de Wetering (eds), *Across the Great Divide: Explorations In Collaborative Conservation And The American West* (Island Press 2001) 169-171 being very critical of collaborative decision-making, questions decision-making delegation to *'unappointed, unelected citizens at large or interested economic entities'* raising issues of constitutional representative democracy and separation of powers.

940 The number of laws, regulations and administrative authorities involved further complicates an already complex system. For an excellent discussion on legal and administrative complexity see Ruhl, 'Thinking of Environmental Law as a Complex Adaptive System: How to Clean Up the Environment by Making a Mess of Environmental Law' (n50).

941Diana Pound, 'Designing and Facilitating Consensus-Building-Keys to Success' in Stephen M. Redpath and others (eds), *Conflicts in Conservation Navigating Towards Solutions* (Cambridge University Press 2015); Borrini-Feyerabend and Buchan (n47)152-156; Reed and Sidoli Del Ceno, (n60) 232; The Sustainable Uplands project mediation approach to a conflict in the UK uplands almost failed due to the lack of experience of the mediator that resulted in conflict to exacerbate in ibid, (n314) 233-234

942 McNeely (n912) 31.

nature for economic development. [943]

5.2.5 Legal and Institutional Arrangements

In this section I discuss legal and institutional arrangements for adaptive collaborative management as a conflict resolution process. I am not seeking to deconstruct and reconstruct the legal system, although ultimately, we might need to revise fundamental and deeply impeded precepts,[944] hence, the discussion is taking place against common legal and regulatory approaches. I distinguish between a) legal and institutional arrangements that largely prevent the implementation for adaptive co-management and b) legal and institutional frameworks that allow or/and promote the implementation of adaptive co-management. This section therefore sets the scene for the next chapter, which traces the flexibility of the English legal framework and evaluates it in relation to opportunities for adaptive co-management implementation.

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[943] Andrew Wood, Natural England Advisor responded to George Monbiot's article in The Guardian (*See* George Mombiot, 'Our countryside has once again become a playground for the rich' <*https://www.theguardian.com/commentisfree/2012/jun/04/wildlife-land-aristocracy*, 4 June 2012> accessed December 2016) in which he (Mombiot) criticized Natural England's decision to drop charges against the Walshaw Moors Estate for damaging area designated as SSSI, SAC and SPA and allowing the burning of blanket blog to continue. Wood wrote: '*Far from abandoning the uplands, we are focused on forging the day-to-day partnerships that can achieve practical results. We are reviewing our uplands evidence and reinvigorating the uplands burning group to share evidence and develop best practice. We have an uplands director in place to coordinate and lead on our uplands work. Only agreed, co-ordinated action will secure the environment of the uplands, and we make no apologies for the pragmatic approach we are taking'.*
Following a complaint by the RSPB, the European Commission has recently issued a Letter of Formal Notice against the UK Government. *See supra* n935.

[944] Jody Freeman, 'Collaborative Governance in the Administrative State' (45) UCLA Law Review 1, 1 argues that the pursuit of collaboration requires a willingness to transcend traditional debates about agency discretion and to experiment with non-traditional forms of accountability; *See also* the discussion above under 5.2.4 and literature cited at n.938.

5.2.5.1 Legal and institutional arrangement preventing adaptive co-management implementation

Adaptive management and adaptive co-management theories were developed as a response to traditional forms of legislation and regulatory decision making. Neither the adaptive nor the collaborative component of adaptive management are compatible and certainly cannot thrive within a highly prescriptive legislative framework.[945] As explained in this chapter, adaptive co-management as a conflict resolution mechanism is based on negotiation and logrolling practices to reach consensus. Under legislation that prescribes specific management practices, decisions are pre-determined, and this allows no room for negotiation and settlement agreements. For instance, the statutory duty introduced by the Wildlife and Countryside Act 1981 that binds Natural England to designate areas on scientific criteria[946] also renders site designation a non-negotiable process.

Even when legislative frameworks afford considerable discretion and as such can foster flexible decision-making processes, collaborative decision-making seem somewhat alien to legal traditions accustomed to sharp and clear distinctions of power and authority and strong adherence to the notion of the 'rule of law'.[947] Collaborative management operates within a framework where:

> lines of authority and divisions of responsibility are often neither formal nor transparent; institutional boundaries are fluid and permeable, if institutions can be discerned at all; and roles, identities, and allegiances are blurred in a jumble of hybrid public- private, national-and-local arrangements.[948]

As such, it is in stark contrast with legal traditions that draw sharp lines

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[945] Melinda Harm Benson and Asako B. Stone, 'Practitioner Perceptions of Adaptive Management Implementation in the United States' (2013) 18 (3) Ecology and Society art.32, 7.

[946] WCA 1981, s.28(1); *See* discussion in ch.4 s.4.2.1.

[947] A. Dan Tarlock, 'The Future of Environmental 'Rule of Law' Litigation' (1999) 17 Pace Envtl L Rev 237, 256 suggests that collaborative governance albeit achieving better results runs counter to the rule of law.

[948] Karkkainen, 'Collaborative Ecosystem Governance: Scale, Complexity, and Dynamism' (n54) 256.

between the regulator and the regulated, strongly adhere to a clear separation of powers and take a conservative approach towards administrative discretion. As Karkkainen puts it:

> is hard to see where accountability comes from when the lines of authority become so blurred that no single party can be identified as *the* authoritative decision-maker. It violates our deep- seated sense of order, and it may even appear incompatible with "the rule of law as a law of rules," to borrow Justice Scalia's phrase.[949]

Introducing, adaptive co-management requires breaking through conventional perceptions of law, public administration, the separation of powers and responsibility.

5.2.5.2 Legal and Institutional Arrangements Allowing the Implementation of Adaptive Co-Management.

Legal and institutional arrangements that would facilitate the implementation of collaborative decision-making would normally display the opposite characteristics from what was discussed above. Adaptive co-management requires flexile regimes applied within a more decentralised and pluralistic legal tradition.

First, to accommodate collaborative management, nature conservation decision-making needs to operate within legislative frameworks that do not prescribe decisions but allow the decision-making authorities wide discretion as to how they choose to reach nature conservation objectives. The relevance of administrative discretion is twofold: a) it permits administrative authorities to introduce collaborative decision making into the process in the first place and b) it allows for negotiation to take place. As long as legislation does not dictate specific management activities and criteria (e.g scientific) against which decisions are to be made binding the administration, decision-makers can enter into negotiation and bargaining procedures. Adaptive co-management characteristics make it a better candidate for legal traditions of

[949] ibid.

decentralised, delegated decision-making where administrative authorities enjoy genuine discretions and are keen on the idea of working together with the regulated. On the other hand, since stakeholders' willingness to collaborate is paramount, collaborative management has more opportunities to flourish within a society of informed citizens, accustomed to democratic procedures and active citizenship.

Second, decision-making authorities will need a diverse legal toolbox to be able to implement the outcomes of agreement and compromises; for instance, a system that introduces trade-offs into the legal realm of nature conservation. If the only means available at their disposal is direct regulation, it is questionable whether they can underpin the implementation of adaptive co-management outcomes. For instance, compromises might be reached not only between one regulator and one regulated but between multiple regulators and multiple regulated. Going back to the Carlsson's network, what is needed are flexible legal instruments such as multi-lateral contractual agreements, to account for the horizontal and vertical links between actors. Furthermore, collaborative processes for large scale management will benefit from legislation introducing binding procedural rules for management planning - if not for collaborative management planning. If planning authorities are under a statutory duty to prepare management plans (this will also entail some form of statutory or non-statutory designation of a specific unit of land), adaptive collaborative management is more likely to occur. Without undermining the importance of adaptive collaborative procedures during later decision-making (e.g. at the time of the approval of a planning permission or consent) as it has already been mentioned, a conflict resolution mechanism adaptive management operates better at the planning stage when all interests can be represented and multilateral negotiations to take place.

Third, traditional regulatory rules and legislation are essential. It might sound contradictory, but adaptive co-management needs traditional legislation and regulation to become the 'watchdog' of the process. The regulators (and the regulated) know that the former have the fallback of regulatory rules if negotiations fail. The regulators will opt for collaboration

techniques given the ineffectiveness of conventional legislation to reach nature conservation targets. For the regulated the threat of coercion provides an incentive to engage with perhaps otherwise non-attractive, collaborative management, to avoid the imposition of regulatory obligations. In this respect, Karkkainen draws from contract theory and introduces the notion of 'regulatory penalty default' which he sees as a compatible and necessary precondition to adaptive collaborative management.[950]

> A regulatory penalty default is a harsh or quasi-punitive regulatory requirement that applies as the default rule if parties fail to reach a satisfactory alternative[951] (...) the regulatory rule is applied only as a presumptively undesirable "penalty default" position, against which superior cooperative solutions are sought.[952]

Regulatory impositions lurking at the side-lines provide strong incentives for parties to bargain towards less harsh alternatives but are also seen as capable of addressing some major concerns of the legal world that adaptive and adaptive collaborative management processes are in tension with, such as fundamental rule of law precepts. These concerns relate to issues resulting by both the adaptive – concerns of reduced accountability and increased political influence on decisions because of the absence of clear, fixed procedural rules and substantial standards - and the collaborative element.[953] Karkkainen's concept of 'regulatory penalty default' is in line with theories on the complementary and sequential combination of legal instruments and approaches, according to which command and control regulation can be used

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[950] Karkkainen, 'Adaptive Ecosystem Management and Regulatory Penalty Defaults: Toward a Bounded Pragmatism' (n74); Karkkainen, 'Collaborative Ecosystem Governance: Scale, Complexity, and Dynamism' (n54) 231.

[951] Karkkainen, 'Adaptive Ecosystem Management and Regulatory Penalty Defaults: Toward a Bounded Pragmatism' (n74) 944.

[952] Karkkainen, 'Collaborative Ecosystem Governance: Scale, Complexity, and Dynamism' (n54) 231.

[953] *See supra* n939; *See also* Jody Freeman, 'The Contracting State' (2000) 28 Fla St U L Rev 155, 157 criticizing contractual agreements predominately used to implement negotiated positions referring to them as a 'recipe for either corporatism or capture': 'The possibility that governments might negotiate regulatory standards with the entities they are empowered to regulate strikes most traditional administrative law scholars as anathema—a recipe for either corporatism or capture'.

as a backdrop to underpin and bolster the credibility of more flexible approaches.[954] For instance Natural England's power to indefinitely refuse consent for restricted operations within a SSSI can be seen as an instance of 'regulatory penalty defaults' that applies unless a management agreement is secured and waves obligations.

Within a context of socio-ecological complexity, flexibility is adaptive management's greatest strength; from a legal perspective, it is its greatest weakness. Arguably, this is the reason why the legal framework remained adherent to earlier depictions of nature even when ecology was strongly indicating otherwise; they both share the same underpinnings of structure, hierarchy, cause and effect relationships and certainty. Adaptive management philosophy matches socio-ecological complexity but creates tensions with long-established legal precepts. However, like every flexible responsive system, as soon as it starts to become formalised it is not as flexible; but on the other hand, if it is not formalised flexibility can be dangerous. Early experience of voluntary conservation attempts in Britain shows that a system of no enforceable rules is futile.[955] Therefore, and beyond the normative questions of accountability and the rule of law, to achieve nature conservation objectives some form of enforceable control is necessary.

Notwithstanding the challenges, the promise of adaptive collaborative management to address both social and ecological complexity cannot go unnoticed especially in relation to large scale management that goes beyond designated areas and protected species. Therefore, we need to make it work by finding the right balance and provide a firm framework for flexibility to operate; a framework where top-down and bottom-up approaches can interact to achieve optimum results. This itself will be a continuous adaptive process until the correct balance is struck. During this process we might need

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[954] Gunningham and Sinclair (n527), 66, states with regard to self-regulation and command and control measures interrelationship: 'the two instruments are applied sequentially: it is only when the first fails the latter kicks'.

[955] Reid, *Nature conservation law* (n1) 39-40.

to compromise, revising and reconstructing established legal principles and perceptions, as well as our sense of order.[956]

[956] Karkkainen, 'Collaborative Ecosystem Governance: Scale, Complexity, and Dynamism' (n54) 235-236 referring to tensions between collaboration and settled legal norms advises lawyers to 'get over it' as 'they risk becoming irrelevant to the most important and dynamic developments in environmental policy today'.

6 An adaptive collaborative approach to conflict resolution in England: Is it possible?

The discussion in the previous sections revealed that when it comes to realizing conservation mandates, conflicts of interest become a 'business as usual' situation.[957] Both the European and the national legislatures sought to resolve such conflicts by prioritizing interests on the adversarial basis that traditionally characterises the legal realm of laws and judicial dispute resolution. They introduced pieces of legislation that confer protection to the elements of natural environment at the expense of the legal rights of property owners attempting to put the 'law in the service of biodiversity'[958] and hence a human construct in the service of the natural world. The post-war era saw a gradual restriction of the 'absolute' character of property rights by planning legislation and most recently nature conservation laws that established a site-focused conservation system that still remains central to conservation approaches. [959] On the other hand, where these rights remain largely unaffected, nature's interests subside and conflicts, latent or otherwise, are resolved in favour of human interests

As mentioned in Chapter Two, nature conservation legislation, as with most initiatives seeking to alter the status quo, became itself the source of conflict. Additionally, the resolution of legal dispute does not essentially resolve conflict. Following the law's adversarial attempt to resolve conflicts, there are designated areas where conservation interests prevail and non-designated areas where the natural environment is allowed to deteriorate.[960] Species deemed to be worthy of protection are afforded protection and those not listed can be freely exploited – until they reach the point of extinction and

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[957] *See supra* ch. 2 s.2.3.1-2.3.2.

[958] C. P. Rodgers, 'Planning and Nature Conservation: Law in the Service of Biodiversity' in Chris Miller (ed), *Planning and Environmental Protection* (2002).

[959] Rodgers, *The law of nature conservation: property, environment and the limits of the law* (n6).

[960] Nevertheless, it has to be noticed that looking at legislation collectively, even non-designated areas are not subject to uncontrolled use and development. A combination of planning laws, environmental permitting and species protection confer a basic level of protection even outside the SSSIs.

must be included on the list. On the other hand, from the landowners, developers' and even society's point of view, one crested newt seems like an enemy to development; hence protective species earn themselves the reputation of derailing house development and public infrastructure.[961]

As an alternative, the previous discussion introduced the idea of adaptive management as a mechanism to resolve conflict or to significantly reduce it, since as long as different groups of people share different priorities a complete elimination is rather unrealistic.[962] Such an approach places negotiation and consensus building at the heart of the decision-making process and shifts from a top-town administrative procedure to bottom-up, based on partnership and co-operation. Adaptive management breaks through the tradition of a powerful administrative state, with the regulator and the regulated on the opposite sides of the decision-making table, the former being in a considerably superior position as the one setting the rules and enforcing them. It seeks to turn this unequal and asymmetric relationship into one of co-operation and trust and replace administrative coercion with negotiation. In this context, the adaptive model moves away from binary models of decision-making; by bringing together all interested parties, it widens the scope for compromise in order to secure positive land management for nature conservation. Additionally, by bringing together multiple stakeholders it steps away from management based on ownership or administrative boundaries, allowing for the implementation of the ecosystem approach.

The effective implementation of a decision-making model such as the one discussed in the previous section, relies on a combination of factors. Some relate to the various aspects of its practical implementation, such as

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961 Alan Law, 'Planning a brighter future for the great crested newt' (*https://naturalengland.blog.gov.uk/2016/05/25/planning-a-brighter-future-for-the-great-crested-newt/*, 25 May 2016) accessed 15 November 2017. Great Crested Newts have caused major delays and millions of pounds to the housing and construction industry. Even the discovery of one newt can halt construction until the proper license is acquired. Often surveys results are deceiving given the fact that newts fall into the category of species whose seasonal numbers of individuals varied. Mitigation measures often require plans to relocate them one by one, with all the implications this would entail in terms of time and budget planning.

962 In this chapter the term 'adaptive management' is used to refer to the collaborative model of adaptive management as discussed in ch.5.

availability of financial and human resources that the competent authorities have at their disposal. These issues are certainly not of minor importance and in fact the lack of adequate resources has been identified by the literature as one of the primary reasons behind the failure of large scale adaptive co-management initiatives.[963]

This discussion focuses on the normative aspects of such a model. The previous chapters argued that adaptive and collaborative decision-making requires a flexible legal framework where statutory provisions do not mandate a particular course of action by the regulator. The 1981 Wildlife and Countryside Act provisions on SSSI designation fall into the latter category. The law lays down specific obligations and binding duties: Natural England is bound to notify and subsequently confirm as an SSSI any area of land that is of special interest 'by reason of any of its flora, fauna, or geological or physiographical feature'.[964] The 1981 Act offers no scope for discretion and the statutory body's omission to notify and confirm the SSSI that fulfils these criteria will be subject to judicial review. However, as this section will show, both the law that relates to nature conservation, but also general features of the English administrative tradition set up a framework for adaptive management to thrive. Admittedly not all aspects of adaptive management fit easily and neatly within the current framework. Both conservation and conservation related laws and regulations remain heavily attached to the notion of private ownership and administrative boundaries, and as such they might be unable to foster and promote join decision-making

Finally, it must be pointed out that an adaptive approach in no case undermines the significance of statutory binding legislation. Statutory legislation sets an overarching framework that draws the limits for action. As contradictory as it might seem, a flexible decision-making model must be clearly structured as it carries the inherent danger of being abused. The UK's experience with an entirely voluntary approach until the amendments of the 1981 Act clearly demonstrates the need for mandatory rules to set up a

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[963] Walters, 'Challenges in adaptive management of riparian and coastal ecosystems' (n264).
[964] WCA 1981, s.28.

framework within which flexibility and adaptive management can take place.[965]

In the following paragraphs, I argue that the English legal framework is sympathetic to adaptive co-management. To support this argument, I am not looking for legal prescriptions explicitly mandating the use of adaptive co-management. Similarly to the analysis on the scientific adaptive management, I am seeking to identify opportunities for negotiation towards amicable conflict resolution within conservation legislation.

I will first set out some general characteristics of the English legal tradition that shaped and strongly influenced the development of conservation laws and provide a backdrop against which the balancing of interest is taking place; there is a traditional adherence to voluntarism and co-operation, which is strongly connected to the historically central position of the notion of property has within English law, together with the powerful lobbies of landowners and farmers who saw nature conservation laws as a threat to their interests. This discussion complements the discussion in Chapter 4, s.4.1.[966]

Then, I will refer to specific legal provisions and instruments that allow flexible conflict resolution approaches such as negotiation and consensus building, to creep into an otherwise science-driven management framework. The discussion will take place against a distinction I am drawing between non-designated and designated areas. This is necessary since the weight attached to either nature or private interests varies significantly, as a result of the legislative efforts to resolve the conflict by directly or implicitly, prioritizing one over the other.

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[965] *See supra* ch.1 s.1.3.

[966] Section 4.1 discussed certain features of the British approach to environmental legislation facilitating adaptive decision-making. The discussion that follows focuses on some features of English legal tradition relating to the collaborative/conflict resolution part of adaptive management.

6.1 Voluntarism and Co-operation

This section will examine fundamental principles and ideas that influence – although to a lesser degree than in the past - nature conservation law and policy throughout its different stages but most prominently, that of practical implementation. It all revolves around the notion of 'property' and the basic tenets of English property law. The significant interference of nature conservation policies with the rights derived from the notion of 'property' is what necessitated the development of a different approach from others areas of environmental law and one reason why direct regulation is not the most suitable approach.[967] Instead, a system based on cooperation and voluntary action was developed. Even after the amendments of CROWA 2000 that strengthened the regime of nature conservation, the administrative authorities will initially take the least onerous course of action, for the landowner that is, and gradually proceed to utilise the more powerful tools included in the armoury of nature conservation.[968]

6.1.1 Cuius est eius usque ad coelum et ad inferos

Christopher Rodgers writes that:

> The starting point of any discussion of the rights and obligations of the property owner in English law is the well-known maxim: *cuius est solum eius usque ad coelum et ad inferos.* In English law the property owner owns everything to the centre of the earth and up to the limit of the sky and enjoys absolute powers of enjoyment use and management of his land. The legal rights of the property owner are, in English law, theoretically absolute, and are not conditioned by any limitations based on notions of environmental stewardship.[969]

Indeed, the establishment and implementation of nature conservation law has been shaped and influenced by two interrelated ideas. The first is the

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[967] Rodgers, 'Planning and Nature Conservation: Law in the Service of Biodiversity' (n961) 91
[968] National Audit Office, *Natural England's role in improving sites of special scientific interest* (n683).
[969] Rodgers, 'Planning and Nature Conservation: Law in the Service of Biodiversity' (n961) 91-92.

historically central and prominent position of land ownership within English law and society, where land tenure had for years been the basis of the societal structure. The second is the idea of man's dominion over nature. This concept is deeply rooted into Western thought and even appears as a key theme in the Biblical depiction of man's relationship to nature.[970] This notion of 'dominion' has clearly influenced the development of laws establishing property rights regarding elements of the natural environment: The development of a land tenure system, where a plot of land together with any plants growing in the ground belong to their owner, is very much in line with this thought. Also reflective of this view of man over nature is the law's treatment of animals, whether it is in regard to animals *domitae naturae* being treated as moveable property for the duration of their lives, or animals *ferae naturae* deemed *res nullius* while in the wild but subject of property when taken into possession.[971]

In this context, it should not come as a surprise that wildlife in Britain has historically been treated as an economic or recreational resource, which needs to be controlled for human benefit rather than protected for its inherent value.[972] Accordingly, early legislation was deeply anthropocentric in nature, aimed at regulating the exploitation of biodiversity and protect rights associated with land. The first acts were enacted to regulate activities of traditionally major economic and recreational significance such as hunting to secure further exploitation of wildlife.[973]

Besides its prominent position within the English common law system, the right to property is enriched in Art.17 of the Universal Declaration of

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[970] Montuschi, Eleonora (2010) Order of man, order of nature: Francis Bacon's idea of a 'dominion' over nature Order: God's, Man's and Nature's: Discussion Paper, Centre for Philosophy of Natural and Social Science, London School of Economics and Political Science, London, UK.

[971] Reid, *Nature conservation law* (n1) 16-20.

[972]Law Commission, *Wildlife Law* (Consultation) (n10) para.1.3-1.4; See also Evans (n1) 15 who discusses the establishment of Royal Forests by the William the Conqueror 'in order to reserve their excellent hunting potential for royalty and nobles'. Due to restricted access, the forests ultimately became a heaven for wildlife but 'any benefit to wildlife was incidental to the interests of the huntsmen, and outside the Royal Forests and parks the decimation of wildlife went on unabated'.

[973]Law Commission *Wildlife Law* (Consultation) (n10) para.1.3-1.4.

Human Rights[974] and is guaranteed in Art.1 of Protocol 1 of the European Convention on Human Rights (ECHR). [975] According to A.M Honoré the property right when in its ultimate form, that of ownership, consists of 'the right to use, the right to manage, the right to the income of the thing, the right to the capital, the right to security, the rights or incidents of transmissibility and absence of term, the duty to prevent harm, liability to execution, and the incident of residuarity'.[976]

The distinctive feature of legal measures taken to conserve biodiversity is that they interfere greatly with the full exercise of the rights associated with ownership. [977] The interference may arise directly by negative control measures established in legislation, when for instance legislation forbids the killing of birds and animals and thereby restricts the exercise of property rights of their potential captors or forbids the taking of plant species, restricting the rights of landowner to 'nurture or destroy the plant as he thinks fit'. [978] Interference may also occur by measures requiring landowners to refrain, tolerate or adhere to certain management practices that significantly restrict their right to determine what happens to their land. [979] But interference with the enjoyment of property rights does not sit well within English law. Christopher Jesser, retired solicitor, stressed during the oral evidence session held by the HoC Justice Select Committee on an inquiry regarding the abolishment of manorial rights: 'it is a very old principle of English law that you do not take property away without compensation, and

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[974] Universal Declaration of Human Rights (adopted 10 December 1948 UNGA Res 217 A(III) (UDHR).

[975] Convention for the Protection of Human Rights and Fundamental Freedoms (European Convention on Human Rights, as amended) (ECHR) art.1-Protocol 1; Incorporated into UK law with Human Rights Act 1988, c.42. Schedule I, Part II, art.1.

[976] A.M Honoré, *Making law bind: essays legal and philosophical* (Clarendon Press; Oxford University Press 1987) 165.

[977] Nature conservation legislation falls into the second kind of intervention – the first being the taking of property rights - considered as 'regulation of the use of property rights'. Gred Winter, *'Property rights and Nature Conservation' in* C.H. Born and others (eds), *The Habitats Directive in Its EU Environmental Law Context: European Nature's Best Hope?* (Taylor & Francis 2015).

[978] Reid, *Nature conservation law* (n1) 17.

[979] Winter (n977) 216.

that goes back centuries—before the civil war—so I do not think it would be possible just to abolish valuable rights without any compensation'.[980] Hence, although reasons of public health or town planning were seen as a legitimate reason for interference with private rights,[981] this was not the case for nature conservation interests, which were not considered important enough to justify such an interference.[982]

Therefore, and given the fact that the vast majority of English land is under private ownership, one should not have expected an entirely invasive approach by the English legislator. Additionally, and beyond normative justifications and legal traditions, considering the long-term management of English land and the increased power of the farming lobbying, a direct confrontation with landowners and land tenants' interests would not have been a politically wise move. Thus, nature conservation law in England has until recently been entirely reliant on the voluntary principle, the good will of landowners and the amount of financial resources available to statutory agencies that would allow them to secure an agreement.[983] However, as Gunningham argues, voluntarism 'lacks dependability' and as such it is more effective when used in combination with command and control regulation.[984] That the 'laissez-faire' approach which dominated nature conservation until the beginning of the 21st century was inefficient was noted by Lord Mustill in Southern Water Authority v. Nature Conservancy Council.[985] Lord Mustill characterised the original regime 'toothless for it demands no more from the owner or occupier of an S.S.S.I. than a little patience'.[986]

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[980] Justice Committee, *Manorial Rights,* (HC 2014-2015, 657) Q65.
[981] McEldowney and McEldowney (n182) 178.
[982] Reid, *Nature conservation law* (n1) 39.
[983] ibid.
[984] Gunningham and Sinclair (n527) 57.
[985] *Southern Water Authority v. Nature Conservancy Council* 1 WLR 775 (House of Lords).
[986] ibid, Lord Mustill at 778.

6.1.2 The Voluntary Principle: Persuasion instead of Coercion

The argument of this chapter is that the primary features of what in literature is referred to as 'adaptive collaborative management' or 'adaptive co-management' can be traced or easily integrated within a nature conservation framework, within a conflict resolution context. In fact, basic tenets of adaptive co-management, balancing interests and resolving conflicts through partnership, cooperation and negotiation underpinned nature conservation practice before the introduction of statutory legislation. The legal framework of nature conservation in England was built on the tenets of partnership and co-operation; in fact, adaptive management mechanisms in England pre-dated the introduction of command and control statutory legislation, as a means to resolve conflicts between nature conservation and other land-uses.

By the 1970's initiatives had already begun to bring together farmers and nature conservation interests, on the basis of their common concern on biodiversity, as well as to advance learning and understanding on how to build bridges between conservation and the farming business. These initiatives took the form of non-statutory (or otherwise institutionalised) Farming and Wildlife Advisory Groups (FWAG) which as Cox et al state:

> 'have been presented as the best available vehicle for demonstrating the capacity for farmers and conservationists to work together in harmony and as a means by which farmers themselves might have encouraged to adopt conservation practices in their farming.[987]

The National FWAG was formed in 1969 by the National Farmers Union (NFU) and was essentially a partnership between major interests, both private and public entities: the Country Landowners' Association (CLA), the Ministry of Agriculture, Fisheries and Food (MAFF), the Royal Society for the Protection of Birds (RSPB), the Society for the Promotion of Nature Reserves (SPNR), the British Trust for Ornithology (BTO) and the Nature Conservancy Council (NC).

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[987] Graham Cox, Philip Lowe and Michael Winter, *The voluntary principle in conservation: the Farming and Wildlife Advisory Group* (Packard 1990) 2.

[988] The aim was to bring together all interested parties through a series of conferences and meetings in order 'to promote mutual understanding and cooperation' [989] on the basis of a compromise approach. [990] A network of FWAGs was subsequently created whose goal was to involve as many local farmers and landowners as possible, and to encourage them to adopt themselves conservation practices in their farming. [991]Central to the work of FWAGs was the idea that agriculture and conservation interests were not incompatible and could be balanced and that 'the loss of wildlife habitats through agricultural intensification can best be ameliorated by encouraging farmers to modify their practices through the provision if appropriate advice and encouragement'.[992]

The initiative was a pragmatic and practical approach to conservation operating outside a formal regulatory framework. Offering advice to farmers through a range of means, including a network of full-time land advisors, flyers and the 'farm walk', was central to the initiative. There were also practical demonstrations in an attempt to show farmers that the needs of conservation and modern (at the time) farming could be reconciled.[993]

FWAG would also organise 'exercises' which were essentially management plans with set objectives, much scientific input and an element of experimentation. [994] One of these 'exercises', a chalkland exercise in Wiltshire in 1973, brought to the surface some of the conflicting viewpoints of those involved and the practical limits on the scope of compromise [995] shedding much light on the complex interactions among multiple stakeholders and land-users.

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[988] ibid.
[989] ibid 2.
[990] ibid 28-29.
[991] ibid 2.
[992] ibid.
[993] ibid 3.
[994] Cox, Lowe and Winter (n986) 25-32.
[995] ibid 27.

As Cox *et al* describe FWAG as the 'prime expression of the voluntary principle in conservation'[996] and continue:

> This has two components. One is positively, to stimulate and broadcast amongst farmers and landowners a social ethic concerning stewardship of the countryside, including the protection and enhancement of natural diversity and beauty within the context of modern farming practice and estate management. The other component is an ideological defence of the autonomy of farmers and landowners from statutory controls, through an emphasis on the paramount need to retain their goodwill and voluntary cooperation if workable remedies to conservation problems are to be found.[997]

Truly, successful conservation management requires the cooperation of landowners, who live and work on the land, have perhaps been managing the land for years and are the people who 'know the land'. Even from a practical perspective, financial and human resources restraints would never allow regulatory agencies to manage all sites using their own means. Successful conservation management requires meaningful active management, a genuine understanding of the objective being pursued, not mere compliance with the letter of the law under the constant threat of coercion. Besides, adequate compliance monitoring and enforcement are practically impossible on a long-term basis and therefore mutual trust and confidence is a cornerstone of the conservation management.

In addition, as Reid notes, 'law cannot hope to deal with all the matters of significance for biodiversity, nor to regulate all the sites that contribute to the overall health and richness of the environment'.[998] As the pioneers of the FWAG realised, proper training education of those involved is vital to conservation. A voluntary approach relies on education, information and advice to landowners and other stakeholders who are made aware that they

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[996] ibid 2.
[997] ibid.
[998] Reid, *Nature conservation law* (n1) 39.

can promote nature conservation even without major impairments of their other interests. [999]

However, the advantages of voluntarism were not the only reason why the voluntary principle was deeply enriched in the 1981 Wildlife and Countryside Act. The strong interference with property rights, socio-economic – *agriculture holds a great share of English economy* - and political – *NFU and CLA are powerful lobbies* - were among the reasons why establishing enforceable legislation did not seem like an appealing choice. As one would expect, in a country whose land has been intensively farmed since the 17th century agricultural revolution, nature conservation was seen as an objective inferior to farming and not important enough to interfere with property rights, economic development or go against powerful lobbies. Public health or town planning would justify controlling certain activities, but nature conservation needed time to be lodged in the consciousness of society in general as worthy of being prioritized. Small changes are usually easier to integrate than abrupt interventions and changes to the status quo when the societal climate is not yet ripe for that change. Arguably, the concept of SSSI was originally accepted exactly because it did not impose any obligations on landowners - apart from the three-month delay within which the statutory agency sought to secure an agreement. [1000] On the contrary, some 'unscrupulous landowners' saw the scheme as an extra source of income.[1001]

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[999] ibid; The importance of education is highlighted in several guidance documents but also technical reports on management of Natura 2000 network. *See for instance*: I.M Bouwma and others, *Natura 2000 - Addressing conflicts and promoting benefits* (Alterra, Wageningen, The Netherlands, 2010); M Stallegger, *Management of Natura 2000 habitats. 7150 Depressions on peat substrates of the Rhynchosporion* (2008); Bouwma and others (n998).

[1000] The minimal effect of SSSI notification on land use is evident in study undertaken by Mather about farmers in Scotland in 1993. The study showed that approximately two-thirds of the interviewees agreed with the statement that 'Notification of the SSSI has made little practical difference to my use and management of the area' while only one-fifth reported that 'a change in land management had been obstructed by Site notification '. *See* Alexander S. Mather, 'Protected areas in the periphery: Conservation and controversy in northern Scotland' (1993) 9 Journal of Rural Studies 371.

[1001] Reid, *Nature conservation law* (n1) 181; *See also* the 'net profits foregone approach adopted by the 'Wildlife and Countryside Act 1981 – Financial Guidelines for Management Agreements' - Department of Environment Circular 4/83; What's worth mentioning is that the

The extensive destruction of designated areas throughout the firsts years of implementation of the original 1981 Act confirms Gunnigham's argument on the 'lack of dependability' of voluntary approaches. [1002] Voluntarism as a sole basis for conservation proved insufficient to prevent further loss caused by damaging activities, let alone supporting positive management. [1003] The destruction of valuable wildlife areas boosted awareness of nature conservation. [1004] At the same time and as noted in Chapter One, the need to comply with the requirements of the Habitats Directive resulted in the regime being strengthened by the CROWA 2000 legal amendments.[1005]

The voluntary principle suffered its first blow with the introduction of enforceable provisions in relation to restricted operations. Statutory bodies were given the power to indefinitely halt damaging operations. [1006] The CROWA 2000 strengthened the nature conservation regime and moved it further into the sphere of command and control legislation. At the same time, nature conservation was largely favoured by amendments to the agricultural policy as a result of the EU Common Agricultural Policy (CAP) reform, [1007] especially the introduction of cross-compliance and changes in the way that payments under management agreements were made. The underpinning philosophy of the current system of payments for management agreements is that public expenditure should focus on positive management. [1008] The payments' emphasis was shifted from damage prevention, to conservation, restoration and enhancement of the natural environment.

Looking back to the historical evolution of nature conservation law and policy from the mid-20th century to date, the trend has been towards stricter

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NCC had played almost no role in the preparation of the Guidelines in sharp contrast to farming organisations, which were extensively consulted, Adams (n333) 142

[1002] N. Gunningham, 'Incentives to improve farm management: EMS, supply-chains and civil society' ((2007) 82 Journal of Environmental Management 302

[1003] Reid, *Nature conservation law* (n1) 40.

[1004] ibid.

[1005] Countryside and Rights of Way Act 2000.

[1006] WCA 1981 (n29) s.28E.

[1007] Reid, *Nature conservation law* (n.1) 361ff.

[1008] DETR *Guidelines on Management Agreement Payments and Other Related Matters* (n761)

and enforceable regimes. This fact alone is a win for nature conservation, especially considering how sharply it contrasts to long established British traditions on land management. Nevertheless, precisely because the voluntary principle is deeply embedded within the nature conservation culture, it is difficult to entirely overcome. While significantly weakened, the voluntary principle remains in the background of nature conservation and continues to influence the implementation of the legal provisions. Although the 'laissez-faire' approach that dominated the nature conservation regime prior to the CROWA 2000 amendments has been abandoned, the approach is not one of command and control either. The nature conservation legal landscape comprises of a mix of instruments that apply in a complementary or sequential way. Voluntary measures are still favoured but the regulators know that they do have the fallback of regulation.[1009] The end result is as Bartle and Vass stress 'something akin to "self-regulation within the regulatory state"'.[1010]

6.2 Tracing flexible conflict resolution and interests balance within the legal and regulatory framework for Nature Conservation in England

The discussion in Chapter Four,[1011] complemented by the discussion in the preceded section, drew attention to some general features of environmental and nature conservation that underlie the administration of conservation in England and provide a context for the discussion that follows. Hence, decentralisation, administrative discretion and regulatory pluralism, besides offering much scope for adaptation of decision making in the face of new information, are equally relevant for adaptive collaborative management. This 'British approach' to environmental regulation, although it does not guarantee the implementation of adaptive mechanisms, does not exclude it either.

[1009] Reid, *Nature conservation law* (n1) 38.
[1010] Ian Bartle and Peter Vass, 'Self-Regulation within the regulatory state: towards a new regulatory paradigm?' (2007) 85 Public Administration 885.
[1011] Ch.4, s.4.1.

Hence, as mentioned in Chapter One, decentralised administration allows for the representation of a wider array of interests given that even interests that can be named 'environmental' are often non-compatible.[1012] This was realised during the review of Environment Agency and Natural England and prevented the merging of latter – the agency bound to nature conservation objectives - with the more powerful Environment Agency.[1013]

Additionally, the variety of instruments available at the administration's disposal coupled with a wide margin of discretion, allows for adaptive co-management mechanisms such as collaboration among stakeholders, trade-offs and compromises towards consensus building and balancing conflicting interests.

This flexible exercising of judgment and decision making enables the administration to employ any technique they deem suitable, from direct regulation to flexible management schemes. Legislation does not prescribe particular means to achieve the objective of e.g. 'favourable conservation status' of SSSIs. Hence, they can choose to place emphasis not on coercion but rather on consensus building through partnership and cooperation;[1014] a

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[1012] See RSPB conservation director Martin Harper, making a case against a merger between Natural England and the Environment Agency due to the inherent conflict of their functions: Martin Harper, 'Shuffling the deckchairs (7): why we say 'no' to the proposed merger between Environment Agency and Natural England' (26 Feb 2013) <https://ww2.rspb.org.uk/community/ourwork/b/martinharper/archive/2013/02/26/shuffling-the-deckchairs-7-why-we-say-no-to-the-proposed-merger-between-environment-agency-and-natural-england.aspx> accessed January 2018.

[1013] DEFRA, *Triennial Review of the Environment Agency and Natural England* (2013) para 26; A merger between the conservation and research oriented English Nature and the Countryside Commission had already taken place in 2006 when Natural England was established, *see supra* n522, n625.

[1014] Lutz-Christian Wolff discussing law and flexibility in Lutz-Christian Wolff, 'Law and Flexibility: Rule of Law Limits on a Rhetorical Silver Bullet' [2011] J JURIS 549, 550 refers to four different perceptions of flexibility in relation to law. One regards flexibility 'as an attribute of the application of the law…from this perspective, it would not be the law itself that is flexible, but how the law is applied in practice'. Although at it becomes clear in p.563, 'application' is used here to refer to judicial application, this view of flexibility could nevertheless encompass the implementation of legal rules by public authorities. Even the most flexible legal regime can turn into a cumbersome set of rules if administration applies it in horizontal, uniform way.

framework for action to be effective and impervious to failure does not necessarily have to be rigid and strict.

Therefore, and given the legal system's links to the voluntary principle, there is much fertile ground for an adaptive collaborative approach. In fact, as this section will demonstrate, the legal framework for nature conservation is characterised by a gradual transition from a strict, binding regime governing site designation and species listing[1015] to the less rigorous, management regime. This is where administrative authorities - Natural England to land management or local planning authorities in relation to land development - are given discretion to allow activities that are in principle forbidden, in an effort to strike a balance between the interests in play. This combination of rigidity and flexibility allows for a regulated adaptive management model to apply; one with enough flexibility but which is nevertheless controlled and underpinned by binding legislation

I will now continue the discussion and examine the nature conservation framework and the ways it seeks to balance competing interests within two different contexts, depending on whether nature conservation interests are a statutory priority or not. This is because statutory protection of biodiversity changes the balance between the various interests; statutory protection changes the dynamics between competitive parties with nature conservation interests (and those who represent them) being placed in an advantageous position. In the wider countryside, on the other hand, private rights prevail.[1016] This is because, despite the absence of ad hoc provisions, property and all related rights remain unaffected and thereby unrestricted – at least in relation to biodiversity conservation. Landowners are then free to determine what happens on that land, which might or might not be operations damaging to wildlife.

In regard to statutory land designations a further distinction is drawn in line with the regulatory dichotomy between operations falling under the

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[1015] *See* discussion in ch.4.

[1016] Or according to Rodger's theory on reallocation of property rights, they have not been reallocated.

'development' under the planning legislation and operations concerning multiple land uses outside the 'development' concept. The reason for this distinction is twofold; first, the impacts but also their relationship to biodiversity are different: the impacts of development are often permanent, and any compromise will take the form of trade-offs, contrary to activities such as agriculture where a common ground can be found. Second, the controlling mechanisms are different. Likewise, operations falling under 'plans or projects' within the meaning of art.6 of the Habitats Directive are examined separately. In line with the Directive's spirit to align socio-economic development with nature conservation Article 6(4) of the Habitats Directive presents the sole case of legally established 'biodiversity offsetting' in England in the form of 'compensatory measures'.

6.2.1 Resolving conflicts arising in designated areas: 'tougher on goals and softer on measures'[1017]

By introducing legal classifications of land, the law seeks to resolve tensions in favour of nature conservation interests. But as has already been discussed, these designations result to confrontations with different sectors of society who see their interests and long-time activities restricted. Hence, the starting point of the discussion is that within these designated areas, nature and those representing conservation interests find themselves in an advantageous position granted by statutory legislation.

However, as a counterbalance to the technocratic approach followed during the stages of identification and land designation, and in line with the preference for voluntary co-operation, the second stage of implementing conservation measure is not one of a strict 'command and control' system of rules. Instead, the model put forward is one 'tougher on goals and softer of

[1017] Bouwma and others (n998) 6 with regard to best practice for achieving a good balance between potentially conflicting interests related to the use and management of Natura 2000 sites, ensuring the engagement of different groups of stakeholders (including the public) into the protection and proper management of the sites and their ecological values (the project 'Dealing with conflicts in the implementation and management of the Natura 2000 network - best practices at the local/site level' was commissioned by the DG Environment in 2009).

measures' where direct regulation is limited 'to the basics'.[1018] To resolve tensions, landowners and land users are ideally actively involved in management planning and management itself. The aim is to 'acknowledge their shared responsibilities by setting clear objectives for conservation, but ensure flexibility in agreed management measures'.[1019] This partnership focused approach is underpinned by the statutory legislation and is put into practical implementation through the way the regulatory agencies opt to fulfil their statutory duties: it is a model of decision making very close to the philosophy of adaptive management, one that 'endorses the constructive dialogue [and] listen[s] to a range of views';[1020] one model of trust, cooperation, communication, sharing information, where 'landowners are not the problem, they are the solution'.[1021]

6.2.1.1 Resolving conflicts from multiple land-uses

The law of nature conservation, or more precisely the implementation thereof, is familiar with the idea of balancing interests. It is not the purpose or the intention of national or European law to create wildlife sanctuaries, where all human activities are excluded, and focus is only set on conservation.[1022] Europe in general and the UK in particular are densely populated areas. As such, excluding all activities from protected areas can be very difficult,[1023] if

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[1018] ibid.

[1019] ibid (n42) 3.

[1020] DEFRA, *Sites of Special Scientific Interest: Encouraging positive partnerships. Code of guidance* (n558).

[1021] Bouwma and others (n998) 6.

[1022] *See* http://ec.europa.eu/environment/nature/natura2000/index_en.htm: 'Natura 2000 is not a system of strict nature reserves from which all human activities would be excluded. While it includes strictly protected nature reserves, most of the land remains privately owned. The approach to conservation and sustainable use of the Natura 2000 areas is much wider, largely centred on people working with nature rather than against it.'; *See also*: DEFRA, *Sites of Special Scientific Interest: Encouraging positive partnerships. Code of guidance* (n562); However, it needs to be mentioned, that especially as to the SSSIs designations and given the power afforded to NE to set out and indefinitely refuse consent of OLDs, the extent to which human activities are allowed will much on how the conservation body choses to implement it.

[1023] Ludwig Krämer, *EU environmental law* (7th edition. edn, Sweet & Maxwell 2012) 191mstressing that 'it is hardly possible to transform designated habitats into nature museums, where no change takes place'.

not unrealistic, but also not appropriate for several reasons: first, removing people from their land would amount to a major interference with property rights and as such it would require large amounts of funding for compensation.[1024] In a country like the UK with the majority of land under private ownership this seems unrealistic. In fact, in England 40% of the SSSI are under private ownership and from the remaining percentage only 16% belongs to organisations managing the land exclusively for nature conservation interests;[1025] around 75% of forest land in Great Britain is also privately owned.[1026]

Furthermore, even if this was somewhat possible, entirely excluding socio-ecological interests would require either a small number of designated sites or halting economic and social development. Let's consider farming for instance: farming uses more than 70% of the country's land area, employs almost 1.5% of its workforce and contributes 0.61% of its gross value added. [1027] At the same time the UK produces only 53% of the food it consumes.[1028] Imposing strict restrictions on designated land would mean that domestic agriculture industry would be unable to cover the increasing food demand. Given the central position of agriculture, this leaves one of two options: either a very small number of reserves or an effort to manage land for nature conservation without in principle excluding other uses. The latter is the approach taken by both the 1981 Act and the Habitats Directive.[1029] This does not imply that there are no areas managed entirely for nature conservation purposes. The power that ownership confers to the landowner, led statutory agencies and conservation organisations to acquire land of high

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[1024] Garca-Ureta and Lazkano (n763) 73.

[1025] 8% of SSSI land belongs to Natural England, 4% belongs to the Wildlife Trusts and 4% to RSPB; England, *Protecting England's Natural Treasures: Sites of Special Scientific Interest* (n557).

[1026] G. Hemery and others, *Awareness, action and aspiration among Britain's forestry community relating to environmental change: Report of the British Woodlands Survey 2015* (2015).

[1027] DEFRA, *Agriculture in the United Kingdom 2015* (2015).

[1028] DEFRA, *Food Statistics Pocketbook 2014* (2014), para.3.1.

[1029] *See supra* n1022.

biodiversity value in order to have it exclusively managed for nature conservation purposes.

Finally, also acknowledged in the preamble of the Habitats Directive is that the maintenance of biodiversity may in certain cases require the maintenance or indeed the encouragement of human activities.[1030] Grazing is an example of such an activity. In the case that Natural England owned and managed all the designated areas, they themselves would have to introduce sheep grazing management. But this would be rather unrealistic given the financial and human resources constraints. Therefore, working together with the farming community can lead to equally beneficial results for all parties.

6.2.1.1.1 Post Notification Preventive Measures: Operations likely to damage the Integrity of the Site

As discussed in Chapter Four, the SSSI notification should also specify 'any operations appearing to Natural England to be likely to damage that flora or fauna or those features'.[1031] The 1981 Act also establishes an obligation to refrain from carrying out OLDs[1032] and subsequently threatens with criminal charges anyone who contravenes this provision.[1033] However, despite stepping away from the previous purely voluntary approach, the regime

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[1030] Habitats Directive (n34) preamble, recital 3; Often it is the abandonment of human activities usually as a result of socioeconomic changes that have negative impacts on biodiversity: *See* R García-González, *Management of Natura 2000 habitats. 6170 Alpine and subalpine calcareous grasslands* (European Commission, 2008), 9; *See also* on the impact of undergrazing on lowland acid grassland SSSIs and the need for active management English Nature, *England's best wildlife and geological sites. The condition of Sites of Special Scientific Interest in England in 2003* (2003); Also *R. v Nature Conservancy Council Ex p. London Brick Co Ltd* (n568) where the special interest of the site was dependent on the owner carrying out positive activities (i.e water pumping). It was because of these activities that the site acquired its 'scientific interest' and which activities the landowner was planning to abandon. However, it was accepted that while the notification under section 28 could prohibit the carrying out of drainage operations which would change the level of the water, the owner could not be required to resume pumping. This case illustrates the weakness of the regime prior to the amendments made by CROWA 2000 in relation to positive management which can be absolutely essential for maintaining the special interest of a site.

[1031] WCA 1981 (n29) s.28(4).

[1032] ibid s.28E.

[1033] ibid s.28P.

retains its spirit of cooperation and its flexibility in relation to resolving the conflicts that are bound to arise because of restrictions imposed on land use.

Hence, s.28E of WCA 1981 introduces the conditions under which a landowner may proceed with restricted operations: first, the landowner or occupier has to give notice to Natural England of his intention to carry out an OLD and either be granted consent to proceed or enter a management agreement.[1034] However, following the CROWA 2000 amendments, it is at the discretion of Natural England to grant consent (with or without conditions) or refuse it indefinitely.[1035]

Negotiation and mutual agreements are still possible under the CROWA amendments; however, the bargaining position of the conservation body is now strengthened by the discretion to refuse to consent. The law also allows for conditional consents offering fertile ground for adaptive decision making: Natural England will work with landowners to find out whether it is possible for certain activities to be undertaken only in part of the site, or at certain times of the year, or in a certain way that will not compromise the integrity of the site, in order to issue a consent;[1036] or explore any alternative solutions that would enable Natural England to issue a consent.

In line with the more flexible character of the post-designation provisions of the WCA 1981, s.28F provides for an appeal to the Secretary of State in cases where the landowner is not satisfied with the outcome of the Natural England's decision,[1037] but which are not however available for notification decisions. The Secretary of State is granted discretion to decide himself, hold a wholly or partly private hearing or a local inquiry.[1038]

The WCA 1981 does not lay down specific criteria to bind Natural England (or the Minister of State in case of an appeal) when deciding on

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[1034]ibid s.28E (3).
[1035]ibid s.28E (5).
[1036] Natural England, *SSSI Regulation Operational Standard* (2013) 3.
[1037] Given the lack of a similar right with respect to the notification procedure, the provision for a right to appeal Natural England's decision on consent, has major human rights implications. This right to appeal holds the notification process human rights-compliant. *See* Bell, McGillivray and Pedersen (n515) 732.
[1038] WCA 1981.

consents. However, for SSSI land that is also designated as SAC or SPA then the stricter provisions of the Conservation Regulations 2010 apply. So, when Natural England receives an application for consent that relates to an operation which is or forms part of a plan or project that is likely to have a significant effect on a European site (either alone or in combination with other plans or projects), and is not directly connected with or necessary to the management of the site, they must make an appropriate assessment of the implications for the site in view of the site's conservation objectives.[1039] In the light of the assessment, they may give consent for the operation only after having ascertained that the plan or project will not adversely affect the integrity of the site.[1040]

Nevertheless, the lack of such a requirement for SSSI that are not designated as SACs and SPAs, does not necessarily mean that Natural England is unaccountable for consenting to damaging operations. Natural England is bound by its primary statutory duty to further conservation and any act that imperils its statutory purpose might give ground for a judicial review.[1041] Hence, there should be cases where private interests would give way to that of nature if all alternatives for compromising solutions have been exhausted.

Arguably, the changes in relation to OLDs brought about by CROWA 2000, significantly compromised the voluntary (albeit not the co-operative) character of the previous regime. However, the Act went further than merely imposing duties to private individuals. CROWA 2000 besides the general conservation duty in s.28G, introduced duties for the s.28G (3) authorities,[1042] which are now required to give notice to Natural England before carrying out in the exercise of their functions any of the proscribed operations. A similar obligation exists when they are about to permit the carrying out of such an

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[1039] Conservation Regulations 2010, reg.21.

[1040] ibid; *See* ch.4 s.4.2.2.2.1.

[1041] Bell, McGillivray and Pedersen (n515) 732.

[1042] s.28G (3) refers to *inter alia* the Secretary of State, government departments and agencies, local authorities and statutory undertakers (e.g. the Environment Agency, the Forestry Commission, Local Planning Authority, utility companies, MoD, Network Rail and Parish Councils). *See* Natural England, *SSSI Regulation Operational Standard* (n1036).

operation [1043] (e.g Environment Agency abstraction licence or a Local Authority planning permission).

When the s.28G authority intends to undertake the proposed operation, which might even take place outside the designated land,[1044] Natural England is asked to assent to the operation. As with the s.28E consent procedure, Natural England may assent with or without conditions or refuse to assent.[1045] Similarly to the conditional consent to private landowners, the s.28H (2) conditional assent allows room for negotiation into finding some common ground between the authorities.

There is, however, a major difference that shifts the balance between conservation and other interests. The public authority may proceed to undertake the operation despite Natural England's refuse to assent provided that they notify Natural England as to when they intend to proceed and how they have taken into account any written advice Natural England may have given. [1046] The WCA 1981, in contrast to the Conservation Regulations 2010, does not set any requirements or criteria e.g an overriding public interest to justify the authority's divergence of Natural England's advice. Neither does it require any measures to compensate for the damage. It does however subject the lawfulness of the operation on the authority carrying out the operations in such a way as to give rise to as little damage as is reasonably practicable.[1047]

In the same vein, when authorising operations, public authorities can proceed against Natural England's advice and permit an operation, as long as they give notice of the permission and of its terms to Natural England, as well as include in the notice a statement of how the authority has taken account the latter's advice.[1048] Hence, the procedural and substantive requirements laid down in s.28I allows for overall consideration of multiple interests:

[1043] WCA 1981 s.28I.
[1044] ibid s.28H (2).
[1045] ibid s.28H (3).
[1046] WCA 1981, s.28H (4) (5).
[1047] ibid, s.28H (6).
[1048] ibid, s.28I (6).

a. The requirement for Natural England's advice and for a statement of how this advice was taken into account, ensures that matters relating to the biodiversity interest of the site are given considerable attention during authorization procedures. There are no specific requirements on the contents of the statements but, given the general biodiversity duty that binds all public authorities, it should at least be able to show that the conservation body's advice was given the appropriate weight.

b. The 28G authorities may include conditions to the authorization - or Natural England may advice for such conditions to be attached. Both Natural England and the 28G authority have discretion on what these conditions would be, which give much room for negotiation among all interested parties.

The implications of these provisions are that they give rise to a defence for a private individual carrying out an OLD while granted authorisation of an authority acting under s.28I. Likewise, the carrying out of an OLD is lawful provided it was authorised by a planning permission granted on an application under Part III of the Town and Country Planning Act 1990. The different treatment of public bodies and especially the defences laid down in WCA 1981 s.28I and s.28P, lead us to conclude that despite the introduction of firmer provisions, English law still finds it very hard to impose a strict system of land use control for the sake of conservation To do this, nature conservation law needs to strike at the very heart of well-established traditions and views on the notion of property and what this entails, and it looks like it is not ready yet for such a big step. The discussion on development control within SSSIs that follows[1049] reveals that the regime is rather loaded in favour of private and socio-economic interests. Again, discretion is the key, and it is the actual implementation of the law by the local planning authorities that will determine how and if the interests are balanced.

[1049] *See infra* s.6.2.1.2.1.

6.2.1.1.2 Post Notification: Positive Management

As it has been made clear by now, nature conservation is not only about preventing damage but also ameliorating the condition of the natural environment. However, this might also create tensions with landowners as it is likely that they have other plans in mind for their land than carrying out conservation management. As mentioned, [1050] the law empowers Natural England to issue a management scheme [1051] that set outs the measures necessary to conserve or restore the features of the SSSI and which, in case of non-compliance - can be enforced - through the subsequent issue of a management notice. [1052] However, this would only apply in exceptional circumstances; Natural England's practice is to take enforcement action when as a last resort, [1053] hence it will first try to secure positive management through management agreements. [1054]

- Management Agreements

Management agreements are voluntary, albeit legally binding, individually negotiated contractual agreements that provide for the positive management of designated land. [1055] They provide a flexible approach to reducing tensions arising in SSSI post-notification as a result of the restrictions imposed to certain operations. They can also be used to address potential tensions that might arise due to differences in management requirements between nature conservation and the purpose for which the land in question is being managed. Natural England officers will try their best to negotiate and

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[1050] *See supra* ch.4 s.4.2.2.1.1.
[1051] WCA 1981 s.28J.
[1052] WCA 1981 s.28K.
[1053] Natural England, *Compliance and Enforcement Position* (December 2011) para.3.
[1054] Explanatory Memorandum, Sites of Special Scientific Interest (Appeals) (Amendment) Regulations 2010 para.7.3.
[1055] Countryside Act 1968 s.15(2) amended by Countryside and Rights of Way Act 2000 s.75(3) for SSSIs; NPACA 1949 (n22) for NNRs; Conservation Regulations 2010 reg.14 for European Sites; There is also a general power to enter into management agreements, granted to Natural England by NERC 2006 s.7; This general power is not limited to designated land and Natural England may exercise it as it sees fit, where it appears it would promote its general purpose to further nature conservation and sustainable development.

find a way to manage the land so as to balance the private interest of the land managers and that of nature.[1056]

There are no legal requirements in relation to the specifics of the agreement; hence, in principle the conservation body and the landowner may agree on anything. That includes activities that could be subject of the s.28E(3)(a) consent.[1057] Hence, Natural England can theoretically make an assessment and agree on carrying out certain OLDs in return for activities that would benefit biodiversity and even compensate for any damage the OLD causes to the site; if provided in the agreement, the condition of s. 28E(3)(b) is satisfied and the landowner will be able to carry out the potentially damaging operation.[1058] Going back to Arnstein's 'ladder of citizenship participation'[1059] management agreement seems to falling within partnership" - found at the upper tier but not upper rung of the ladder - since they enable citizens (landowners) to negotiate and engage in trade-offs with traditional power holders (Natural England).[1060] They also sit somewhere in between cooperation and communication of Berkes *et al* co-management ladder.[1061] Nevertheless, Natural England is in a superior position given that it is at its discretion to offer a management agreement and usually the focus is on sites most in need.[1062]

- Management Scheme

Contrary to the management agreements, management schemes are regulatory measures that are designed and capable of being enforced, unilaterally, by the conservation body through issuing a management

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[1056] DEFRA, *Sites of Special Scientific Interest: Encouraging positive partnerships. Code of guidance* (n558) para.29; Natural England, *Natural England Standards. Sites of Special Scientific Interest* (n751) 8.
[1057] WCA 1981 s.28E(3)(b).
[1058] ibid.
[1059] Arnstein (n876); *see* ch.5 s.5.2.1.
[1060] ibid ch.5 s.5.2.1.
[1061] ibid.
[1062] English Nature, *The Wildlife Enhancement Scheme: Delivering management agreements for English Nature* (English Nature, 2002/2003).

notice. [1063] However, the legislator's predilection to amicable conflict resolution is reflected in the fact that WCA 1981 will allow a management notice to enforce positive management only when a management scheme has been put in place.[1064] Additionally, although Natural England may formulate a management scheme anytime, it will only do as a measure of last resort.[1065] Nevertheless, even in this otherwise top-down decision-making process, the legislation allows for a basic form of engagement participation in the form of the procedural requirement of landowner consultation,[1066] falling within the middle tier of Arnstein's ladder of participation and the second rung of Berke's et co-management ladder.

Managements agreements (as well as any work undertaken as part of a management scheme) [1067] are supplemented by economic incentives. [1068] Landowners will receive payments for any positive work they undertake on the basis of a management agreement. Under the Guidelines on Management Agreement Payments and Related Matters (DETR 2001),[1069] public funds are to be invested on positive rather than negative aspects of land management; for works that landowners would not otherwise undertake:

> Ministers expect that management agreements on SSSIs will be used to facilitate their positive management…Ministers are not **prepared for public money to be paid out simply to prevent new operations which could destroy or damage these national assets**.[1070]

At this point I need to make an observation. Until the Environmental Stewardship scheme was launched in 2005, statutory management

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[1063] WCA 1981 s.28K, S.28J; *See also* the discussion in ch.4, s.4.2.1.1.

[1064] It is also the Government's expectation that management notices would only be used in exceptional circumstances. *See* DEFRA, *Sites of Special Scientific Interest: Encouraging positive partnerships. Code of guidance* (n558) 7.

[1065] *See supra* n1054.

[1066] WCA 1981 s.28J (3).

[1067] WCA 1981 s.28M (2).

[1068] *See* DETR *Guidelines on Management Agreement Payments and Other Related Matters* (n761) para.1.2.

[1069] The 'Guidelines' document has a statutory effect by virtue of s.50(1) of the WCA 1981,

[1070] DETR, *Guidelines on Management Agreement Payments and Other Related Matters* (n761) para.1.2.

agreements were made under the Wildlife Enhancement Scheme (WES),[1071] a land management initiative funded by central government. These agreements were tailor-made, individually negotiated management agreements, targeted at the specific requirements of the various SSSIs. They also exemplified a collaboration-based model of designated land management 'by combining Natural England's knowledge of wildlife management with the owner or occupier's skills and knowledge of the land'.[1072] Operating through schemes like WES, management agreement could fulfil its full potential for balancing interests and resolve tensions. During the negotiation procedure, both parties would lay down their particular needs and problems and aspirations to be taken into account in the final agreement. They were also normally for five years with a possibility of renewal.

However, negotiating individual agreements was a costly process and this led to the transfer and incorporation of SSSI agreements to the Rural Development Programme for England jointly under Pillar 2 of the EU Common Agricultural Policy. Hence SSSI agreements became part of the Higher-Level Stewardship.[1073] The implications were significant for the flexibility of SSSI agreements. AES agreements as mentioned in Chapter Four are focused schemes that offer standard payments for standard management requirements.[1074] As a result, besides being unable to deliver management specifically targeted at the SSSI in question, its unique features and biodiversity, this 'transfer' of statutory management agreements to AES leaves significantly less room for negotiation. Nevertheless, tailor-made agreements

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[1071] English Nature, *The Wildlife Enhancement Scheme: Delivering management agreements for English Nature* (English Nature 2002/2003).

[1072] *See*<http://webarchive.nationalarchives.gov.uk/20140605103232/http://www.naturalengland.org.uk/ourwork/farming/funding/closedschemes/wes/default.aspx> accessed January 2018.

[1073] Higher Level Stewardship (HLS) was the top tier of Environmental Stewardship, the agri-environmental scheme that ran between 2005-2015. HLS agreements were by invitation only and targeted at priority areas such as SSSIs. The lower tier that had a wider focus, was the Entry Level Stewardship. *See* Natural England, *Entry Level Stewardship. Environmental Stewardship Handbook* (Fourth Edition, Natural England, 2013); DEFRA, *Higher Level Stewardship. Environmental Stewardship Handbook* (2013).

[1074] *See supra* ch. 4 s. 4.2.2.1.2.

can still be created under the Conservation Enhancement Scheme, but only for land that does not qualify for environmental stewardship (e.g non-agricultural land).[1075]

It follows from the analysis so far that, during the last few decades, the nature conservation regime underwent two transitions: a. towards positive management, enhancement and restoration of the natural environment rather mere prevention of further degradation through the more traditional approach of restricting damaging activities. and b. from voluntarism to a regulated consensus building. The available tools have remained the same[1076] and despite the departure from the voluntary principle, voluntary conservation, being very well rooted within English conservation policies, has been difficult to completely override.

In this context, management agreements remain the primary mechanism for securing effective conservation management, the flagship of nature conservation in England.[1077] They provide the necessary flexibility so that management is adapted not only to the special natural features and technical and scientific requirements of individual sites but also to the needs of other land users, mainly agriculture.

However, following the amendments under the CROWA 2000, negotiations take place against a substantially different background, with Natural England having a markedly strengthened bargaining superiority: the amended version of the WCA 1981 sets a coherent framework for management agreements, which are now negotiated against the threat of the regulatory lever. Natural England may refuse to consent to an OLD indefinitely or exercise its powers to issue and enforce a management scheme. The likelihood of a refusal by the statutory agency to consent, or the potential

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[1075] Natural England, *Conservation and Enhancement Scheme: Notes for Agreement Holders To help set up and complete a CES agreement* (Natural England, 2011).

[1076] Rodgers, *The law of nature conservation: property, environment and the limits of the law* (n6) 112.

[1077] Reid, *Nature conservation law* (n1) 193; In 2008, 63% of SSSI land was supported by an incentive and only one management scheme had been put in place, *see* National Audit Office, *Natural England's role in improving sites of special scientific interest* (n683) 19, 21.

threat of a management scheme, will become leverage to engage landowners in a fruitful agreement negotiation.[1078]

6.2.1.2 Resolving conflicts as a result of development control in designated sites.

6.2.1.2.1 Domestic Designations

The protective regime established by the WCA 1981 is significantly relaxed as regards development operations, as neither the WCA 1981 nor the planning legislation provide for a blanket ban on development that might affect SSSIs.[1079] In the absence of strict controls on development the balanced is shifted in favour of socio-economic interests. As the discussion will show, there is still potential for compromise and agreement, but here the roles here are reversed. Planning permission is a matter for planning authorities exercising wide discretion and Natural England does not have a superior position in the negotiation table anymore.

As mentioned above, under s.28P WCA 1981 a landowner can lawfully carry out activities without Natural England's consent provided he or she has a planning permission, even if the activity is included within OLDs included in the SSSi notification. Hence, for operations that fall under 'development' for the purposes of planning legislation, it is the local planning authority rather than Natural England that decides whether a development within an SSSI may proceed.

Nevertheless, the law provides for the consideration of SSSIs' interests by introducing a statutory obligation for planning authorities to consult Natural England while exercising their right to approve a planning proposal on any development that is affecting or likely to affect a SSSI.[1080] The objective

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[1078] *See* Karkkainen's theory on penalty defaults in Karkkainen, 'Adaptive Ecosystem Management and Regulatory Penalty Defaults: Toward a Bounded Pragmatism' (n74) and the discussion in chapter 5, s.5.2.5.2.

[1079] David Brock, 'Is nature taking over?' (2003) Supp (Occasional Papers No.31) Journal of Planning & Environment Law 50.

[1080] Town and Country Planning (Development Management Procedure (England)Order (DMPO) (2015), sch.4; WCA 1981 s.28I; An application for planning permission in a SSSI will

of this rule is to allow Natural England to give advice and perhaps secure a management agreement. Prior to the introduction of the WCA 1981 this was the only protection for SSSIs. The planning authority must consider Natural England's advice, but it is not legally bound by it.[1081] It follows that an approval may be granted, and damaging operations may take place within the protected area.

Although unable to provide a high level of protection, these arrangements do ensure that nature conservation interests will be considered. The consultation process has a purpose similar to the EIA: they are both procedural requirements that provide the decision-maker with relevant information in relation to all interests at play, so as to be considered before the final decision. The fact that Natural England is a statutory consultee at the beginning of the planning process is crucial for the implementation of adaptive collaborative management. Early communication of the conservation issues arising by the proposed development allows for Natural England, the planning authorities, the developers, nature conservation organisations and anyone with an interest to the site[1082] – at the discretion of the planning authority - to work together to secure a solution in order to accommodate as many competing interests possible.

The National Planning Policy Framework sets out the government's planning policy for England, [1083] imposes a presumption in favour of sustainable development[1084] and provides for the integration of planning and nature conservation. [1085] In essence, the Framework seeks to help local

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also require an environmental impact assessment under the Town and Country Planning (Environmental Impact Assessment) Regulations 2011, SI 2011/1804; *See also* ODPM Circular 06/2005/DEFRA Circular 01/2005 Biodiversity and Geological Conservation - Statutory Obligations and Their Impact Within the Planning System.

[1081] WCA 1981, S.28I;

[1082] According to DMPO 2015 (n1080) art.15 local planning authorities are required to undertake a formal period of public consultation, prior to deciding a planning application. Any interested stakeholder can make representations which is crucial to the implementation of adaptive management as all different interests can be represented.

[1083] National Planning Policy Framework (NPPF) (DCLG 2012).

[1084] ibid para. 11-16.

[1085] ibid para. 109-125.

authorities to strike a balance between development and biodiversity interests and/or conservation interests of designated areas. The Framework makes a rare distinction between significant harm and adverse effects.[1086] As to the former, it provides for a planning permission to be refused if significant harm to biodiversity cannot be avoided (by relocating activities to an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, or compensated for.[1087] In cases where the proposed development on land within or outside an SSSI is likely to have an adverse effect on the SSSI (either individually or in combination with other developments) it should not normally be permitted. Where an adverse effect on the site's notified special interest features is likely, an exception should only be made where the benefits of the development at this site clearly outweigh both the impacts that it is likely to have on the features that make the site of special scientific interest and any broader impacts on the national network of Sites of Special Scientific of Interest.

The policy on SSSI development mirrors the Habitats Directive procedure on plans and projects likely to affect European designations.[1088] It exempts SSSIs from development likely to have adverse effects, while at the same time recites circumstances when planning permission should be granted. Clearly, the NPPF is not legally binding, however, the planning authorities need to give proper regard as it reflects the government's priorities; the NPPF seeks to guide planning authority with exercising its 'balancing' duty, by attaching more weight on securing the integrity of SSSI.[1089]

However, the fact remains that despite elevating the status of conservation considerations, the NPPF does not lay down statutory requirements. At the same time, the local planning authorities are not bound by the same duty to conservation that Natural England is. Although they are

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[1086] ibid para.118.

[1087] ibid para.118; Here the NPPF refers to biodiversity in general not just SSSI development.

[1088] Habitats Directive (n34) art.6(4).

[1089] The conservation interest of a site is a material consideration when it comes to decisions on whether to grant planning permission Town and Country Planning Act 1990 s.70(2); *See also* Bell, McGillivray and Pedersen (n515) 431.

under the duty to further conservation within the SSSIs[1090] and are also bound by the NERC 2006, s.40 general biodiversity duty, local authorities are also legally bound by a number of other statutes that introduce duties more than often not conflicting with conservation.[1091] Therefore, given the absence of a statutory ban of development within SSSI a judicial review against local authority decision has a very limited likelihood of success.[1092]

It is a fact that the legislature wished for development, even when it takes places in designated areas, to remain a planning policy rather than a scientific decision. In a different case, the decision would have been left with Natural England or at least Natural England's advice would have had a binding effect. On the contrary the non-experts (planning authorities and inspectors) are entrusted with planning decision-making. Arguably, development decisions are viewed as capable of affecting a greater part of society than a s.28 OLD, and as such the democratically elected local authorities are the 'arbiters of disputes' between the different interests involved. [1093] During this 'balancing' exercising their only statutory obligation is to consider all material factors, hence the statutory consultation of Natural England and the wider public.[1094] The weight attached to each of these factors and the final judgement

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[1090] WCA 1981 s.28G.

[1091] Rodgers, *The law of nature conservation: property, environment and the limits of the law* (n6) 60 argues that 'the nature of many of the obligations on public bodies and statutory undertakers means that their primary statutory functions may necessitate discounting nature conservation in practice'.

[1092] Provided all procedural requirements are complied with and given the judicial preference of not interfering with administrative decision making when the competent authority is exercising discretion.

[1093]Brock (n1078) 68; The inherent differences between Natural England and Local Planning authorities are reflected in a comment made by the latter when referring to delays caused by objections made by the statutory body and RSPB in relation to a housing development affecting an SCA: 'We are a small area with no spare land and if we went along with this, with the threat of objection and judicial review, we could not grant any new housing..... Natural England is a quango and they are not acting in the public's best interest. This has been a major problem' in Gemma Burgess, *The Nature of Planning Constraints. Report to the House of Commons Communities and Local Government Committee* (Cambridge Centre for Housing and Planning Research, University of Cambridge, 2014), 29.

[1094] In fact, depending on the development there is a list of statutory consultees whose advice need to be considered before final decision making. *See* Table 2 in <https://www.gov.uk/guidance/consultation-and-pre-decision-matters#Statutory-consultees-on-applications>.

is at the discretion of the authority. Judicial scrutiny will be limited, and courts will only intervene to quash a planning permission 'if it appears "so unreasonable that no reasonable authority could ever come to it"'.[1095]

To conclude, the legal protection afforded to designated areas in relation to development is rather weak. [1096] Planning authorities are left to decide what kind of protection will afford to statutory designations under their jurisdiction. They may adopt restrictive planning policies where nature conservation weights higher than any other consideration or prioritise other interests and allow development. Political influence, conservation or industry lobbying but also the opinion of the public can be decisive factors in the final decision. If a planning permission is granted, it will act as a defence for prosecution for damaging an SSSI. In this case, Natural England's options will most likely include a compulsory purchase or a management agreement that would have to compensate for lost profits.[1097] In both cases, large amounts of money provided from public funds will be required.[1098]

- *ss. 70 and 106 of the Town and Country Planning Act 1990*

Does this mean that there is no room for compromise? The truth is that contrary to land management activities where interests are likely to overlap or align, development is more likely to result in permanent biodiversity loss. Hence the scope for compromise is significantly narrower. Nevertheless, the planning system offers two opportunities for trade-offs and adaptive co-management techniques that reflect the 'negotiative nature'[1099] of planning

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[1095] Rodgers, *The law of nature conservation: property, environment and the limits of the law* (n6) 59, referencing the *'Wednesbury unreasonableness'.*

[1096] it's worth mentioning that there would be some cases that law favours biodiversity interests against that of development. If within the proposed area and irrespectively of its status as designated area, there are individuals belonging to species protected under the WCA 1981 or the Habitats and Birds Directives, then a licence from Natural England is required. If development proceeds without a license and results in killing or damaging listed species, developers would be guilty of an offence. It seems then that species legislation can often afford stronger protection to biodiversity than land designations.

[1097] Bell, McGillivray and Pedersen (n515) 734.

[1098] ibid.

[1099] ibid 437.

legislation.

First, there is the provision in s.70 of the Town and Country Planning Act that allows for conditional grant of permission. The local planning authorities may impose such conditions 'as they seem fit' meaning that they can exercise discretion when deciding on conditions. Such discretion is nevertheless limited by ss.72 and 75 and judicial control.[1100] Although the statutory guidance in ss.72 and 75 is limited and relatively insignificant, legal tests developed by courts throughout the years have shaped the decision-making procedure on conditions.[1101] The conditions must:[1102]

a. be imposed for a planning purpose and not for an ulterior motive;
b. fairly and reasonably relate to the development permitted
c. not be perverse (Wednesbury unreasonable)

A condition attached to a planning permission to mitigate conservation loss or SSSI damage will most likely satisfy the legal test formulated by the courts, especially within the context of the NPPF, the WCA 1981 s.28G duty to take reasonable steps to enhance the SSSI special features and the NERC 2000, s.40 general biodiversity duty. In fact, planning conditions have been used to control environmentally harmful activities, especially if not controlled by other regimes. [1103] Hence, they provide a window of opportunity for negotiation to take place among Natural England, the developer and the planning authority to formulate conditions that would mitigate the harmful effect of the proposed development and allow the development to proceed.

A second opportunity is to be found in s.106 of the 1990 Act. which provide for planning obligations agreements. These are legally enforceable private agreements[1104] between the developer and the planning authority that

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[1100] ibid 433-434.
[1101] ibid 434.
[1102] ibid 434, citing *Berkeley v. Secretary of State for the Environment, Transport and the Regions* (n705).
[1103] ibid; S. Bell, D. McGillivray and O. Pedersen also discuss the controversial issue of using planning conditions as a means to achieve continuing pollution control, since it is likely to duplicate with other statutory controls.
[1104] Town and Country Planning Act s. 106(1).

can be attached to a planning permission to allow otherwise unacceptable development to proceed. They can be used in a range of purposes and have a scope which is wider than that of conditions e.g. they can include work on a different site than the one of the proposed development.[1105] Hence they can be used to mitigate environmental harm but also to provide for environmental gain.[1106]

Planning obligations, therefore, open the door to biodiversity offsetting. Biodiversity offsetting holds great potential as a balancing mechanism and has been gaining much attention in the literature and policy as a way to secure no net loss and ideally a net biodiversity gain.[1107]

> Biodiversity offsets are measurable conservation outcomes resulting from actions designed to compensate for significant residual adverse biodiversity impacts arising from project development after appropriate prevention and mitigation measures have been taken. The goal of biodiversity offsets is to achieve no net loss and preferably a net gain of biodiversity on the ground with respect to species composition, habitat structure, ecosystem function and people's use and cultural values associated with biodiversity.[1108]

Biodiversity offsetting is increasingly recognised as a way to ensure that when a development has negative effects on the natural environment, then new nature sites will be created to outbalance the loss. In this sense it is in fact a pragmatic approach to reconciling conflicting interests through trade-off arrangements. In line with the growing attention biodiversity offsetting has earned in literature, Defra and Natural England ran six biodiversity offsetting pilot areas from 2012 to 2014, to assess the practicalities and implications of a voluntary biodiversity offsetting scheme.[1109] There were mixed results as to whether a voluntary biodiversity system was sufficient to support biodiversity

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[1105] Colin T. Reid, 'The Privatisation of Biodiversity? (n216) 216.
[1106] Ibid.
[1107] Reid, 'The Privatisation of Biodiversity?; DEFRA, *Biodiversity offsetting in England Green paper* (2013).
[1108] Business and Biodiversity Offsets Programme (BBOP), *Biodiversity Offset Design Handbook* (2009) 6 cited In Reid, 'The Privatisation of Biodiversity?' (n216) 215.
[1109] Baker and others (n794).

offsetting.[1110] Defra following the initiation of the offsetting pilot project, issued and placed under consultation a Green Paper on biodiversity offsetting and its integration into planning systems as a means to bridge nature and development interests.[1111] Interestingly a vast majority of the responders, opted for making biodiversity offsetting mandatory, against the Government's preference over voluntary approach.[1112] Defra and Natural England have also published detailed Guidance for offset providers, developers and local authorities in the pilot areas.[1113]

Certainly, although biodiversity offsets might seem a relatively straightforward and simple idea, they are more complicated in their implementation and their effectiveness has been brought into question due to practical and scientific limitations,[1114] while they have also attracted criticism on moral and ethical grounds.[1115] As with most flexible instruments, their contribution to nature conservation will depend on their implementation; biodiversity offsets might work in favour of development, in the case e.g of

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[1110] Ibid.

[1111] DEFRA, *Biodiversity offsetting in England Green paper* (n1107); The consultation was on the use of biodiversity offsets regardless of the status of the site of proposed development as a protected area.

[1112] DEFRA, *Consultation on biodiversity offsetting in England: Summary of responses* (2016) 9-10; Also, as expected, the majority of NGOs and planning authorities opted for a mandatory approach while the majority of developers favoured a voluntary approach.

[1113] These are available at <https://www.gov.uk/government/collections/biodiversity-offsetting> accessed March 2018.

[1114] D. McGillivray, 'Compensatory Measure against Article 6(4)' in C.H. Born and others (eds), *The Habitats Directive in Its EU Environmental Law Context: European Nature's Best Hope?* (Taylor & Francis 2014), 106 discussing practical challenges of biodiversity compensation; Reese Moritz, 'Habitat offset and bankong -will it save our nature' in C.H. Born and others (eds), *The Habitats Directive in Its EU Environmental Law Context: European Nature's Best Hope?* (Taylor & Francis 2014).

[1115] Christopher D. Ives and Sarah A. Bekessy, 'The ethics of offsetting nature' (2015) 13 Frontiers in Ecology and the Environment 568, discussing how offsetting is unable to account for the multiple values attached to nature as well as the implications of viewing nature as tradeable commodity; *See also* Karl Mathiesen, *Is Biodiversity Offsetting a 'License to Trash Nature'?* THE GUARDIAN (12 November 22, 2013), <https://www.theguardian.com/environment/2013/nov/12/biodiversity-offsetting-license-trash-nature> accessed February 2018 quoting Friends of the Earth consultation response to Biodiversity Offsetting '*Nature's intrinsic value cannot be accurately measured and access to the natural world is valued by local communities – both values are lost if nature is treated as a chess piece to be shifted around the country whenever a development comes forward*.'

strict planning, authorities are most likely to refuse applications with adverse effects on the integrity of an SSSI; or they might work in favour of the natural environment, if for example the planning authority is willing to permit the development regardless of its potential harm to biodiversity. And of course, there is likelihood for abuse if for instance planning authorities approve development proposals that would otherwise be refused on the basis of a risky offsetting project that might not be able to compensate for biodiversity loss. Below is RSPB's response to Defra's consultation:

> There are many different types of 'system' that could be introduced, and our support will depend on the details of the framework that is adopted. An offsetting system could significantly improve the way the planning system deals with biodiversity, but it could also make the situation considerably worse. We would support a new system that captures currently unaddressed small - scale losses of biodiversity and turns these into strategic gains via offsetting. Conversely, we would strongly oppose a system that fails to capture and offset lower - value biodiversity loss that would not necessarily warrant refusal of a planning application , yet facilitates the risky offsetting of high - value biodiversity where the loss may justify refusal of the planning application . [1116]

Despite the recognition of the offsetting potential in policy, there seems to be a reluctance to introduce biodiversity offsetting schemes as a statutory requirement within the general planning framework, even if only in relation to development affecting SSSIs.[1117] However, it would not be the first time where a voluntary instrument transitioned into a statutory obligation. For now, biodiversity offsetting in relation to domestic designation is at the phase where although not mandated, it is being encouraged by policy[1118] and can be applied through legislation. Hence it is one more flexible instrument in the tool

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[1116] RSPB, *Consultation on the Green Paper on Biodiversity Offsetting* (RSPB, November 2013) available at <http://ww2.rspb.org.uk/Images/biodiversity-offsetting_tcm9-358604.pdf> accessed March 2018.

[1117] The only occasion where biodiversity offsetting becomes a statutory requirement is under CHSR 2010, reg.66 that transposes art.6(4) requiring compensatory measures to be put into place in the exceptional situation where a plan or project likely to damage a Natura 2000 is allowed to proceed by virtue of the derogation laid down in the same article.

[1118] NPPF (1082) para.118.

basket of administrative authorities to balance the interests between socioeconomic development and nature conservation.

6.2.1.2.2 European Designations: The Habitats Directive art.6(4)

Chapter Four, in the context of the discussion of science-driven technocratic decision making, referred to art.6(3) of the Habitats Directive that affords a high standard of protection on Natura 2000 sites laying down an assessment requirement for plans and projects likely to have significant effects on the site either individually or in combination with other projects.[1119] The analysis concluded that the AA is a highly technocratic, closed assessment where administrative discretion is considerably restricted in comparison to the EIA assessment or the balancing process that take place during approvals under planning legislation.

In contrast to the EIA assessment, which is a project-based procedure whose objective is to ensure wide public participation and information gathering, the AA is a site-based assessment whose purpose is to safeguard the integrity of the site.[1120] Similar to the WCA 1981 ODLs consent procedure, the AA is a closed assessment; the decision-making authority is granted discretion to acquire the opinion of the public without however being legally bound to do so.[1121]

Like site designation, the AA is a scientific-based assessment where social and economic reasons are not given any weight in the final judgement. A permission (or consent or licence)[1122] may only be granted if the competent authority has ascertained that the integrity of the site will not be adversely

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[1119] The Habitats Directive assessment requirements are transposed into English Law through reg.61-67 of Conservation Regulations 2010.

[1120] Rodgers, 'Planning and Nature Conservation: Law in the Service of Biodiversity' (n2) 106; Bell, McGillivray and Pedersen (n518) 746.

[1121] Conservation Regulations 2010, reg.61(4).

[1122] Given the wide and purposeful interpretation of 'plans and projects' reg.61 also governs decision making that falls outside 'development' as defined in planning law. In that case, it is more than one authorities that might need to make an assessment or determine whether one is required.

affected.[1123] These strict controls introduced in the Habitats Directive provide a shining example of tensions that ignite as a result of legal interventions to resolve conflict in the favour of nature conservation. The strict protection afforded by the Habitats Directive to European Designations made the Nature Conservation NGOs to highly appreciate it[1124] and the developing industry to resent it.[1125] The latter saw it as a major obstacle that at best was a source of delay and at worst was thwarting their plans.[1126]

Notwithstanding the technocratic nature and stricter protection it affords to European designations in comparison to the one applied to SSSIs, the Habitats Directive is far from one rigid and cumbersome regime. On the contrary, it can be argued that given the wide discretion granted to public authorities through the judicial interpretation of art 6(3), in practice, what is perceived as an immensely strict nature conservation regime may in certain cases prove otherwise.[1127]

Truly, the precautionary interpretation of art.6(3) in Waddenzee resulted in what has been recognised 'as one of the most stringent [restrictions] available to governmental or private objectors to plans or projects in the vicinity of European sites'.[1128] Nevertheless, socioeconomic

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[1123] *See supra* ch.4 s.4.2.2.1.2

[1124] RSPB *Defend nature. How the EU nature directives help restore our environment* (Undated); Following an announcement by the EU Commission to reform the Habitats and Birds Directive, environmental NGOs launched the campaign 'Defend Nature' against the proposed reform. In the UK, 100 environmental NGOs, got together to submit the UK NGO sector's response to the first phase of the Commission's Fitness Check consultation supported by over 500 separate pieces of evidence. *See* Joint Links, *Joint Links Position Statement: European Commission 'Fitness Check' of the Birds and Habitats Directives* (2015) available at <http://www.wcl.org.uk/habsregs.asp> accessed in December 2016. Considered a great victory by the Conservation lobby, in 7 December 2016 the EU Commission decided not to reform the Directives: 'Following an 18 month Defend Nature campaign run by environmental NGOs across Europe - and a public consultation with a record 550,000 respondents - European Commissioners today decided to save the EU's flagship environment legislation; the Birds and Habitats Directive' in ibid.

[1125] F.J Mink, *EUDA Analytical Paper. Maritime infrastructure and Marine Coastal Zones. Issues with the Habitats Directive* (European Dredging Association Environment Committee, 2007); Burgess (n1093).

[1126] ibid.

[1127] Scott (n731).

[1128] ibid 104.

reasons are not entirely excluded as a consideration to be taken into account before the competent authority reaches the final decision on an approval application. These are only come into play under art.6(4) (or reg. 63) derogation, as imperative reasons of overriding public interest (IROPI). Article 6(4) reads:

> *If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.*
>
> *Where the site concerned hosts a priority natural habitat type and/or a priority species, the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest.*

Before proceeding to discuss IROPI and the ways the Habitats Directive seeks to balance nature conservation with socioeconomic development, I would like to make some observations on how the technocratic nature of the Directive is being watered down even before art.6(4) derogations come into play. First, it is the nature of the 'competent authority'; second it is the possibility of putting into place mitigation measures.

- **The Article 6(3) competent authority**

As would be expected, the Habitats Directive does not mention who the competent authority is but rather leaves the Member States to decide. In England, the AA process has been integrated into other decision-making procedures and thus the competent authority for the AA permit will be the making the decision in question.[1129] Hence the AA assessment is not made by

[1129] Competent authorities include, but are not restricted to: Local Planning Authorities; The Environment Agency; Harbour Authorities; Marine Management Organisation; National Park Authorities; Forestry Commission; Natural England can also be a competent authority during

a nature conservation body or any other scientific organisation.[1130] Natural England is only a statutory consultee to the assessment, whose advice is not legally binding'.

This has the following implication: it weakens the technocratic nature of the assessment process. First, as mentioned in Chapter Five, although being asked to make a scientific assessment, many of these authorities are not experts themselves. This puts into question their ability to make effective AA assessments that include details of complex and technical issues.[1131] There is also the matter of a conflict of interest, given the fact that the majority of these authorities do not have nature conservation as their primary statutory duty. This is especially true for local authorities that are expected to provide for their constituents and foster the growth and development of local economies.

Hence, socioeconomic development, which has traditionally been embedded to local decision-making, is bound to influence at least partially and perhaps unintentionally the AA process. This is particularly true during the first stage of the AA process, the determination whether an AA is needed. During this initial stage, the safeguards of conservation body consultation and potential public participation that are likely to give weight to environmental considerations are absent and the decision is made solely by the competent authority itself. Even more problematic is the case when the competent authority has the twin role of being the one applying for permission or consent

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the consent process of operations requiring consent. Often in cases where jurisdictions overlap more than one authority might be responsible to make an assessment. Private companies exercising public duties can also be 'competent authorities' under the meaning of the Habitats Directive. That was the ruling in *Akester* (n740) [85] where Owen J held that 'neither the Habitats Directive nor the Habitats Regulations preclude a non-governmental body from being a competent authority (…) the fact that it is a private company does not in my judgment disqualify it from discharging its public duties as statutory harbour authority. The discharge of its public duties must override commercial considerations. If it fails in this regard, then the exercise, or failure to exercise its public functions, will be subject to supervision by the court by judicial review'.

[1130] For instance, in Slovenia it is the State Institute for Nature Conservation or in Denmark the Danish Nature Agency that issue the relevant consent in Kerstin and Roth (n711) 19.

[1131] Paul Stookes, 'The Habitats Directive: Nature and Law' in Gregory QC Jones (ed), *The Habitats Directive A Developer's Obstacle Course?* (Hart Publishing 2012), 149-150; *see* also ch.4 s.4.2.2.2.1.

for an operation and the one granting it; this conflict of interest is likely to have a bearing on the outcome of the decision. [1132]

- **Mitigation Measures**

A second observation would be the provision for mitigating measures to be considered during the AA process. Regulation 61(6) allows mitigation measures to be considered by the competent authority while making the appropriate assessment. The practical implication of this provision is that the competent authority can impose conditions, either on a case by case basis or as part of wider plan,[1133] to strike a balance between nature conservation and other interests.

One example of standardised mitigation measures is the Suitable Alternative Natural Greenspace (SANG) mechanism that was developed to provide mitigation for the potential impact of residential development on the Thames Basin Heaths SPA by preventing a potential increase in visitor pressure on the SPA.[1134] Essentially, SANG is an alternative open green space that seeks to attract visitors (mainly dog walkers) and divert them from using the SPA to using the SANG. What is of great interest is the high level of cooperation and partnership between the local authorities and organisations involved in delivering the SANGs project. The large number of local authorities involved [1135] and the cumulative nature of the impacts (from individual housing applications) required a coordinated approach to the mitigation. The Thames Basin Heaths Joint Strategic Partnership Board (JSPB) was set up 'to provide the vehicle for joint working between local authorities and other

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[1132] *See* ch.2 ss 2.3.1, 2.3.2. the discussion on conservation conflicts.

[1133] That would be the case of the Suitable Alternative Natural Greenspace (SNAG) mechanism discussed below.

[1134] For a detailed study of the SANGs and their potential as a conflict resolution mechanism *see* Simon Ricketts and Sarah Bishoff, 'SANGs: The Thames Basin Case Study' in Gregory QC Jones (ed), *The Habitats Directive A Developer's Obstacle Course?* (Hart Publishing 2012).

[1135] The SPA extends over 11 local planning authorities in Surrey, Berkshire and Hampshire and comprises a network of 13 Sites of Special Scientific Interest (SSSI).

organisations responsible for protection of the Thames Basin Heaths SPA'.[1136] Housing developers within the Thames Basin Heath SPA Zone of Influence (roughly within 5km of the perimeter of the SPA) are required to finance the provision of SNAGs and contribute towards the Strategic Access Management and Monitoring (SAMM). Applying an ecosystem rather jurisdictional based approach, it was agreed that developers' funding was to be collected by local authorities on an individual basis but used strategically across the SPA through the co-ordination of Natural England. Hence, it could be the case that tariffs collected by local authority A could be used to fund management within the jurisdiction of local authority B.

While underpinned by similar principles, SANGs are to be considered mitigation rather than compensation measures.[1137] SANGs seek to prevent loss or deterioration of the designated area which continues to maintain its integrity. Therefore, in principle there is no loss to compensate for. SANGs is a bright example of adaptive collaborative decision-making that seeks to reconcile the interest of the Thames Basin SPAN and the continuous and increasing need for housing. As Ricketts and Bischoff stress 'SANG has proven to be a necessary and pragmatic solution to a fundamental conflict between habitats protection and the need for housing'.[1138] Furthermore, it provides the financial means for the management and enhancement of non-designated areas that would probably otherwise remain undermanaged.

On the other hand, given the existing scientific uncertainty, potential risk to the SPA from the permitted development cannot be ruled out.[1139] The risk of damage to the site increases by what seems to be settled case-law that mitigation measures forming part of a plan or project could, as a matter of law, be considered at the screening stage. The courts have in several cases held that it is lawful to take into consideration a mitigation scheme before reaching a

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[1136] Natural England, *Thames Basin Heaths. Strategic Access Management and Monitoring Project.Tariff Guidance* (Natural England, March 2011).
[1137] *See* discussion that follows on compensatory measures.
[1138] Ricketts and Bischoff (n1134) 137.
[1139] ibid.

decision at the 'screening stage'.[1140] Thus, decision-making authorities can evade the AA process, which in turn questions the compliance with the purposive interpretation of the directive and the precautionary principle.[1141]

Nevertheless, for the purpose of this discussion, the fact remains that the reg. 61(6) gives space for adaptive collaborative conflict resolution instead of a binary, purely technocratic approach. As with most nature conservation legislation and policy, in the end, much depends on the practical implementation. Mitigation measures offer a great opportunity for adaptive management, but incorrect implementation might turn it to a 'simple and convenient hoop-jumping exercise designed to circumvent the strict

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[1140] In *R. (on the application of Hart DC) v Secretary of State for Communities and Local Government*, [76] Sullivan J stressed that:
'there is no legal requirement that a screening assessment under Regulation 48(1) must be carried out in the absence of any mitigation measures that form part of a plan or project.'
See also: *Smyth v Secretary of State for Communities and Local Government* [2015] EWCA Civ 174; [2015] PTSR 1417; [2016] Env LR 7; *Champion v Northfolk DC [2013] EWCA Civ 1657*; *Hargreaves v Secretary of State for Communities and Local Government* [2011] EWHC 1999 (Admin); [2012] Env LR 9; [2012] JPL 134.

However, compare with *Champion v Northfolk DC [2013] EWHC 1065 (Admin)* where the High Court quashed the planning permission as it was not rationally possible to impose conditions (mitigation measures) which pointed to a risk of contamination while reaching to the conclusion there was no relevant risk of pollution: *'These conditions, which could only be imposed where the Committee considered them necessary, suggested that the Committee considered that there was a risk that pollutants could enter the river'… 'It does not seem to me that the Council could, rationally, adopt both positions at once…the Committee will have to consider whether it considers that there is no relevant risk of pollutants entering the river… 'If there is no risk, the Committee can grant planning permission, but will not be entitled to impose conditions 23 and 24. If there is such a risk the Committee will have to require an Appropriate Assessment and an EIA to be obtained'.* Nevertheless, the judgement was reversed in the Court of Appeals in *Champion v North Fork DC [2013] EWCA Civ 1657 [*2013] EWCA Civ 1657 which was subsequently affirmed by the Supreme Court in *Champion.*

[1141] Stookes (n175) 145 argues in this regard: 'The Court's view in *Hart* that mitigation measures may reasonably be taken into account as part of the initial screening process is of concern and sits uncomfortably with the fact that mitigation measures will often be critical aspects of the proposal that require detailed assessment and should be subject to public scrutiny. To exclude such assessment and comment appears at odds with the purpose of the Directive and the precautionary principle'.

requirements of the Habitats Directive [in case of the SANGs] by way of financial payments'. [1142]

- **Imperative Reasons of Overriding Public Interest and Compensatory Measures**

Given full effect, art.6(3) of the Habitats Directive affords a very high degree of protection for European designations. In contrast with the SSSI proposed development where the conservation interest of the site is merely a material consideration for the decision-making authority, the latter is legally bound not to approve any plans of projects unless it is ascertained that it will not adversely affect the integrity of the site.

Accordingly, art. 6(3) establishes a general prohibition that benefits nature conservation. Article 6(3) is however followed by art.6(4) which introduces a derogation that relaxes the strict art.6(3) rules and seeks to balance nature conservation objectives with socioeconomic interests. Hence, by virtue of art.6(4) a plan or project may be approved regardless of adverse effects if there are imperative reasons of overriding public interest, including those of social or economic nature. If however the area in question hosts priority habitats or species, then the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion of the Commission, to other imperative reasons of overriding public interest. This requirement to seek the Commission's Opinion forms an additional safeguard in favour of conservation. As Krämer notes, the Commission's Opinions 'are at the cross-point between ecological and economic/social considerations'[1143] that ensure the coherence of the system of protection of European Natural Heritage across Member States.

Article 6(4) presents another example of the familiar pattern of nature conservation legislation: a trajectory from strict designation to flexile

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[1142]Ricketts and Bischoff (n1134) 137 on expressed concerns on SANGs efficacy to genuinely prevent adverse effects on the SPA.

[1143] Ludwig Krämer, 'The European Commission's Opinions under Article 6(4) of the Habitats Directive' (2009) 21 Journal of Environmental Law 59, 84.

management. The strict technocratic process of designation follows another technocratic procedure, that of AA, which leads to more flexible management decision making that leave some scope for balancing interests. The Directive treads the fine line between socioeconomic development and ecological interests. On the one hand seeks above all to enforce strident environmental requirements and on the other give regard to the social aspect of the ecosystems. Ultimately, the balance is shifted towards socioeconomic considerations but not without additional safeguards for the natural environment. The Directive sets three main conditions: the first is that there *are no alternative solutions,* the second that *there are imperative reasons of overriding interest* and the third that *compensatory measures are in place.*

– *Alternative Solutions*

The competent authority may proceed to undertake the IROPI test only after all having considered the possibility of resorting to alternative solutions that better respect the integrity of the site.[1144] Alternative solutions would normally have been identified and considered during the AA.[1145] They include all feasible alternatives including alternative locations or routes, different scales or designs of development, or alternative processes together with the

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[1144] European Commission, *Managing Natura 2000 Sites. The provisions of Article 6 of the 'Habitats' Directive 92/43/CEE* (European Communities, Belgium 2000) para.5.3.1.

[1145] However, there seems to be a mixed approach on whether the consideration of alternative solutions should take place before or after the IROPI consideration. The Commission's guidance considers that to be the 'first step' in applying art.6(4) derogation. The same approach is adopted by the Habitats Conservation Regulations 2010. However, the wording of the Directive does not make it very clear. *See in that respect* Gerd Winter, 'Balancing Environmental Risks and Socio-Economic Benefits of Alternatives: A General Principle and its Application in Natura 2000' in Backer I.L, Fauchald O.K and Voigt C. (eds), *Pro Natura - Festskrift til Hans Christian Bugge* (Oslo, Universitetsforlaget 2012).

The Defra guidance also states that, while they are separate tests, it may be helpful to initially consider alternative solutions and IROPI together. This is because the consideration of alternative solutions includes the identification of the overall objective of the plan or project, and the assessment of whether alternatives would deliver that goal. It is a waste of effort to assess alternative solutions if they will not deliver the same objective, or if it is very clear that the nature of its objective means that a plan or project will not meet the IROPI test in DEFRA, *Habitats and Wild Birds Directives: guidance on the application of article 6(4). Alternative solutions, imperative reasons of overriding public interest (IROPI) and compensatory measures* (DEFRA, 2012).

'zero option'.[1146] Alternatives solutions should be capable of delivering the same primary objective as the proposed plan. According to the Commission's guidance the reference parameters for comparisons between solutions should be the conservation and the maintenance of the integrity of the site and of its ecological functions. [1147] As such, economic criteria cannot be seen as overruling ecological criteria.

However, the DEFRA Guidance on the Application of art.6(4) does not exclude the consideration of economic criteria.[1148] According to the Guidance the consideration of alternatives should be limited to options which are financially, legally and technically feasible. [1149] However, the Government expects for an alternative not to be ruled out simply because it would cause greater inconvenience or cost to the applicant but continues to stress that 'there would come a point where an alternative is so very expensive or technically or legally difficult that it would be unreasonable to consider it a feasible alternative'.[1150] The competent authority will be the one making this judgement. In light of the above, it can be argued that in that stage socio-economic considerations are gradually intruding into the technocratic regime of the Habitats Directive.

– *Imperative Reasons of Overriding Public Interest*

The IROPI provision offers one more example of non-precisely defined terms within legal provisions that afford wide discretion on the authorities responsible for their implementation. Thus, while it might appear that art.6(4) sets a high threshold for granting permission, in fact a broad interpretation of IROPI can allow public authorities to circumvent the provisions of the

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[1146] European Commission, *Managing Natura 2000 Sites. The provisions of Article 6 of the 'Habitats' Directive 92/43/CEE* (n1144) para.5.3.1.

[1147] Ibid.

[1148] DEFRA, *Habitats and Wild Birds Directives: guidance on the application of article 6(4). Alternative solutions, imperative reasons of overriding public interest (IROPI) and compensatory measures* (n1145).

[1149] ibid para.18.

[1150] ibid.

Directive which in turn might compromise the objectives of the Directive.[1151] Administrative discretion should be framed by the nature of art 6(4) as a derogation of art.6(3). As such, it must be interpreted in a way as to allow a plan or project to proceed regardless a negative assessment only in exceptional cases.

Notwithstanding the risk of discretion abuse, the combination of art.6(3) protection with the art.6(4) IROPI derogation provides a very good example of an effort to introduce adaptive decision making into statutory legislation. In fact, article 6(4) was drawn up in response to the controversies caused by the ECJ's interpretation of art.4(4) of the Birds Directive in relation to development within SPAs.[1152]

The Court in *Commission v Germany*[1153] (known as the *Leybucht Dykes*) held that it was only on exceptional grounds that a Member State could reduce the size of a SPA.[1154] These grounds must correspond to a general interest superior to the general interest represented by the ecological objective of the directive and that economic and recreational requirements did not meet that test.[1155] Further the Court found that taking account of fishers' interests to provide fishing vessels access to the Harbour was in principle incompatible with the requirements set out in art.4(4) of the Birds Directive.

This narrow interpretation of the Birds Directive sparked great controversies on behalf of the Member States impact on development exceeded far beyond what they were ready to accept.[1156] To redress the balance and 'soften the blow'[1157] delivered by the Leybucht Dykes judgement, article 6(4) of the Habitats Directive was drawn up allowing both social and

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[1151] Rebecca Clutten and Isabela Tafur, 'Article 6(4) and the IROPI Exception' in Gregory QC Jones (ed), *The Habitats Directive A Developer's Obstacle Course?* (Hart Publishing 2012).
[1152] ibid (n197) 170-172.
[1153] *Case C-57/89 Commission of the European Communities v Federal Republic of Germany.* [1991] ECR I-00883.
[1154] ibid [21].
[1155] ibid [22].
[1156] Clutten and Tafur (n1051) 171.
[1157] ibid (n1051) 171; Krämer, 'The European Commission's Opinions under Article 6(4) of the Habitats Directive' (n1043) 60.

economic reasons to be considered as IROPI to provide justification for permitting damaging activities to take place.

As there is no definition of IROPI in the text of the Directive, the concept has been shaped by court rulings and guidance documents by both European and domestic institutions. Following the CJEU's ruling in *Solvay,*[1158] a plan or project must be both public and overriding, which means that it must be one of such importance that it can be weighed up against the directive's objective of the conservation of natural habitats and wild fauna and flora.[1159] Given the paramount significance attached to nature conservation by the Directive, only reasons of major importance could justify exceptions from its protective framework.[1160] The ruling in Solvay was in line with the Advocate General's Opinion in *Commission v Portugal*,[1161] who indicated that IROPI can override site protection only where greater importance attaches to those reasons; when, under the principle of proportionality, damage caused by a development is not disproportionate to the benefits it aims to achieve:

> The necessity of striking a balance results in particular from the concept of 'override', but also from the word 'imperative'. Reasons of public interest can imperatively override the protection of a site only when greater importance attaches to them. This too has its equivalent in the test of proportionality, since under that principle the disadvantages caused must not be disproportionate to the aims pursued. [1162]

Whether a plan or project is public or private influences but does not determine the outcome of the IROPI test. A private plan or project although profit oriented, may nevertheless present and overriding public interest due to its economic and social context.[1163] For instance, that would be the case of a private project with increased socio-economic value, such as one offering job

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[1158] *Case C-182/10 Marie-Noëlle Solvay and Others v Région Wallonne* [2012] OJ C98/5.
[1159] ibid [75].
[1160] Garca-Ureta and Lazkano (n763) 86.
[1161] *Commission of the European Communities v Portuguese Republic* [2006] ECR I-10183, Opinion of AG Kokott.
[1162] ibid [45].
[1163] *Solvay* (n1158) para.77.

opportunities[1164] or a significant boost to regional economies.[1165]

The Commission's Guidance stresses that when the competent authority that undertakes the balance exercise, it needs to ascertain that the public interest weights more than conservation, which is more likely when the interest is long-term.[1166] In order to help the national authorities with their balancing exercise the Commissions refers to circumstances likely to form an IROPI[1167]:

> It is reasonable to consider that the "imperative reasons of overriding public interest, including those of social and economic nature" refer to situations where plans or projects envisaged prove to be indispensable:
>
> -within the framework of actions or policies aiming to protect fundamental values for the citizens' life (health, safety, environment);
>
> - within the framework of fundamental policies for the State and the Society;
> - within the framework of carrying out activities of economic or social nature, fulfilling specific obligations of public service.

As Clutten and Tafur argue, this is a somewhat restrictive interpretation that if it was to be followed in practice, would mean only a very limited number of projects would be allowed to proceed.[1168] Certainly, as the DEFRA's consultation document on draft guidance on the application of article 6(4) points out, setting a threshold above which IROPI exists is not possible

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[1164] An Audi investment in Western Hungary that would secure 10.000 workplaces was considered by the Commission as an IROPI that justified a derogation from the general protection afforded to SACs despite hosting priority habitats types. *See* Commission Opinion of 25 January 2011 *on request of Hungary pursuant to Art. 6 (4) Sub Par. 2 of Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, concerning the modification of the development plan of the Gyr town (Hungary)*, C (2011) 351

[1165] Likewise, the Secretary of State in the application for a Harbour Revision Order in the Port of Bristol, considered that despite the significant effects of the project on the Severn Estuary SPA, the enhancement of the regional economy of South West England constituted an Overriding Public Interest to allow the project to proceed. *See* Clutten and Tafur (1051) 179

[1166] European Commission, *Managing Natura 2000 Sites. The provisions of Article 6 of the 'Habitats' Directive 92/43/CEE*, (n1144) para.5.3.2.

[1167] Ibid.

[1168] Clutten and Tafur (n1051) 175.

and competent authorities will have to undertake the balance test on a case by case basis to decide whether an interest outweighs the harm to the affected site(s) and therefore an IROPI can be demonstrated.[1169]

In practice, it has been interpreted broadly both by English public authorities[1170] and the European Commission. [1171] Looking at the published Commission Opinions, in all but one, the Commission gave a positive opinion on the proposed derogation of art.6(4) [1172] recognising as IROPIs considerations such as the creation of job opportunities and the facilitation of transport and communication, in one case even contrary to its own Guidance.[1173]

Certainly, reasons such as human health and public safety score high on the 'overriding' test. However, it seems that economic reasons are increasingly recognised as 'overriding' to species and habitats interests. The reality is that any major infrastructure is likely to create job opportunities and have positive repercussions on the economy in the area. That means that as Clutten and Tafur suggest, that 'almost any large-scale development would then be capable

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[1169] DEFRA, *Habitats Directive: consultation on draft guidance on the application of article 6(4). Alternative solutions, imperative reasons of overriding public interest (IROPI) and compensatory measures* (August 2012), para.12.

[1170] Clutten and Tafur (n1051) 178-181 discussing the 1998 Defra Guidance and the broad interpretation of IROPIs and Secretary of State's practice.

[1171] Krämer, in Krämer The European Commission's Opinions under Article 6(4) of the Habitats Directive' (n1043) after reviewing several of the Commission's Opinions concludes that the interpretation of IROPI has been interpreted more broadly than its own Guidance suggests or what would survive the CJEU scrutiny. Kramer was also very critical of the lack of transparency of the process. Most of the related documents and as well Opinions of the Commission are not available to the public and that according to Krämer, ibid 85, 'favours lobbyism, mental corruption and decisions which are, in the long term, neither good for the environment nor for society as such.

[1172] *See* Commission's published Opinions at <http://ec.europa.eu/environment/nature/natura2000/management/opinion_en.htm> accessed January 2018.

[1173] *See* Commission Opinion C(2003) 1308 of 24 April 2003 referenced and discussed by Krämer, in Krämer, 'The European Commission's Opinions under Article 6(4) of the Habitats Directive' (n1043) 72 where he states that 'the Commission accepted that the short-term negative effects of a refusal to extend the mine constituted imperative reasons of overriding public interest'. That is contrary to Commission's Guidance according to which normally only long-term interest could satisfy the IROPI requirement, *see* Clutten and Tafur (n1051) 177.

of satisfying the criteria'.[1174] In fact, very few plans have been cancelled due to Habitats Directive Implications.[1175] In the UK most major port developments were given the green light.[1176] In the few cases that projects were abandoned, economic complication and poor compliance were to be blamed.[1177]

There seems to be a pattern of art.6(4) becoming the rule rather than be a derogation. Against this background, compensation requirements become all the more necessary. However, compensation should not be used indiscriminately. As Clutten and Tafur rightly point out, 'if, however, compensatory measures were in truth a sufficient and wholly satisfactory response to development in designated areas, […] there would be no real need for art.6(3) in the first place'.[1178] This statement relates to the concerns raised in the previous section in terms of a potential abuse of biodiversity offsetting. It is quite possible that such an approach would result in approval becoming the norm rather than the exception, which would be in conformity with the precautionary principle that underlies the implementation of the Directive.

– *Compensatory Measures*

The last condition is that the Member State takes all *compensatory measures* necessary to ensure that the overall coherence of Natura 2000 is protected. The significance of this provision is that the Habitats Directive and subsequently the Habitats Conservation Regulations 2010 are the only legislative documents in the UK introducing a biodiversity offsetting statutory requirement to tip the balance towards the interests of nature conservation. This unique requirement of the Habitats Directive makes the regime capable

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[1174] Clutten and Tafur (n1051) 176.
[1175] H. Schoukens and A. Cliquet, 'Biodiversity offsetting and restoration under the European Union Habitats Directive: balancing between no net loss and deathbed conservation?' (2016) 21 Ecology and Society art.10; '*Natural England receives around 26,500 land use consultations annually; of these, they 'object' to less than 0.5% of these on Habitats Regulations grounds'* in DEFRA, *Report of the Habitats and Wild Birds Directives Implementation Review* (2012), para.28.
[1176] Schoukens and Cliquet (n1175).
[1177] ibid.
[1178] Clutten and Tafur (n1051) 181.

of fostering adaptive decision-making. Seeking to align conservation and economic development interests the Directive makes the derogation from the strict protection of art.6(3) conditional upon measures taken to compensate for the loss of valuable biodiversity incurred as a result of the plan or project in question.

The need for biodiversity compensation is laid down in reg.66 of the Conservation of Habitats and Species Regulations 2010. Balancing socio-economic and conservation interests is common among a number statutory instruments, but usually the procedure ends with the competent authority making a determination in favour of one or the other. The approach is then rather binary, since in the end, one of the two (usually that of conservation) subsides. The innovation introduced by reg.66 is that it requires compensation for the biodiversity about to be lost as a result of the plan's approval on the basis of imperative reasons of overriding public interest. The adverse effects of development are outbalanced by programmes linked to the plans/projects in question.[1179] In this way, neither conservation nor development are entirely sacrificed for the other. A statutory obligation for offsetting works in favour of nature conservation, as in the absence of the reg.66 rules and the condition for compensatory measures, the chances are that socio-economic considerations are going to prevail.

The Directive does not provide with a definition for compensatory measures. The Commission's Guidance provide with a definition suggested through the experience implementing art.6(4):

> compensatory measures *sensu stricto:* are independent of the project (including any associated mitigation measures). They are intended to offset the negative effects of the plan or project so that the overall ecological coherence of the Natura 2000 Network is maintained.[1180]

[1179] Schoukens and Cliquet (n1175).

[1180] European Commission, *Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC. Clarification of the Concepts of: Alternative Solutions, Imperative Reasons of Overriding Public Interest, Compensatory Measures, Overall Coherence, Opinion of the Commission* (2007/2012), para.1.4.1.

A key notion is that of additionality. Any measure needs to be *additional* to existing protection and management requirements under the Directive or EU law in general.[1181] The Guidance also lays down issues to include in a programme of compensatory measures:

- Tight coordination and cooperation between Natura 2000 authorities, assessment authorities and the proponent of the compensatory programme (i.e. plan or project proponent and external consultants involved).
- Clear objectives and target values according to the conservation objectives of the site.
- Analysis of the technical feasibility of the measures in relation to their conservation objectives.
- Analysis of the legal and/or financial feasibility of the measures according to the timing required.
- Explanation of the time-frame in which the achievement of the conservation objectives is expected.
- Timetable for implementation and their coordination with the schedule for the plan or project implementation.
- Public information and/or consultation stages.
- Specific monitoring and reporting schedules based on progress indicators according to the conservation objectives.
- The appropriate budget programme approved during the suitable period to guarantee the success of the measures.

Additionally, any compensatory programme – and consequently the art.6(4) derogation - should be implemented as an option of last resort and when all other safeguards are ineffectual. The 'zero option' should also be considered in cases where the negative effects of the project are produced in rare natural habitats or habitats that need a long period to provide the same functionality.[1182]

There are two primary points to be made in relation to biodiversity compensation and how it does or does not relate to an adaptive co-

[1181] ibid.
[1182] ibid para.1.4.3.

management model. The first point is the wide discretion the competent authorities are afforded when putting into place compensatory programmes, a recurring theme in this thesis. The Guidance is a non-binding document and as such has no legal effects. Hence, the competent authorities are only bound by the general duties imposed by the Directive. In this context, Member States might indeed found be non-compliant if national authorities abuse art.6(4) derogation and consent to non-feasible or likely to be ineffective compensatory measure in order to promote development.

The second point is that given the amount of discretion granted to the competent authorities, art.6(4) supports a model of adaptive decision making. As with any opportunity for adaptation, also in that case, it will be subject to the way it is being practically implemented by the competent authorities. Looking at the requirements laid down in the Commission's Guidance, it can be argued that they reflect broad principles of both models of adaptive management, the one calling for scientific and technical expertise and continuous monitoring to address the uncertainties surrounding such a project together with opportunities shared decision-making and public participation as a means to genuine conflict resolution.

Nevertheless, the trade-off opportunity that arises in art.6(4) opens a door to but cannot itself guarantee adaptive management, especially given the great ambiguity regarding its effectiveness. Without prudent designing and planning, art.6(4) carries the inherent risk of becoming a means for developers (and perhaps even local authorities) to escape and circumvent the obligations set by the Directive.[1183] To be truly adaptive the competent authorities (LPAs) need to secure the involvement of all affected interests at all stages from the measures proposal to its implementation and monitoring. Encouraging multilateral stakeholder participation from an early stage in the process is central to the equal representation of all involved interests and the proactive, genuine resolution of conflict. The US experience with the Habitat

[1183] *See* RSPB, *Consultation on the Green Paper on Biodiversity Offsetting* (n1113), in which the NGO expresses mixed views that are subject to the actual implementation of the scheme by the local planning authorities.

Conservation Programme, which bears significant resemblance to the art.6(4) compensation scheme, is a typical example of how bad implementation puts barriers in the way of an otherwise very promising initiative to the extent that exemplifies 'maladaptive management':[1184]

> …[al]though a few HCPs have served as truly promising examples of the value of broad participation and adaptation in regulation, the HCP program as implemented largely allows for the proliferation of private, ill-considered agreements between agencies and developers that evade the ESA's otherwise strict prohibitions[1185]

As mentioned, neither the Directive nor the Regulation lay down procedural requirements. On the other hand, looking at the DEFRA Guidance it is evident that the Government's approach is towards a rather 'closed' procedure between the planning authority, the developer and to an extent the conservation body.[1186] Although nothing prevents LPAs taking a broader participatory approach, statutory procedural requirements or at least a governmental policy would definitely contribute towards securing stakeholder involvement.

6.2.1.3 Resolving conflicts in the wider countryside

If the legislator has prioritised conservation interests within the designated areas, by implication, we need to assume that outside those areas, nature conservation interests do not carry enough weight to justify restrictions to property rights and economic development. In short, the absence of statutory legislation implies a prioritisation of human interests against those of nature. If within a designated area it is the conservationists

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[1184] Camacho (n264).

[1185] Ibid, 293; The author discussed the lack of genuine stakeholder involvement, especially in cases of private plan proposals. It is interesting to note that although the procedure for the designing and implementation of HCP is better articulated and defined than the art.6(4) compensation scheme, its implementation became problematic or as Camacho argues 'maladaptive'.

[1186] DEFRA, *Habitats and Wild Birds Directives: guidance on the application of article 6(4). Alternative solutions, imperative reasons of overriding public interest (IROPI) and compensatory measures* (n1145).

who have the advantage, in non-designated areas it is the human interests that are favoured. Hence, here tensions are likely to arise on behalf of the conservationist community rather than the agricultural or economic sector.[1187] In non-designated areas any attempts to resolve conflict in an adaptive way will take place without the underpinning of the statutory legislation, with the only controls imposed on the land being that of planning legislation and the procedural requirements of the EIA Directive (provided the plan or project falls under the ambit of the Directive).

As with tensions within protected areas, conflicts in non-designated areas arise due to land development and land use management. However, they are usually latent and more generalised (e.g. agriculture's impacts on the natural environmental) due to the absence of statutory legislation that often works as a trigger of conflict within designated areas (e.g. when an activity is restricted, or a development not allowed). As argued in the discussion on development control within SSSIs, the wide discretion afforded to planning authorities, allows for the introduction of mechanisms (such as biodiversity offsetting) that seek to balance the impacts of development to the wider environment. As mentioned above,[1188] only the Conservation Regulations 2010 establish a biodiversity compensation requirement for European Designations as the last resort, as they need to comply with the mandate of the Habitats Directive. Not even the Wildlife and Countryside Act 1981 set a similar requirement for SSSIs, which leads us to believe that introducing offsetting obligations for development outside protected areas is rather unlikely.

However, besides development, major - if not the biggest - threats to biodiversity in the wider countryside relate to agricultural activities.[1189] Much

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[1187] Nevertheless, the gradual increase in cross-compliance requirements has led to a general dissatisfaction amongst the farming industry, Interview with NFU Environment and Land Use Adviser, NFU North East (York, 5 March 2014).

[1188] *See* the discussion *supra* ss.6.2.1.2.1 and 6.2.1.2.2 .

[1189] L.H. Campbell and others, *A review of the indirect effects of pesticides on birds* (JNCC Report 227, ISSN 0963 8091, 1997); Marion Shoard and Henry Ian Moore, *The theft of the countryside* (Temple Smith 1980).

of English biodiversity is found in private agricultural non-designated land that has been intensively managed for years, hence farmland conservation becomes a central focus of the conservation policy in the country.[1190] The common agricultural policy adopted by the EC in the 20th century, was targeted at maximizing food production and provided farmers with subsidies and grants to encourage the farmers to invest in innovating ways to increase yield[1191]. The result was a highly industrialised agriculture with increased use of fertilisers, pesticides, herbicides, supported by highly mechanised agricultural units. Traditional farming techniques were gradually abandoned in favour of intensive farming with detrimental effects on the natural environment.[1192] Certainly, pollution control legislation as well as laws on agriculture practices do regulate farming activities. However, placing the majority of English land under a framework of strict biodiversity protection similar to the SSSI network is not possible for reasons cited above.[1193] What then is needed is to balance interests; but in this case without any regulatory support. On the one hand, this is where adaptive management is most needed; on the other, it is not a straightforward undertaking. As Garcia-Ureta and Lazkano stress:

> […] conservation policies usually require the management of policies that ordain activities carried out over decades or even centuries, for example, hunting, exploitation of watercourses, wood, cork, peat, fish, cattle. Reaching a proper balance, if feasible, between increasingly demanding nature conservation objectives and the regulation of the aforementioned activities may transform public authorities into tightrope walkers.[1194]

Given the absence of statutory legislation, any attempt to balance economic activities with nature conservation management will sit on the voluntary side

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[1190] *See* Péter Batáry and others, 'The role of agri-environment schemes in conservation and environmental management' (2015) 29 Conservation Biology 1006, 1006 opening his article with a statement on European conservation: 'There is an obsession with farmland conservation in Europe that is not understood in other parts of the world'.'

[1191] Reid, *Nature conservation law* (n1) 361ff.

[1192] Ibid.

[1193] *Supra* s.6.2.1.1.

[1194] Garca-Ureta and Lazkano (n763) 71.

of a voluntarism–coercion spectrum. An adaptive approach would seek to engage landowners with nature conservation management through advice, partnership and negotiation but without the fallback of regulation.

Looking at the regime governing land management in the wider countryside and in areas where conflicts are likely to arise, we can in fact trace elements of adaptive management. The test here is reversed to the one applied when looking at management in designated areas. When testing the designated areas management regimes for opportunities to put into place an adaptive approach, I sought to identify elements of flexibility and opportunities for socio-economic interests to enter the decision-making process. Here, I am trying to detect opportunities for nature conservation against a generalised presumption in favour of socio-economic development.

Recent changes in the agricultural policy have created a framework for introducing nature conservation considerations in land management for other activities. If the role of state in nature conservation management in protected areas is partially administrative and partially contractual, where the conservation body is at the same time a regulator and an advisor, [1195] landscape management is characterised by the stronger presence of the contractual rather than the administrative state.

Nevertheless, similarly to the management of designated areas, where at first glance the regime looks strict and cumbersome but on a closer look is found rather flexible and adaptive, on a closer observation, landscape management is more regulated than one would think. To begin with, countryside management takes place within the wider framework of environmental law and policy and more specifically, pollution control, planning legislation, the environmental impact assessment regulations, and the general biodiversity duty introduced by NERC 2006 s.40. On the other hand, species protection legislation applies across designated and non-designated land. As a result, there might be cases where the licencing system for taking listed species may occasionally prove to be more difficult to

[1195] National Audit Office, *Natural England's role in improving sites of special scientific interest* (n683) para.3.15.

overcome – especially in relation to development - than restrictions on certain activities within designated areas.[1196]

However, the following paragraphs will focus on two mechanisms that reflect the wider philosophy of adaptive management expanding beyond the management of protected areas and providing opportunities for nature conservation considerations to be introduced and incorporated within agricultural activities. These are the mechanisms of cross-compliance[1197] and agri-environment schemes [1198] introduced as part of the EU Common Agricultural Policy (CAP) to provide negative and positive incentives for nature conservation management. These mechanisms were introduced following a major reform of CAP that took place in 2003, in response to the extended ecosystem degradation which occurred as a result of intensive agriculture practices that were strongly supported during the first phases of the CAP implementation.

In 2013 a new 'greening' requirement was introduced by the latest CAP reform,[1199] to complement cross-compliance requirements, adding further obligations to farmers as conditions to any type of direct payments. Tracing CAP reform changes over the years, one can notice a gradual shift towards more prescriptive management where vital financial incentives instead of legislation forms a leverage for active nature conservation management. An increasing number of obligations either part of cross-compliance or greening are integrated into agricultural subsidies schemes as a condition to direct payments. Moving certain management activities from the voluntary positive (agri-environment schemes) to the essentially mandatory negative incentive area (greening and cross-compliance), secures more funding for the former,

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[1196] Scott (n731) 117 argues 'It would indeed be ironic if, at least to developments outwith a European site, the greatest threat to their continuance and viability might not be appropriate assessment but Article 12 of the Habitats Directive'.

[1197] For general information *see* <https://ec.europa.eu/agriculture/envir/cross-compliance_en>accessed January 2018

[1198] *See* https://ec.europa.eu/agriculture/envir/measures_en

[1199] *See* <https://ec.europa.eu/agriculture/direct-support/greening_en> accessed January 2018; DEFRA, *The new Common Agricultural Policy schemes in England: August 2014 update Including 'Greening: how it works in practice'* (2014)

thereby providing greater opportunities to underpin for more complex and demanding management activities but at the same time creates some tensions with the farming lobby that finds itself obliged to undertake more and more conservation management activities.[1200]

6.2.1.3.1 Cross-compliance

Cross compliance refers to the requirement for farmers to comply with a set of SMRs (statutory management requirements) and standards for Good Agricultural and Environmental Conditions (GAECs) so that they can qualify for any payment made under the Common Agricultural Policy[1201]– currently under the Basic Payment Scheme (BPS) and the agri-environment Countryside Stewardship Scheme.[1202] Cross-compliance was initiated to support changes in CAP brought by the 2003 CAP reform which sought to integrate environmental concerns into agricultural policy.[1203] One major innovation and contribution to nature conservation was to decouple payments of subsidies from production so that EC funding would stop being an incentive for intensive farming.[1204]

The tension between agricultural incentives and nature conservation is reflected on a report of the Parliamentary Environmental Committee - albeit with regard to subsided activities damaging SSSIs and the Nature

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[1200] This trend made some farmers insecure about what the future holds for them and whether there are limits to introducing more and more baseline requirements, Interview with NFU Environment and Land Use Adviser, NFU North East (York, 5 March 2014)

[1201] European Parliament and Council Regulation (EU) 1307/2013 establishing rules for direct payments to farmers under support schemes within the framework of the common agricultural policy and repealing Council Regulation (EC) No 637/2008 and Council Regulation (EC) No 73/2009, OJ L347/68; DEFRA, *The guide to cross compliance in England 2017*;

[1202] For the new schemes *see* in general the information provided at:
<https://www.gov.uk/government/collections/basic-payment-scheme#bps-2017>
<https://www.gov.uk/government/collections/countryside-stewardship-get-paid-for-environmental-land-management>.

[1203] For a historical overview of the Common Agricultural Policy *see* http://ec.europa.eu/agriculture/50-years-of-cap/history/index_en.htm, accessed December 2017.

[1204] Reid, *Nature conservation law* (n1) 363-364.

Conservancy's efforts to offer payments for landowners in order to refrain from damaging activities made on a markedly lower budget than the Ministry of Agriculture's. The Environmental Committee stressed:

> [the] illogicality of one part of government (…) offering financial inducement to someone to do something which another part of government (…) then has to pay him not to, is clear. The primary reason for the negative character of management agreements is (…) to control a farmer subsidised to damage the environment.[1205]

With the introduction of the Single Farm Payment – now Basic Payments Scheme - the incentive of overproduction was removed, and all payments became subject to cross compliance requirements. In theory, complying with SMRs will not add net conservation gain. SMRs are statutory requirements that are legally binding regardless of whether someone receives agricultural subsidies. Of relevance to nature conservation are SMR2 and SMR3 that require compliance with the WCA 1981 and the Habitats and Birds Directives. [1206] However, receiving the BPS might prove to be a stronger compliance incentive for a landowner, especially when considering Natural England's low enforcement rates as regards nature conservation legislation.[1207]

On the other hand, GAECs apply in addition to underlying obligations under EU and UK legislation and as such can provide for management above the statutory baseline. In the UK, the devolved governments of England, Wales, Northern Ireland and Scotland each define GAEC standards for their own region. This allows for special consideration of the diversity in landscape and farming practices throughout the UK. At country level however, the GAECs are rather standardised. Apart from a 'derogation' process, similar to the WCA

[1205] Environmental Committee, *Operation and Effectiveness of Part II of the Wildlife and Countryside Act* (HC 1984-1985, 1984) cited in John S. Harbison, *Biodiversity and the Law of Nature Conservation in Great Britain* (Fayetteville, Arkansas: The National Agricultural Law Center, March, 2004) 14 available *at* < http://www.NationalAgLawCenter.org> accessed November 2017

[1206] DEFRA, *The guide to cross compliance in England 2017*, 50-53.

[1207] Between 2007 and 2014 Natural England initiated only eleven prosecutions in relation to SSSI offences, in Natural England, *Annual report on Natural England's enforcement activity 1 April 2013 to 31 March 2014* (April 2014).

1981 consent procedure for the SSSIs there are no opportunities for further adaptation of GAECs that apply horizontally for anyone subject to cross-compliance rules.[1208]

Being subjected to cross-compliance obligations, in particular GAECs, is not mandatory. Technically, landowners are only voluntarily committed to conform with cross-compliance mandates. However, effectually GAECs have great weight attached to them. Certainly, any landowner will not have to abide by cross-compliance requirements, if he or she does not apply for a CAP scheme. However, most farms are not viable without the CAP payment and as such farmers are bound to commit to cross-compliance requirements. [1209] Non-compliance results to the imposition of gradually increasing penalties that depending on whether non-compliance is 'negligence' or 'intentional' range from a 3% reduction to a complete cancellation of payments.[1210] The practical implication is that for the farming community, the cross-compliance effect is similar to those of statutory legislation. The threat of reduction or cancellation of direct payments might form a greater motivation for compliance than the WCA 1981 fines.

Notwithstanding the limited flexibility to adapt GAECs requirements to special environmental and social conditions, cross-compliance is a very good example of how policies along different sectors merge together to address environmental concerns. It represents the EU's and the Government's appreciation of the complexity of environmental problems and the need for a coherent and integrated approach not merely among the environmental sectorial policies but also policies that are or appear to be competing. In this sense, cross-compliance reflects ecological complexity and dynamics in the legal world.

A further important feature of cross-compliance is that it manages to bridge nature conservation and economic interests without the need to

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[1208] DEFRA, *The guide to cross compliance in England 2017*, 9.

[1209] Interview with NFU Environment and Land Use Adviser, NFU North East (York, 5 March 2014.

[1210] DEFRA, *The guide to cross compliance in England (*DEFRA, 2001)12.

introduce more statutory legislation and without the high cost associated with management agreements. In essence, the cross-compliance mechanism, by attaching terms and conditions to a very popular, existing scheme, takes advantage of the CAP budget to secure both compliance with existing environmental legislation and additional positive management in favour of the interests of the natural environment.

6.2.1.3.2 Agri-Environment Schemes

Agri-environment schemes (AESs)[1211] are land management schemes co-funded by the Rural Development Programme of Pillar 2 of the Common Agricultural Policy.[1212] The AESs offer landowners and farmers voluntary management agreements, while compensating them for income foregone resulting from applying environmentally friendly farming practices in line with the terms of agri-environment contracts.[1213] Similarly to the WCA 1981 statutory management agreements, they are contractual measures underpinned by financial incentives falling into the wider circle of payments for environmental services, with the state being the buyer and the landowner/farmer being the seller.[1214] Along the same lines as SSSI agreements, agri-environment payments seek to achieve additional conservation value through commitments that 'go beyond the relevant mandatory standards' (statutory or cross-compliance).[1215]

[1211] Regulation (EU) No 1305/2013 of the European Parliament and of the Council of 17 December 2013 on support for rural development by the European Agricultural Fund for Rural Development (EAFRD) and repealing Council Regulation (EC) No 1698/2005 OJ L 347/487 (Now called agri-environment-climate schemes).

[1212] Currently 20% of the total RDP budget goes to AESs funding *see* <https://ec.europa.eu/agriculture/envir/measures_en> accessed January 2018.

[1213] ibid; Despite being optional for farmers, the application of AESs is compulsory for Member States.

[1214] Katherine Falconer and Martin Whitby, *Administrative Costs in Agricultural Policies: the Case of the English Environmentally Sensitive Areas* (Centre for Rural Economy, University of Newcastle, Undated), 7; On payments for environmental service *see* in general Stefanie Engel, Stefano Pagiola and Sven Wunder, 'Designing payments for environmental services in theory and practice: An overview of the issues' 65 Ecological Economics 663.

[1215] Regulation (EU) No 1305/2013 of the European Parliament and of the Council of 17 December 2013 on support for rural development by the European Agricultural Fund for

This requirement reflects the Commission's adherence to the incorporation of the *polluters pay principle* into the agricultural policy.[1216] Rodgers argues that, in this respect, good agricultural practice is an aspect of the farmer's property rights:

> [the] adherence to the minimum standard of environmental care for the countryside demanded by compulsory legislation, and represented in good agricultural practice, should be an attribute of the farmer's property rights and left uncompensated, whereas farmers should be paid for their costs and lost income in providing environmental services beyond this basic level of good practice.[1217]

AES schemes have been changing throughout the years being under constant revision to adapt to changes of policy and lessons learnt by previous initiatives.[1218] When seen in combination with cross-compliance and the most recent greening, the evolution of AES mirrors the evolution of nature conservation framework from prevention of further degradation to conservation and enhancement, with the focus shifted from protecting threatened habitats or landscapes in order to prevent further loss of farmland biodiversity species, to improve and maintain ecosystems services.[1219] Currently, given their wide spatial coverage, AESs constitute the main mechanism to provide for positive management and delivering conservation targets in England. They are of vital importance in bridging conservation interests and economic exploitation of the land. In 2016 farms with entry-level (ELS) agri-environment agreements accounted for 40% of area on agricultural holdings in England and another 15% was under higher-level or targeted agri-environment agreements.[1220]

Rural Development (EAFRD) and repealing Council Regulation (EC) No 1698/2005 OJ L 347/487 preamble, recital 3, para.23.

[1216] ibid para.23.

[1217] C. P. Rodgers, *Agricultural law* (Fourth edition. edn, Bloomsbury Professional 2016), 45.

[1218] For a history of AES in the UK *see* Boatman and others (n809).

[1219] Batáry and others (n1189) 1008.

[1220] JNCC dataset on agricultural and forest area under environmental management schemes available at http://jncc.d efra.gov.uk/page-4242; The ELS and HLS agreements were part of the Environmental Stewardship Scheme that preceded the current Countryside Stewardship Scheme.

As mentioned, agri-environment schemes are now also being used to fund SSSI management, replacing to a great extent the statutory management agreement. [1221] Assessing AES effectiveness is not straightforward given the fact that they are multi-objective instruments.[1222] As a result, research on the effectiveness of AES has produced mixed results regarding their ability to provide environmental benefits,[1223] while its contribution towards certain objectives such as landscape management has been hard or too early to assess.[1224]

AES can be implemented either horizontally throughout the country or zonally, only targeting certain areas.[1225] The most recent scheme in England is the Countryside Stewardship comprising of three elements, mid-tier

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In 2009 there were more than 58.000 agreements in England covering 66% of agricultural land in England, *see* Natural England, *Agri-environment schemes in England 2009: A review of results and effectiveness* (Natural England 2009).

[1221] DEFRA, *Higher Level Stewardship Environmental Stewardship Handbook* (n1072).

[1222] AES can be used to fund a combination of objectives. In the UK, contrary to countries such as Germany, Denmark and France where agreements are designed to serve other priorities, the focus has traditionally been nature conservation. *See* David Kleijn and William J. Sutherland, 'How effective are European agri-environment schemes in conserving and promoting biodiversity?' (2003) 40 Journal of Applied Ecology 947, 949. Nevertheless, there have been other objectives not directly linked to biodiversity including enhancement of historic environment, water resources, climate change mitigation and adaptation, flood management, education and access and landscape character. *See* Natural England, *Entry Level Stewardship. Environmental Stewardship Handbook*; England, *Countryside Stewardship: Mid-Tier Manual.*

[1223] Kleijn and Sutherland(n1221); A. P. Hejnowicz, M. A. Rudd and P. C. L. White, 'A survey exploring private farm advisor perspectives of agri-environment schemes: The case of England's Environmental Stewardship programme' (2016) 55 Land Use Policy 240, 241; Mark J. Whittingham, 'Will agri-environment schemes deliver substantial biodiversity gain, and if not why not?' (2007) 44 Journal of Applied Ecology 1.

[1224] *See* the contribution assessment results in DEFRA-Natural England, *Environmental Stewardship Review of Progress* (2008), one of the few coherent reviews on the effectiveness of AES in the EU.

[1225] Kleijn and Sutherland (n1221) 949; That was the case with the Environmentally Sensitive Areas (ESA) Scheme, the first agri-environment scheme in Europe. ESAs were available only within land designated as ESA. ESA was based on a very basic contractual model where standardised management prescriptions were applied to all participating farms within the ESA *See* Rodgers, *The law of nature conservation: property, environment and the limits of the law*, 132.

stewardship, high tier stewardship and capital grants.[1226] Given funding constraints and the great expenditure characterising AES,[1227] the new scheme is very competitive and offered only to land managers who show potential to undertake effective nature conservation management activities.[1228]

Placing AES agreements on the spectrum between top-down and bottom-up decision making, at first glance might seem straightforward but is actually not easy. In fact, the way AES agreements are designed in England makes the scheme a somewhat 'hybrid' mechanism that features elements of both administrative regulation and voluntary agreements. In fact, looking at them, it could be argued that they follow the exact opposite trajectory of that of legislation, from flexible 'designation' towards regulated management. More specifically, although in more targeted schemes such as the later stages of the HLS (and the current CS) often participation is by invitation [1229] and in the end it is the landowners who decide which areas of land will come forward. Hence, Natural England certainly retains the right to refuse an agreement but has no means, no statutory leverage, to impose AES agreements on landowners.

However, when it comes to setting out the content of the agreements, this is a more rigorous procedure. Contrary to statutory management agreements, AES management options are prescribed rather than negotiated.[1230] As already mentioned,[1231] stewardship agreements come with a predetermined list of management options from which the landowners are asked to choose. Hence, there is no room for them to put forward their views

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[1226] *See* general information on the new scheme at:
<https://www.gov.uk/government/collections/countryside-stewardship-get-paid-for-environmental-land-management#mid-tier>

[1227] In England, total expenditure on AES, including measures with non-biodiversity objectives, was €375 million per year from 2007 to 2013 Batáry and others (n1189) 1008-1009.

[1228] Natural England, *Countryside Stewardship Manual* (2016) para.2.2 .

[1229] Interview (in written form sent by email) with NE land advisor, 17 June 2014.

[1230] See for instance: Natural England, *Countryside Stewardship: Mid-Tier Options, Supplements and Capital Items* (n690).

[1231] *See* Ch.4 s.4.2.2.1.2.

on management, no space to tailor the agreement to their specific requirements and needs of their business.

Nevertheless, at this stage, the balance is again shifted as they (the landowners) are the ones who determine which of the options are chosen. Certainly, a NE advisor must be happy that the agreement fits well within the set priorities of the local area -meaning that it contains a certain number of options favouring these priorities - and that it is worthwhile - in terms of money spent for biodiversity gain.[1232] He or she will also need to be confident that the agreement is manageable by the owner, in the sense that appropriate work will be done to an acceptable standard - meaning that the agreement must fits well within the owner's farming.[1233] In cases where the advisor considers that the options put forward by the owner are unsuitable or not sufficient, then he or she may not proceed with the agreement.[1234] But that is the only thing Natural England can do; the conservation body has no power to impose specific management requirements on landowners.

The prescriptive nature of AES significantly limits the scope for negotiation and compromise for all parties. On the one hand, farmers enter the agreement on preset defaults. Usually, they tend to choose the management options that are easier to implement, have less implications on the primary management focus of their land but do not have the greatest conservation potential.[1235] On the other hand, Natural England's power to influence a farmer's management options is limited and in many cases, it will have to accept the second or even third best.

That is not to say there is no room for negotiation, but that it takes place within the limits outlined by the pre-set list. The procedure to enter a scheme - especially when targeted - is not merely an application on behalf of the landowners that is then either accepted or rejected by NE. There is some discussion and negotiation over what is preferred or acceptable and on the

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[1232] Interview (in written from sent by email) with NE land advisor, 17 June 2014.
[1233] ibid.
[1234] ibid.
[1235] Hejnowicz, Rudd and White (1222) 249.

specifics of management delivery.[1236] There is also some scope to tailor agreements to fit individual circumstances. But when compared to non-prescriptive, individually negotiated agreements one can see that the scope to adapt these agreements is reduced. The pre-set stipulations make it difficult to tailor the management agreement to the specific needs of local biodiversity and to the needs of the landowners, even less tailor it to both.

The lack of flexibility in designing management objectives and options targeted to specific areas decreases the scheme's great potential – given its spatial expansion - for bridging the interests of agriculture and biodiversity; its implementation becomes rather broad but shallow. The result is some very good agreements and some rather weak, largely depending on the negotiation abilities and dedication of the advisor.[1237] Furthermore, being a financial incentives scheme, its effectiveness is undermined by funding availability. Conservation is a long-term process, and a very expensive business,[1238] but an AES agreement only last for a limited number of years and as long as budget cuts allow it. It is what Whitby refers to as 'the end of contract problem'.[1239] Unless a way is found to retain conservation benefits after the end of an agri-environment agreement, a disruption in the scheme's funding will result in all previous efforts being rather unavailing. Therefore, as some commentators argue altering land management beliefs is paramount to achieving long term conservation results.[1240] This entails a shift in the way people value different things, biodiversity included, but as stressed in the beginning of this thesis, while conflicts of interest are likely to be resolved through financial incentives, conflicts in values are very difficult to address.

[1236] ibid.

[1237] Interview (in written from sent by email) with NE land advisor, 17 June 2014.

[1238] *Supra* n1026.

[1239] Martin Whitby, 'Challenges and Options for the UK Agri-Environment: Presidential Address' (2000) Journal of Agricultural Economics 317, 325.

[1240] David Colman, 'Ethics and Externalities: Agricultural Stewardship and Other Behaviour: Presidential Address' (1994) 45 Journal of Agricultural Economics 299.

6.3 Conclusions: Adaptive management as a conflict resolution mechanism within English nature conservation law and policy

The above analysis sought to demonstrate that certain features of the legal framework pertaining to nature conservation, when considered as a whole, convey the image of a flexible regime that paves the ground for the implementation of adaptive decision-making aimed at the resolution of conflicts arising between the conservation of biodiversity and traditional notions of property rights and socio-economic development. Such features that attach the necessary flexibility, include the highly decentralised decision making and the wide range of instruments available to the regulatory authorities to create their own tailor-made regulatory mosaic, but most importantly the high degree of delegation and the wide discretion granted to the administration, which allows it to use that rich regulatory toolbox as it thinks fit.

However, merely looking at the letter of the law is not sufficient to be able to draw firm conclusions on whether adaptive management actually takes place or is just *allowed* to take place by. To be able to this, one must look beyond the letter of the law. Given the wide discretion granted to the executive, it is not what the law says that becomes a measure for flexibility or rigidity of the legal framework, but how the law is applied. Within this context, I discuss certain elements that reflect adaptive management and seek to situate the English approach of nature conservation law and policy on the continuum between top-down and bottom-up decision making.

6.3.1 An adaptive philosophy

Overall, the management of nature conservation as it is outlined in law and policy bears certain features inherent to adaptive decision making within a conflict resolution context. The preceding analysis points to a system oriented to care for local and individual circumstances, a system seeking to resolve conflicts through partnership and deliberate compliance than sanctioning and coercion. It is a set of substantive rules and procedural

safeguards that reflect a regime, which without being 'toothless' retains a degree of flexibility to allow decision-making to adapt to different circumstances and different interests. However, and going back to Berkes *et al's* ladder of co-management, the English law in its current form cannot support decision making at the top rungs of the ladder such as Community Control and Partnership. [1241] Given the inherent technical nature of conservation decision making, there is always going to be a need for science-driven determination. But apart from this practical consideration and looking from a normative perspective delegating decision power to the community raises big questions on accountability and conformity with the rule of law. [1242]

6.3.1.1 Wide Consultations

Stakeholder consultation is central and can be found at all tiers and levels of environmental decision-making from Natural England's administration to the EU Commission. [1243] Besides the cases where consultation is a statutory requirement, [1244] both the legislative and the executive undertake consultations in order to gather information by those affected or interested in nature conservation law and policy or in decisions that might have an impact on the natural environment.

Parliamentary committees make open 'calls for evidence' where all interested parties can submit written and oral evidence and their views on the inquiry in question while Public Bill Committees call for the public's view on prospective legislation. The Law Commission also holds consultations when

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[1241] *See* ch.5, s.5.2.1.

[1242] *See* ch.5. s. 5.2.5.1.

[1243] *See* for instance the wide consultation undertaken by the EU Commission during the fitness check of the Habitats and Birds Directives. The evidence gathering, and consultation was concluded in two phases, one targeted to representative bodies and stakeholder organisations and a second, wider, open to the public internet consultation. *See* <http://ec.europa.eu/environment/nature/legislation/fitness_check/index_en.htm> accessed January 2018.

[1244] e.g. the EIA requirements on public participation or Natural England's statutory consultation in planning procedures.

reviewing effectiveness and proposes reforms to legislation.[1245] In a similar way, DEFRA and the statutory bodies hold consultations on matters of policy and the same applies for local authorities when for instance designing local development plans.[1246]

Usually, primary stakeholders are invited to consult by the authority holding the consultation, but anyone is allowed to participate. Often consultations are not limited to written response but include a range of activities to engage stakeholders such as meetings, conferences and workshops.[1247] Consultations responses are thoroughly considered and shape the final decision. In this way potential or existing sources of conflict are identified early and are easier to address.

The consultation process apart from being itself a form of collaborative management[1248] also allows for the early identification and engagement of all interested stakeholders. Engaging and acknowledging the views of different types of lobbyists and representatives of disparate interests, forces policy makers to consider compromises that would allow smoother implementation.

[1245]See for instance Law Comimission, *Wildlife Law: A Consultation Paper* (n10)

[1246]See for instance DEFRA consultations at <https://www.gov.uk/government/publications?keywords=&publication_filter_option=consultations&topics%5B%5D=all&departments%5B%5D=department-for-environment-food-rural-affairs&official_document_status=all&world_locations%5B%5D=all&from_date=&to_date> Natural England Consultations at: <https://www.gov.uk/government/publications?departments%5B%5D=natural-england&publication_filter_option=consultations>
For Local Authorities Consultations *see for instance* the City of York Council, *Local Plan. Preferred Options* (June 2013) available at https://www.york.gov.uk/downloads/download/1268/local_plan_preferred_options_main_documents and City of York Council, *City of York Local Plan. Prefered SItes Consultaton* (July 2016) available at: <https://www.york.gov.uk/downloads/download/3333/local_plan_preferred_sites_consultation_documents> accessed January 2018.
The City of York Council asked for the public's and all interested parties to respond in shaping the City's Local Plan that reflects the city's '*vision for the future development of the city and spatial strategy and covers both strategic policies and allocations (previously the Core Strategy and Allocations Development Plan Document), alongside detailed development management policies'.*

[1247] DEFRA, *Consultation on the implementation of CAP reform in England. Summary of responses and government response* (December 2012), para. 1.4-1.6.

[1248] *See* ch.5 s.5.2.1.

The end policy result will be the result of multiple-aspect, well-informed decision making with reduced likelihood of intense future confrontations.

Nevertheless, there will be cases where consultations, especially at the lower levels of administration e.g. management plans prepared by Natural England, will not flag up any difficulties as people either had not been aware of it happening and did not respond or do not complain until they are about to be affected by work about to begin.[1249]

6.3.1.2 Partnership and Co-operation and negotiation between the public authorities and land managers

Depending on whether nature conservation management is mandated by statutory legislation, policy or is merely a means of fulfilling broader strategic targets in relation to biodiversity, the approach adopted can range from prescriptive to voluntary without however touching the spectrum's edges - meaning it is neither entirely prescriptive nor entirely voluntary.[1250] The inherent flexibility of statutory legislation that was established as a primary feature of English nature conservation in the previous paragraphs allows the decision makers to choose to implement it either way, traditional and prescriptive or flexible and adaptive. The preferred approach draws elements of both, combining regulation with flexibility; it is a regulated flexibility; a combination of a top-down and bottom up approach.

This is largely because of the Government's commitment to partnership, co-operation and negotiation [1251] that counterbalance the prescriptions of statutory legislation. In this context Natural England maintains a dual role: it is a nature conservation advisor but also nature

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[1249] Interview (in written from sent by email) with NE land advisor, (17 June 2014).

[1250] The number of laws governing the various human activities especially in relation to the environment makes an entirely voluntary approach impossible. There are laws pertaining to development control, pollution control, land designations other than nature conservation, restrictions or allowances due to property rights, that would nevertheless create a loose framework of action even if nature conservation law and policy did not apply.

[1251] DEFRA, *Sites of Special Scientific Interest: Encouraging positive partnerships. Code of guidance* (n558).

conservation regulator. [1252] Natural England's dual role in relation to landowners/occupiers involves encouraging them to protect the area; and acting on infringements.[1253]

In terms of SSSI management DEFRA's code of guidance stresses the importance of further developing 'the constructive relationship between landowners and managers and the officers of the conservation agencies in England and Wales'. Owners and occupiers of SSSIs are considered 'guardians of the SSSIs' [1254] who have a crucial role in safeguarding their integrity. Working in partnership is paramount and underlies all stages of implementation.

> English Nature's staff, particularly area team officers, should continue to develop a mutually supportive and constructive relationship with land managers, and with public agencies, recreational organisations and other bodies whose activities may affect SSSIs, to secure the positive management of these sites. [1255]

Even during procedures that are inherently scientific such as the SSSI notification, with no obligation set to Natural England to consult or negotiate notification, [1256] ideally the conservation body will engage in informal meetings and discussions with the landowners to discuss potential management, as well as any concerns they may have.[1257]

Information and advice are crucial for decision on management actions. Recognising the central position of landowners in any nature conservation framework and the importance of local knowledge, DEFRA's Guidance expects for information exchange to flow both ways. On the one hand the technical

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[1252] National Audit Office, *Natural England's role in improving sites of special scientific interest* (n683) para.3.15.
[1253] ibid.
[1254] ibid para.3.4.
[1255] DEFRA, *Sites of Special Scientific Interest: Encouraging positive partnerships. Code of guidance* (n558) para.9.
[1256] The only statutory obligation is to publish a notification in at least one local newspaper and allow time for representation. There are no consultation requirements prior to notification.
[1257] DEFRA, *Sites of Special Scientific Interest: Encouraging positive partnerships. Code of guidance*, para.13-15; English Nature, *SSSI Notification Policy Statement* (English Nature, 2006).

expertise of NE officers and on the other traditional management practices and expertise of individual landowners and managers. [1258] Often, proper information, advice and constructive dialogue in a informal way will suffice to resolve tensions, particularly those that result from misunderstandings of the effects of designation.

On a day to day basis, locally based staff work jointly with landowners often in an informal way to decide on the best course of action and practices that 'enhance the environment but also allow them to management the land in a way that is economically viable'.[1259] To this end, Natural England advisers seek to build and maintain relationships of trust with private land managers through regular meetings and constant support:

> Natural England brings to land management a workforce of locally based staff, whose combined knowledge of environmental legislation and scheme rules with environmental expertise, knowledge of their local areas and an appreciation of local farming systems. Natural England supports these advisers through access to a range of guidance, in-house specialist advice and the practical experience of our NNR managers.[1260]

> Environmental outcomes will be most favourable where we offer farmers and land managers good service and efficiently operated schemes, we understand and take account of their aspirations and business needs and explain clearly how they can provide value for money in return for the payments they receive.[1261]

The support and expertise of NE advisers are highly appreciated by landowners themselves. Apart from their technical expertise, NE officers offer advice on the different schemes available and explain how the intricate system of conservation policy works. How important it is to establish such good working relationships is reflected in the evidence submitted by the National Farmers Union at the *Innovation, Universities, Science and Skills Committee*,

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[1258] DEFRA, *Sites of Special Scientific Interest: Encouraging positive partnerships. Code of guidance* (n558) ara. 9-12.
[1259] National Audit Office, *Natural England's role in improving sites of special scientific interest* (n683) *para*.3.4.
[1260] Natural England, *Natural England Standard. Land Management: why we do what we do* (2013) 4.
[1261] ibid 5.

Tenth Report of Session 2008-2009, referring to problems caused by discontinuity between NE officers and owners and occupiers and stressing the importance of good face-to-face communication.[1262]

> I would say that the critical point I want to bring across to the Committee is that of relationships and communication. It is absolutely essential that those who own and manage sites understand the reasons for designations, have a good relationship with Natural England about how their sites are managed. Occasionally we find that discontinuity between the officers within Natural England causes problems for our owners and occupiers; they do not know who they should be dealing with. One officer will come along and have a particular interest in one aspect of the site; the next officer might not have the same interest in that site. Consistency of interaction between Natural England and the farming community is absolutely essentially. Finally, sometimes there is a feeling amongst my members that there is more of a box ticking mentality than a partnership. I know that Natural England is under a huge amount of pressure to get favourable condition across sites and on occasion we find that sometimes it is a case of signing the management plan and the relationship is finished, whereas we would like to see an on-going relationship and discussion about the detail of that site.

Any tension arising from management requirements should ideally be be resolved through mediation and dialogue to agree measures before resorting to legal means.[1263] The commitment of Natural England to the voluntary principle is reflected in the rare use of enforcement measures granted by legislation.[1264] Again, discretion is crucial. Natural England is not under a statutory duty to enforce either the negative obligations or positive management. As is evident from the low rates of enforcement initiated by

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[1262] Oral evidence by Andrew Clark, Head of Policy Services, National Farmers' Union, in Universities Innovation, Science and Skills Committee, *Sites of Special Scientific Interest* (HC 2008-2009, 717, 2008-2009), Q18.

[1263] DEFRA, *Sites of Special Scientific Interest: Encouraging positive partnerships. Code of guidance* (n558) 7 'where consent is refused or given subject to conditions, or no decision is made (…) it may be possible to resolve matters without a formal appeal (through mediation or informal dispute resolution); *See also*: DEFRA, *Sites of Special Scientific Interest. Consent Appeals: A Guide for taking part in appeals under section 28F of the Wildlife and Countryside Act (as amended) 1981* (DEFRA, February 2009) 'If Natural England has refused you consent, or granted it subject to conditions, Defra would encourage both you and Natural England to hold full and constructive negotiations before an appeal is lodged. This can save time and expense for all sides'.

[1264] *See supra* n1053, n1207.

Natural England and the rare use of management schemes and notices to impose positive management, coercive measures are the last resort.[1265] This approach seems to be working given that in 2010, 96.5% of SSSI reached target for good condition [1266] and Natural England has established a good relationship with the farmers' community.[1267]

Having said that, it does not come as a surprise that management agreements are the primary mechanism in pursuing nature conservation objectives. Being a flexible mechanism SSSI agreements can be individually negotiated to suit the needs of the various land-uses. Interestingly enough, as discussed, the same flexibility does not apply to management agreements made under Agri-Environment Schemes. A major opportunity for large-scale adaptive management may have trouble to be realised as result of the way the Government has chosen to implement the AES.

What can be concluded from the above analysis is that the model of decision making as framed in law and when opted for in practice, shows great flexibility but it is still far from being one of shared-decision making. The two main actors, Natural England and the landowners, are not equal members in designing and implementing conservation management due to the powers afforded to the former by legislation. Despite the gradual weakening of primary features of the 'administrative state', regulators and public authorities retain the power of *imperium* hence the scale is tipped - even if just slightly - in their favour. Second, and related to the first, top-down controls manage to infiltrate even what is supposed to be a voluntary flexible mechanism: as

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[1265] Natural England, *Natural England Standard: How we use regulation (2013)*

[1266] Natural England, *Protecting England's National Treasures. Sites of Special Scientific Interest* (2011), 11.

[1267] *See* Andrew Clark, Head of Policy Services of the National Farmers' Union giving evidence in Sites of Special Scientific Interest, HC Innovation, Universities, Science and Skills Committee Tenth Report of Session 2008-2009, Q18-19:

> In terms of the tensions, I think there are fewer tensions now than there used to be. Certainly, after the 1981 act there was quite a lot of tension around SSSIs. However, if we go looking for tensions now we still continue to find them. They are not life stopping; they are more issues of detail and irritation…As I say, I think it is a case of irritating detail rather than fundamental problem.

discussed, the AESs management practices/options are prepared and decided by the Government's experts and subsequently offered to landowners.

6.3.2 Limitations

Apart from issues already identified in the previous paragraphs that reduce the scope for negotiation and compromise such as the limited flexibility of AESs agreements, there are two main limitations of the current legislative and regulatory approach that constrain – but do not prevent - the implementation of a collaborative version of adaptive management and which I would like to draw attention to. To start, adaptive management as a conflict resolution mechanism has greater potential at the planning rather than the implementation stage of management. The aim should be to identify and bring together to the decision-making table all interested stakeholders and share policy making among those involved or likely to be involved with the management of a given area (e.g. landowner, developers, public authorities, NGOs) area from a very early stage. In this way, diverse and competing interests in relation to a certain area are identified early before the need to make specific decisions. This then allows for negotiations and compromises based on the allowances that the involved parties are willing to make. Adaptive planning allows for proactively manage potential sources of conflict before actual conflict arises. Surely, this does not preclude adaptive decision making at later stages. However, having agreed on set priorities and land uses beforehand certainly reduces the likelihood of future conflicts, since all involved are already aware and have agreed on the main management framework.

Early planning also allows for a coherent approach that is time and cost efficient. Funding can be used to carry out a thorough research on the ecological and socio-economic aspects of an area, considering all existing and potential pressures. In contrast, when management decisions are taken in an abstract way, for instance, at the time of a planning permission approval, there are time and financial constraints that would not allow proper consideration

of all interests.

Therein lies the first limitation of the legislative framework; it does not set any requirements for management planning for nature conservation designations or the wider countryside. On the contrary, laws governing national parks, areas of outstanding natural beauty as well as the Water Framework Directive do require management plans to be designed and be put into place. There is a twofold significance in making planning a statutory requirement.

On the one hand it would make management planning mandatory. As such it would provide a platform for adaptive management even if the relevant procedures – partnerships, negotiations, workshops etc. - were not explicitly provided in law. Given the wide administrative discretion that characterises the English approach to conservation, the competent authorities could opt for an adaptive collaborative approach instead of merely designing a plan and presenting it to the regulated. On the other hand, a statutory planning duty means more funding expectations. Certainly, the fact that planning is still not a legal requirement does not prevent administration from initiating the negotiation and designing of management plans.[1268] But being bound by a statutory duty, apart from rendering it a mandatory requirement, would also allow administrators to request and secure additional funding allocation from the Government.

The second limitation relates more to the stage of implementation and

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[1268] There are many examples such as the, cases of SSSI and European designations with management plans into place, the SAGNs initiative discussed above. Especially for European Designations, Natural England in partnership with the Environment Agency launched an Improvement Programme for England's Natura 2000 sites funded by the EU nature conservation funding mechanism LIFE+. The Programme implements a model of nested collaborative/scientific adaptive management from the planning to implementation stage. It is structured to include four main phases from broad scoping to site management implementation plans: programme scoping to identify issues that might affect Natura 2000 sites and any gaps in knowledge, development of theme plans through collaboration work with specialists of both agencies, developing site improvement plans using information acquired during the previous stage and through collaborative works with any stakeholder showing an interest on the land. For details on the IPENS visit: <https://www.gov.uk/government/publications/improvement-programme-for-englands-natura-2000-sites-ipens >.

is a correlation of the central position, the notion of property within nature conservation law, policy and ultimately management. The majority of land management decision-making is property (or farm) oriented and takes place between a public authority and those having rights on the land in question. Hence, a management agreement is made between Natural England and the owner or owners of a certain parcel of land on a piecemeal, farm by farm basis. It is a rather polarised approach that does not leave much room for multilateral agreements that would allow the accommodation of multiple interests and foster as a dispute-free ecosystem-based management as possible.

As a result, compromises and reciprocal concession are negotiated between the administrative authority on the one hand and private individuals on the other. The alternative would be multi-partied agreements with a wider circle of interested participants across ownership boundaries, managed under the principles of ecosystem management, with compromises made not in a binary way but equally among all interests.[1269]

To use a very simple example, let's assume that the conservation body would like to introduce biodiversity spots within agricultural land. If the only option is individual management agreements, landowners would have to set aside a certain amount X of land for this purpose. However, provided that the conservation body could enter into management agreements with multiple parties then neighbouring properties could set aside neighbouring parts of land X/2 that together would form the much-needed biodiversity spot, but with less land loss for each of the participants. There has been a significant body of literature on the need to reinvent and reorient land management schemes to provide incentives and promote collaborative management.[1270]

[1269] Ideally this would include interests other than that of the agricultural community, which might however contribute to cumulative impacts on the local biodiversity e.g industrial or recreational operations. However, in this case AESs schemes given that they apply on agricultural land would be unable to fund, at least entirely, such agreements. They could however take the form of NERC 2006 s.7 agreements.

[1270] Ian Hodge and Sandra McNally, 'Wetland restoration, collective action and the role of water management institutions' (2000) 35 Ecological Economics 107; Robert McFarlane, 'Implementing Agri-environment Policy: A Landscape Ecology Perspective' (1998) 41 Journal

For instance, MacFarlane carried out a study on the Lake District Environmentally Sensitive Area (ESA) and suggested expanding the scheme with a higher tier to support an integrated approach to the management of land across ownership boundaries, with the additional benefit of reducing transaction costs.[1271] However, no changes were made to the ESA scheme and with a few notable exceptions, neither were any changes incorporated into subsequent schemes.[1272]

As argued in the previous chapter, an adaptive approach does not

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of Environmental Planning and Management 575; Jeremy Franks, 'A Blueprint for Green CoOperatives: Organisations for Coordinating Environmental Management Across Farm Holdings' (2008) 4 Journal of International Farm Management 46.

[1271] McFarlane ibid; On reducing transactional cost through collective management agreements *see also* Katherine Falconer, 'Farm-level constraints on agri-environmental scheme participation: a transactional perspective' (2000) 16 Journal of Rural Studies 379

[1272] Joint-participation into environmental management agreements remained an option for only a limited number of land managers with live-stock grazing rights to common land, organised through their Voluntary Management Association. The subsequent Environmental Stewardship Scheme offered financial incentives for group applications under options *HR8 (HLS) and UX1 (UELS) options* that were nevertheless primarily targeted to common land. Their restrictive scope resulted in low participation rates (By 2008 only 23 agreements under option HR8 were made). Jeremy R. Franks, 'The collective provision of environmental goods: a discussion of contractual issues' (2011) 54 Journal of Environmental Planning and Management 637, 637;

For a detailed analysis on ESS options HR8 and UX1and their potential for collaborative management *see* Franks JR and others, *Options for landscape scale collaboration under the UK's environmental stewardship scheme* (Newcastle University CRE 2011).

The newest Countryside Stewardship Scheme recognising the importance of landscape management provides for a facilitation fund to support people and organisations that bring farmers, foresters, and other land managers together to improve the local natural environment at a landscape scale. It is a supportive rather than implementing mechanism that can underpin initiatives such as the Nature Improvement Areas. It reflects the Government's adherence to the primary role of partnership and collaboration within large scale landscape management and seeks to financially support group land management. As stated in DEFRA's Guide to CS Facilitation Fund 'priority will be given to approaches which show partnership and a collective approach across holdings to deliver shared environmental outcomes that go beyond what could be delivered by individual holdings acting in isolation'. What makes the scheme very interesting is that it is only available to potential facilitators aiming to facilitate management of areas that are at least 2,000 hectares, spread across a minimum of four holdings managed by different people, and it is exclusively targeted at activities that are new as a result of cooperation. It also allows adjustments to existing management agreements to ensure complementary management outcomes. Finally, it sets out a set of conditions to secure group-working and ensure that funding is only used towards collaborative management activities.

clearly prioritise among the different interests. When these interests overlap an agreement is sought; when these interests completely diverge then considering trade-offs will be the most appropriate course of action. Given the complexity of natural systems and social interests, in a given plan it is likely that both approaches will be necessarily linked together. Flexible legal instruments to support adaptive management do exist: management agreements, financial incentives, biodiversity offsetting, together with the public authorities' discretion to attach conditions to the various permits and consents. Also, there has been a growing interest in using a range of non-statutory instruments such as biodiversity covenants and self-regulatory instruments like eco-labelling, both of which can be used to implement management decisions.

Certainly, collective management agreements present several legal and practical challenges.[1273] The farming industry is very competitive, and it is unlikely that farmers would be willing to undertake shared responsibilities. [1274] However, experiences abroad show that albeit not challenge free, collective agreements are possible to implement.[1275] There is nothing in legislation that precludes it and as with most decisions, the introduction of multipartite agreements lies with the nature conservation body or other public authority.

[1273] *See* Franks, 'The collective provision of environmental goods: a discussion of contractual issues' (n1272) discussing contractual issues as potential barriers to collective contracts.

[1274] Interview with the NFU Environment and Land Use Adviser, NFU North East (York, 5 March 2014).

[1275] J. R. Franks and A. Mcgloin, 'Environmental cooperatives as instruments for delivering across-farm environmental and rural policy objectives: Lessons for the UK' (2007) 23 Journal of Rural Studies 472 discussing the potential of environmental co-operatives (EC) implemented in the Netherlands to deliver environmental benefits and an integrated and strengthened rural economy in the UK; J. R. Franks and A. McGloin, 'Joint submissions, output related payments and environmental co-operatives: Can the Dutch experience innovate UK agri-environment policy?' (2007) 50 Journal of Environmental Planning and Management 233 discussing the Dutch experience with joint-management agreements as a means to implement AES.

6.3.3Where does English nature conservation stand?

Following the above analysis, there several conclusions to be drawn. Firstly, nature conservation decision making can be as flexible and adaptive as administrative authorities wish it to be. There are only a few circumstances under which administrative action is strictly prescribed in statutory law. Even within designated areas, the approach chosen is one of regulated flexibility.

Second, and related to first, it is not safe to draw any general conclusions on how adaptive the decision-making process is without looking at the practical implementation of nature conservation on a case by case basis. The wide discretion granted to the administration allows for variable implementation. There is a generalised pattern towards more participatory decision making, but it is yet to be fully institutionalised.[1276] Establishing legal requirements - even if only procedural - for large scale nature conservation management planning could contribute significantly in the gradual adoption of a decision-making model based on adaptive management, as public authorities would be bound to undertake management planning. Additionally, laying down procedural requirements for broad multilateral stakeholder participation would further secure collaboration among conflicting interests towards proactive consensus building.

Nevertheless, as mentioned above, the absence of statutory provision and formalisation of adaptive management and collaborative decision making does not mean that such a model is not being implemented in practice. Most of these instruments are characterised by operational versatility. Hence, if applied collectively in an co-ordinated and complementary way by the administration, the latter exercising its wide discretion can make full use of their flexibility and align them to the commonly agreed objectives; they can be adapted to serve adaptive collaborative management. This interplay among the various instruments and the authorities responsible for their

[1276] This for instance is the case with Local Nature Partnerships that reflect adaptive management ideas. However, their involvement with policy and decision making is not provided in legislation, therein it will largely be at the discretion of the competent authority to allow their inclusion and active participation.

implementation becomes clearer in the following chapters, which look at the practical implementation of nature conservation. It is the case study of the Nature Improvement Areas initiative in Humberhead Levels, where large scale management is administered by stakeholder Partnerships and management is implemented by land managers in collaboration with NGOs and public authorities.

Part III

Addressing complexity in Practice: The Humberhead Levels NIA

It has been established that in order to manage complexity we need to establish resilient systems. In doing so, we need adaptability which in turn requires overlapping interests to find a common way to work together. This requires a framework that allows and promotes flexible adaptive management. The following chapters will argue that the Nature Improvement Area (NIA) Scheme introduced by the DEFRA Natural Environment White Paper in 2011 recognises and provides such a structure, one that allows for the implementation of an intertwined version of adaptive management models that were developed in Part II, also that the legal and regulatory framework within which it operates is flexible enough – albeit not without limitations – to support it.

The following chapters look at the scheme as conceived and executed, designed and implemented in one of the original 12 NIAs, the Humberhead Levels NIA (HHL NIA) and find that it reflects both models of adaptive management tangled together. This confirms an earlier observation that any conceptualisation of distinct adaptive management models is theoretical and for the purpose of the analysis. In the real world everything is rather muddled. The HHL NIA programme brings together and merges the two models. Identifying boundaries is difficult since elements of both fade in and out at different stages or places of delivery.

Science is central to the scheme; so is experimentation. From its conception the NIA scheme was a pilot project; a big learning activity. It was designed to test different approaches especially in situations where the science is still developing. What was expected was a lot of innovative and

experimental work. On the other hand, resolving or even preventing conflicts is crucial. Addressing conflict through adaptive management can be an end itself or a means to implement otherwise science driven decisions. Seeking to combine nature conservation with social and private interests is itself one of the main objectives of the scheme. At the same time, resolving conflict that is likely to arise from the implementation of science-based recommendation is essential. Science will tell us what we need to do but then when interests fall apart we need to decide whom to make deals with. The success of the NIA is that it expands the network of people involved already since the land designation. In a sense, the scheme is about conflict resolution overlapping with science and as such it sits at the intersection of the two models of adaptive management introduced before.

The following chapters discuss the interaction of these two models during the three-years management that took place in the Humberhead Levels NIA. In doing so, they seek to identify the core elements that characterise adaptive management models extracted earlier in the thesis. Chapter 7 is an introductory chapter providing the background on the NIA scheme and the Humberhead Levels. In chapter 8 continues the discussion of chapter 7 with a detailed analysis that heads from the Lawton Review and the subsequent White Paper stating the vision and setting the objectives of the scheme. It is important to examine why Lawton made these recommendations and how they were taken forward. The Lawton Review and the White Paper set the course for the scheme. The vision and aims of the programme outline the framework of action and set the course for the NIA management.

Chapter 9 looks at management implementation on the ground. Using information provided by key individuals within the HHL NIA and through research in a series of documents and reports this chapter looks how and whether adaptive management works on the ground; whether the management practices applied in the NIA amount to what the theory refers to as adaptive management. The discussion will revolve around the themes identified to run through the adaptive management models:

adherence to science as a primary driver of nature conservation decision making, adherence to the non-equilibrium paradigm, research, learning and experimentation, flexibility and iterative decision making for science driven adaptive management and collaboration as a way to bring diverse interests together thereby reducing (potential) tensions on the ground.

Chapter 9 concludes with an assessment of the legal and regulatory system in terms of its flexibility –or lack thereof- to allow for such practices to be effectively implemented. It broadly confirms what was suggested in the previous chapter: that the current framework and the way it is being implemented by those applying it, is flexible enough to allow those engaged with nature conservation management to manage adaptively within both attributed meaning

Research methods

As mentioned in the introduction the main research methods employed in this study were research in documents and qualitative interviewing which are commonly used as data collection methods in case-studies.[1277]

Documentation

Documentary research on the Humberhead Levels NIA and the NIA initiative in general was essential in order to provide me with general and more detailed information on the NIA: how was the programme initiated,[1278] how was the HHL NIA established,[1279] aims and objectives,[1280] project design,

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[1277] JW Creswell and CN Poth, *Qualitative inquiry & research design: choosing among five approaches* (Fourth edition. edn, SAGE 2018) 105.

[1278]Lawton and others (n36); Natural England, *Nature Improvement Areas: Competitive Grant Scheme General Guidance Notes* (n96).

[1279] Kevin Bayes and Humberhead Levels Partnership, *Humberhead Levels Nature Improvement Area Business Plan* (December 2011) (henceforth HHL NIA Business Plan); Humberhead Levels Partnership, *Humberhead Levels Nature Improvement Area: Ambition Report* (undated).

[1280] ibid.

implementation and progress.[1281] Data collection through document research is widely used in social research in particular as sources of background knowledge and for cross checking data collected through other methods. Documents – in particular public documents– usually represent data which are products of considerable thought[1282] and in the case of the HHL, products of research. Documentary research can provide with invaluable historical information but with quantitative data given that many of the reports and records examined contain tables and graphs with a vast amount of information on land management, habitats and species condition, monitoring etc.[1283] A variety of public documents were available and acquired online on the Internet; some had to be accessed through a Freedom of Information request; others (e.g maps) were given to me by people involved in the scheme. Among documentation that was examined was the Lawton Report, the NEWP, the Humberhead Levels business plan that was submitted as part of the original NIA selection process, a number of policy documents laying down the framework for the initiative, progress reports as well as related information available online and in particular on the Natural England and YWT websites. These documents provided background information on the initiative and to an extent reflect the understanding and aspirations of higher level policy makers and scientists. Furthermore, as the plan was being implemented, progress reports and other internal records were included in the research.

[1281] Humberhead Levels Partnership *Year 1 in the Humberhead Levels* (undated); Subsequent quarterly progress reports from August 2013 to February 2014; Humberhead Levels Partnership *Humberhead Levels Progress Year 2 Report* (1st quarter, August 2014); Humberhead Levels Partnership *Nature Improvement Area: Inspiring landscapes and vibrant communities in a changing climate 2012-2015* (2005);
Monitoring and Evaluation of Nature Improvement Areas: Year 1 Progress Report (n90); Collingwood Environmental Planning, *Monitoring and Evaluation of Nature Improvement Areas: Year 2 (2013-14) Progress Report.* (Defra Research Project WC1061, 2014) (henceforth Monitoring and Evaluation of Nature Improvement Areas: Year 2 Progress Report); Monitoring and Evaluation of Nature Improvement Areas: Final Report (n97).

[1282] JW Creswell, *Research design: qualitative, quantitative, and mixed methods approaches* (3rd edn, SAGE 2009).

[1283] *See supra* n1281.

Interviews

In addition, qualitative semi-structured interviews were conducted with purposively selected individuals in conjunction with document research. Interviews are often regarded as the most commonly used method in social research. [1284] In fact, they are so widely used that Benney and Hughes refer to modern sociology as 'the science of the interview' [1285] and Barbour as the 'golden standard' of qualitative research.[1286] They can provide the interviewer with information that is otherwise inaccessible but also with information on people's interior experiences, their perceptions, opinions and feelings. [1287]

There are three major categories that are identified in literature depending on their structure – or the lack thereof – of the interviews: structured, unstructured or semi-structured interviews. Semi-structured interviews – the preferred method in this study- lay between the rigid structured interviews and the more relaxed unstructured interviews [1288] and are considered by some scholars as the genuine type of qualitative interview.[1289] I briefly refer to these other two types of interviewing below:

[1284] Hilary Arksey and Peter Knight, *Interviewing for social scientists : an introductory resource with examples* (Sage 1999) 62; Michelle Byrne, 'Interviewing as a data collection method' (2001) 74 AORN Journal 233, 233.

[1285] Mark Benney and Everett C. Hughs, 'Of Sociology and the Interview: Editorial Preface' 62 American Journal of Sociology 137,137.

[1286] Rosaline S. Barbour, *Introducing qualitative research : a student's guide to the craft of doing qualitative research* (Sage 2008)113.

[1287] Steinar Kvale, *Doing interviews* (SAGE Publications, 2007) 1.

[1288] Arksey and Knight (n1284) 9; N.K. Denzin, *The research act: a theoretical introduction to sociological methods* (McGraw-Hill 1978)115 (refered to as nonscheduled standardizes inerview).

[1289] J Mason, *Qualitative Researching* (SAGE Publications 2002) 62. Mason considers the 'unstructured interview' to be a '*misnomer because no research interview can be completely lacking in some form of structure*'; Steiner Kvale, *InterViews : an introduction to qualitative research interviewing* (Sage 1996), he mainly discusses the semi-structured interview. He stresses: '*Technically, the qualitative research interview is semistructured: It is neither an open conversation nor a highly structured questionnaire'.* Kvale, ibid 27.

Structured interviews – also standardized or formal interviews[1290] – use a formally structured predetermined set of questions.[1291] Interviewers do not deviate from their established question schedule; all subjects are asked the same set of questions and usually have to choose from one fixed range of question (often called, closed, closed ended, pre-coded or fixed choice).[1292] Structured interviews produce descriptive information[1293] and are mostly associated with quantitative interviews.[1294] Surveys are a typical example of structured interviews. Using a pre-established set of questions, they intent to provide with data which when analysed can provide a numerical description of the issue in question and ultimately generalize from the research sample to population.[1295] In structured interviews, researchers already have 'fairly solid ideas about what they want to uncover'.[1296] In designing and setting the questions, the researchers assume that they are (the questions) sufficiently comprehensive to extract from the subjects the intended information, but also that they are stressed in a way that can be clearly understood in an identical way by all subjects.[1297] These assumptions have received criticism by some scholars who argue that structured interviews are best realised in homogenous samples.[1298]

Structured interviews are effective in keeping the interview focused on the topic of the interview, and given their strict format, they reduce error due to interviewer variability.[1299] However and especially since 'non-real' variations must be kept to a minimum, there is no opportunity for further

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[1290] Bruce L Berg, *Qualitative Research Methods for the Social Sciences* (Allyn and Bacon 2001) 68-73 and Denzin (n1288) 113-117.
[1291] Berg (1290) 69.
[1292] A. Bryman, *Social Research Methods* (OUP Oxford 2012) 210
[1293] Arksey and Knight (n1284) 4-7.
[1294] ibid.
[1295] ibid4.
[1296] Berg (n1290) 69.
[1297] Denzin (n1288) 113-115.
[1298] ibid.
[1299] A Bryman, *Social Research Methods* (OUP Oxford 2012) 210 stresses that '*the standardization of both the asking of questions and the recording of answers means that if the interview is properly executed, variation in peoples replies will be due to "true" or "real" variation and not due to the interview context'.*

clarification of answers through follow-up questions. Structured interviews are very good in finding out *e.g.* how many people smoke, what brand of cigarettes they prefer, how often they smoke, but less capable of allowing for deeper exploration, in order to get answers on why the smoke, how the subject started, why they continue although it is bad for health etc.

At the other end of the continuum is the **unstructured – or unstandardized – interview**. Here, the interviewer does not have a pre-established set of questions neither does he or she know exactly what kind of information they are after.[1300] This type is similar to conversation and it might entail a single question to the interviewee who then may choose how and in what extent will answer. It provides a relaxed atmosphere for the interviewees where interruptions on the interviewer's part are kept to a minimum. It is usually used in ethnographic research.[1301]

In between the two types mentioned above, we find this study's preferred research method, that is the semi-structured interview, which as mentioned, is often regarded as genuine qualitative interview. A qualitative interview is often defined as a purposeful conversation.[1302] Kvale stresses that 'the purpose of a qualitative research interview is to obtain a qualitative descriptions of the life world of the subject with respect to interpretation of their meaning'.[1303] Hence, an interview is a conversation between at least two people: the interviewer and the interviewee but differs from everyday conversations in the sense that it has a structure and a purpose.[1304]

> It goes beyond the spontaneous exchange of views as in everyday conversation and becomes a careful questioning and listening approach with the purpose of obtaining thoroughly tested knowledge.[1305]

[1300] Berg (1290) 70.
[1301] Ali Alsaawi, A Critical Review of Qualitative Interviews (2014). 3 European Journal of Business and Social Sciences 149, 151
[1302] Robert Bogdan and Sari Knopp Biklen, *Qualitative research for education: an introduction to theory and methods* (2nd edn, Allyn and Bacon 1982) 133.
[1303] Kvale, *InterViews : an introduction to qualitative research interviewing* (n1289) 124.
[1304] ibid 6.
[1305] ibid.

There is a set of pre-planned interview questions that follow certain themes which link back to the research questions. [1306] The interview is loosely structured around these key questions which allow for much flexibility but at the same time for some degree of comparability. These key questions are open-ended questions which means that the interviewee will answer the question, talking about what they believe is important about the topic.[1307] In contrast to structured interviews, the questions may not be asked in the same way at each and every respondent. Using follow up and probing questions the researcher can follow up ideas, ask for clarification and further elaboration[1308] which allow for deeper exploration and insight of how the research subjects view the world.

The purpose of the case study was to trace adaptive management models in nature conservation decision-making in day-to-day practice, by identifying the main themes of adaptive management models that were extracted at the second part of the thesis (a) adherence to science as a primary driver of nature conservation decision making b) adherence to the non-equilibrium paradigm c) research and learning and experimentation d) flexibility and iterative decision making e) stakeholder participation and collaboration). Consequently, identifying emerging adaptive management themes in practical nature conservation management and in particular that of stakeholder participation and collaboration, required a good understanding of the complex personal interactions that occur in practice between those involved in the HHL and the lived experience of those with responsibility for practical implementation of conservation management. [1309] Accordingly, semi-

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[1306] ibid 131.

[1307] Hence, although the interview is not conversation between equal partners, since the interview is the one who set the scene, introduces the topic and formulates the questions, ibid 3, however in the end, it will be the interviewee who will choose what to answer and likely direct the interview by focusing on certain point that might provide the basis for follow up questions.

[1308] Arksey and Knight (n1284) 7.

[1309] *See* Kvale, *InterViews : an introduction to qualitative research interviewing* (n1289) 29 stressing: '*The topic of the qualitative research interview is the lived world of* the subjects and

structured interviews provided an appropriate way of seeking to balance out a general overview of a complex phenomenon - nature conservation management - whilst simultaneously analysing that general picture within a very specific context, framed by the adaptive management models I wanted to evaluate. This tension between overview and detail reflects the strengths and weaknesses of the semi-structured interview of selected participants in terms of an empirical study. Simply put, the qualitative data from the interviews provide a contemporary snapshot of a subjective interpretation of what are personal and closed networks of actors. In other words, the data gained represented views from individual participants with all of the limitations, biases and partial understanding that suggests. Critically however, it does give us a lens through which to take that snapshot and the picture it presents, whilst flawed, is still a picture worth analysing.

Selecting participants

With this in mind, I developed what in literature is referred to as *a panel of knowledgeable informants*, [1310] that is a panel of knowledgeable and experienced individuals, each of which 'would be chosen because he or she could significantly instruct us'.[1311] Also, likely to be included in such panel as respondents, are people 'who view our topic from different perspectives or who know about different aspects of it'.[1312] This *panel of knowledgeable informants* is qualitatively different to a *sample of representatives* which is the usual case in qualitative interviewing, and where the respondents are chosen 'because together they can represent the population of concern'.[1313]

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their relation to it. The purpose is to describe and understand the central themes the subjects experience and live toward'.

[1310] RS Weiss, *Learning from Strangers: The Art and Method of Qualitative Interview Studies* (Free Press 1995)17.

[1311] ibid.

[1312] ibid.

[1313] ibid.

Hence, all interviews were carefully targeted to a limited number of individuals who had a key role in implementing the NIA management plan. Eleven people were interviewed in total, representing different organizations/agencies; each of them was better familiarised with certain aspects of the project related to their field of expertise, (e.g land advice, science-driven projects, organization and finance etc) but they all had a comprehensive overlapping knowledge of the NIA initiative: all but one were working either for Natural England, the nature conservation statutory agency, also responsible for running the projects' finances and the only body with regulatory powers (in terms of nature conservation); or for nature conservation NGOs and specifically the Royal Society for the Protection of Birds (RSPB), in charge of a number of projects within the NIA, and the Yorkshire Wildlife Trust which administers the entire initiative. One individual however represented the private sector and more specifically the National Farmers' Union (NFU). Among them were the Chair and the Secretariat of the Humberhead Levels Partnership (NE), the programme manager (YWT), an officer in charge of landowners engagement (YWT), an officer in charge of involving the public to nature conservation activities (YWT), Natural England land management advisers who work with farmers in the area and draft management agreements as well as scientists running different projects within the NIA (RSPB).

Interviewing

In conducting my interviews, I had been both what Kvale refers to as a *'miner'* and a *'traveller'*.[1314] Kvale uses the metaphor of the interviewer as a *miner* and as *traveller* to describe and contrast between two different epistemological conceptions of interviewing: one as a process of knowledge collection and one as a process of knowledge construction:

> In the miner metaphor, knowledge is understood as buried metal and the interviewer is a miner who unearths the valuable metal. Some miners seek objective facts to be quantified, others seek nuggets of essential

[1314] Kvale, *InterViews : an introduction to qualitative research interviewing* (n1289) 3-4.

> meaning. In both conceptions the knowledge is waiting in the subjects' interior to be uncovered, uncontaminated by the miner. The interviewer digs nuggets of data or meanings out of a subject's pure experiences, unpolluted by any leading questions.[1315]

By contrast,

> […] the traveler explores the many domains of the country, as unknown territory or with maps, roaming freely around the territory [. . .] The interviewer wanders along with the local inhabit- ants, asks questions that lead the subjects to tell their own stories of their lived world.[1316]

Hence, the *miner* has a specific target, he or she knows exactly what to look – that piece of information which they consider valuable, a 'precious stone' and seek to dig out and collect these 'nuggets of knowledge'. At the other end, the *traveler* wanders around without pre-defined standards; knowledge is co-constructed interactively with the respondents and every conversation is an opportunity to discover new aspects or may even result in changing his or her opinion. What the *traveler* is taking with him or her, is knowledge that has been constructed interactively through the conversation with the respondents:

> The journey might instigate a process of reflection that leads the interviewer to new ways of self-understanding, as well as uncovering previously taken-for-granted values and customs in the traveler's home country. [1317]

My approach fell in between the *'miner'* and the *'traveler'* as I was aiming to get a general sense of what was happening in the HHL but also identify and further explore the specific themes that linked back to my theory. It was similar to that of what Witzel and Reiter refer to as the *'well informed traveller':*

> […] they have certain priorities and expectations and start the journey on the basis of background information obtained beforehand. Yet the trip they will finally make, and the story they will tell about it afterwards,

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[1315] ibid 3.
[1316] ibid 4.
[1317] ibid.

> depend on the people they meet on the road and on their insider knowledge. By talking to them they are able to refine their assessment of the major sights mentioned in the travel guide. Their guidebook only helped them to outline a preliminary roadmap and frame of reference that remains open to modification and revision on the basis of conversations with the locals.[1318]

The 'major sights' of the travel guide were the adaptive management themes that were identified at the theoretical part of the thesis; these became the basis for the formulation of key-questions that provided the 'roadmap' of the interview process and reflected my research questions.

However, given that my intention was not merely to study these themes in isolation but also to explore the interface between science-driven decision making, flexibility, adaptability and collaboration and thus the interaction of the different theoretical models in practice, the interview was not merely a 'mining' process. The high degree of complexity of my research topic required a good balance between an in-depth exploration and a more open flexible approach. Hence, all interviews were focused, semi-structured conversations in order to allow the participants to present their understanding of how nature conservation management is being carried out, reducing to a minimum any influence on the data gathered. [1319] A list of topics and some principal questions were prepared to be covered during what was essentially, a natural conservation between two people.[1320] As mentioned above, these main topics reflected and linked back to the main themes of the theoretical adaptive management models.

[1318] A Witzel and H Reiter, *The Problem-Centred Interview* (SAGE Publications 2012) 2.

[1319] Yin writes on case study interviews*: 'the interviews will be guided conversations rather than structured queries. In other words, although you will be pursuing a consistent line of inquiry, your actual stream of questions in a case study interview is likely to be fluid rather than rigid'* in Yin (n105) 106.

[1320] Sapford in Roger Sapsford and others, *Data collection and analysis* (2nd edn, SAGE, 2006). 94, 113 refers to this less structured interviews as 'naturalistic 'since it approximates a social conversation were the parties take turns; Spaford uses the term 'unstructured' But then opts for the term 'less-structured' since a completely unstructured interview is impossible, Sapsford ibid 97.

All interviewees were informed, in written prior to the day of the interview and verbally during a briefing before the beginning of the interview, about the overall purpose of the study, the main features of the interview design and the use (and potential future use) of data. They received information on confidentiality, who would have access to the interview material, the secure storage of data, the conditions of their participation – voluntary participation and withdrawal from the research. The participants were also informed that, as it is often the case with qualitative studies and semi-structured interviews,[1321] and especially given the limited number of people involved with the project, that although all interview material would be anonymised,[1322] a possibility still remained that the participants would be identifiable. Before the beginning of each interview, every participant, signed a consent form that had previously been approved by the University of York Ethics Committee. All interviews but one, took place at the interviewee's work place. One interview took place in writing via emailing due to time limitations on behalf of the participant. [1323] On two occasions, two people were interviewed together at the participants' suggestion. All interviews but three were digitally recorded and subsequently transcribed.[1324]

I began all interviews by asking general questions that were very similar to all interviewees, e.g on their role within the HHL and some general information on the initiative. Then adopting a funnel type approach, I moved towards more specific questions based on the interview agenda that was already developed. As mentioned, the questions posed linked back to the main themes of the research. However, the form of questions was different to that

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[1321] Arskey and Knight (n1284) 9.

[1322] Interviewees have been anonymised and any reference is made by their role or position in the programme.

[1323] As a result, this interview was more structured than the others. A number of open-ended questions were e-mailed to the responded who answered in writing. However, the interviewee was available for written following up questions.

[1324] Of the these, two, that were conducted simultaneously, were not recorded due to mechanical failure of the recording device and notes were taken. The third interview was not recorded at the participant's request.

of research questions in order to allow for a dynamic conversation[1325] and prevent 'leading' that might implicitly suggest certain answers. Hence, for example, seeking to find out whether science was a determining factor when designating the HHL NIA, the question posed was formulated as: 'according to what criteria the HHL NIA was designated?' In that way, I could actually find out -as I actually did- not only what the role of science had been *(miner)* but also other factors that that I had not yet considered *(traveller).*

The sequence of the questions was not predetermined. Also, questions were adjusted depending on the participant's role within the project, focusing more on certain aspects of management.[1326] Hence, interviews with senior members of the HLP Board or the programme manager were generally broader and focused on the general organization and operation of the Partnership, higher level decision-making and historical information on the very early stages of the NIA. On the other hand, interviews with RSPB scientists focused more on the scientific aspect of management, the wetland land advisor on working with landowners and the NE advisor on management agreements. The interviews were also not of standardized length, ranging from one to three hours. This was because as mentioned, I wished to be a *traveler* but also a *miner*. Hence, when during the interview journey I encountered something valuable I would explore it further. This flexibility would not have been possible had I chosen a more formal and structured type of interviewing.

Bias and Validity of Result

Bias on behalf of the researcher and the interviews is often associated with qualitative interviewing and may affect the validity [1327] – or trustworthiness [1328] – and the objectivity – within a qualitative study context [1329] – of the results. [1330] Miles and Huberman refer to sources of

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[1325] Kvale, *InterViews : an introduction to qualitative research interviewing* (n1289) 130
[1326] *See supra* n1312.
[1327] Kvale, *Doing interviews* (n1287) 121.
[1328] ibid 122.
[1329] Kvale, *InterViews : an introduction to qualitative research interviewing* (n1289) 64.
[1330] Kvale, *Doing interviews* (n1287) 120.

potential biases that might invalidate qualitative observations and interpretations, relating to both the participants and the researcher and suggest tactics for confirming qualitative findings[1331]

Triangulation is one way to address participants' bias and check the trustworthiness of information. It has already been mentioned that in this case study interviews have not been the only research method employed, but served as an 'auxiliary method,' [1332] used in conjunction with documents research.[1333] Hence, and particular in relation to factual information such as e.g the designation procedure or land management agreements, I sought confirmation by checking on management plans, reports and relevant documentation. Furthermore, although the formulation of questions varied, certain themes were explored in all interviews, allowing me to triangulate to a certain extend which bits of information overlapped. If pieces of information were not checkable, then on the basis that the participants had no reasons to give false information I assumed that it was true - *e.g* that often NGOs would take permission from landowners so that their staff and volunteers would do management work themselves.

At the same time this study's aim is not to suggest what the decision should have been *e.g* whether a permit should have been granted or not, or whether draining would have been a more suitable approach in a given occasion, but rather to demonstrate that there is an argument and conflict on what the better approach should be, and to look at ways to address it. People's perceptions of what happens in these situations can be coloured by their own and very personal worldview and, as to the HHL, by their role and position within the initiative. Hence, in these situations this subjective perspective offers an interesting insight to the way that nature conservation works in the real world.

[1331] M.B. Miles, A.M Huberman and J. Saldana, *Qualitative Data Analysis* (SAGE Publications 2013) 296ff.
[1332] Kvale, *InterViews : an introduction to qualitative research interviewing* (n1289) 98.
[1333] ibid.

> A recognized bias or subjective perspective may, however, come to highlight specific aspects of the phenomenon being investigated and bring new dimensions forward, contributing to a multi-perspectival construction of knowledge.[1334]

As to the researcher bias, it needs to be recognised that I was looking for specific themes and was interested in how the participants experience linked to my theory. However, I minimised bias, by approaching the interview process with open mind, refraining from posing leading questions that might suggest certain responses or interpreting data to confirm my hypothesis.

As Miles and Huberman stress, 'the problem of quality, of trustworthiness of authenticity of the findings will not go away'.[1335] That people's perceptions of events and answers to interview questions are coloured by their personal views and opinions, profession, cultural and historical background does not entirely negate what they are saying. It means, however, that we have to be a bit more sceptical and acknowledge that there might be a difference between what happens in practice and what people say it happens. As Miles and Huberman stress, "getting it alright" might be an unrealistic goal but as Wolcott suggest, we should try "not to get it all wrong".[1336]

[1334] Kvale, *Doing interviews* (n1287) 86.
[1335] Miles et al (n1331) 311.
[1336] Ibid, Miles et al quoting H. Wolcott, On seeking—and rejecting—validity in qualitative research. In E. W. Eisner & A. Peshkin, (Eds.), Qualitative Inquiry in Education: The Continuing Debate (New York: Teachers College Press, 1990).

7 Background to the Humberhead Levels NIA

7.1 The National Character Areas - The Humberhead Levels

The establishment of the Humberhead Levels NIA (HHL NIA) and the management is taking place therein, is the government's response to the concerns raised by the scientific community over habitats fragmentation and the need for landscape management. It is also an effort to support and an attempt to 'formalize' a number of management practices that had been going on in the wider area for several years.

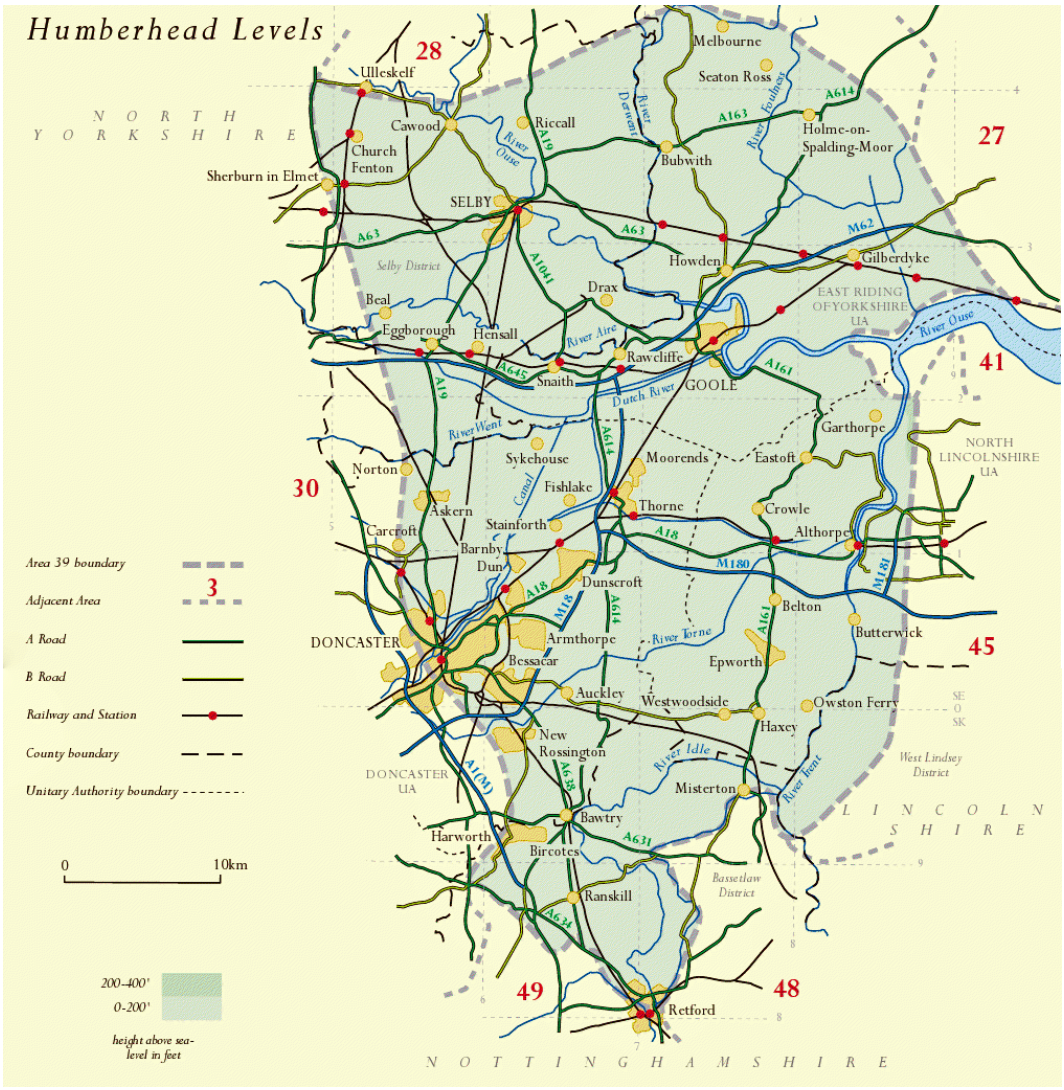

Figure 8 The Humberhead Levels Area (Countryside Agency)

The name 'Humberhead Levels' is not a formal geographical or administrative designation but was introduced by the Countryside Agency in a study of the English Landscape published in 1999 (figure 8).[1337] It later became one of the 159 National Character Areas (NCAs), a Natural England (NE) strategic policy project aimed at defining the diversity of landscape character across England, to give a context, an overview of each area and set aspirations for the future.[1338] Geographically, the HHL NIA falls within the wider HHL NCA.

The NCA framework is one of the first policy initiatives that addresses concerns over the fragmented protection offered by the statutory designation system. Each NCA is defined on the basis of a combination of landscape, biodiversity, geodiversity, cultural and economic activity. Their boundaries follow natural lines in the landscape rather than administrative boundaries, making them a good decision-making framework for the natural environment. In 2014, to meet its commitment made in the Natural Environment White Paper 2011, Natural England completed a major revision and update of the 159 NCA creating detailed profiles that bring together a wide range of information on the natural, socioeconomic and cultural environment. Each profile contains a set of data including geological and soil information, agriculture related data, the number of protected sites and other land designations and opportunities for conservation work, species closely associated with the area, historical information, even details on the tranquillity and remoteness of the area. These comprehensive profiles can be used in a wide range of situations such as to provide land use planning authorities with information on the environmental conditions of the area that can be crucial to the development of local land use plans, in developing land management plans, woodland plans and Countryside Stewardship

[1337] All maps used in this and following chapters where kindly provided by Natural England and the Yorkshire Wildlife Trust.

[1338] Natural England, *National Character Area profile: 39. Humberhead Levels* (Natural England, 2014).

Applications. They can also be used as a research and study resource in particular to monitor change across the landscape[1339] and as a local data index to support tourism and recreational activities. The significance of the NCA profiles lies in the fact that they reflect the government's acknowledgment of the multidimensional nature of ecosystems and their dynamic character but also the limitations of scientific knowledge and the need for more integrated and adaptive management based on constantly updated information:

> Each profile includes a description of the natural and cultural features that shape our landscapes, how the landscape has changed over time, the current key drivers for ongoing change, and a broad analysis of each area's characteristics and ecosystem services. Statements of Environmental Opportunity (SEOs) are suggested, which draw on this integrated information. The SEOs offer guidance on the critical issues, which could help to achieve sustainable growth and a more secure environmental future. NCA profiles are working documents which draw on current evidence and knowledge. We will aim to refresh and update them periodically as new information becomes available to us.[1340]

The NCA profile provided the background and knowledge for setting up the NIA. The NIA scheme is a means of getting some project going within the broader HHL NCA; contrary to the more strategic NCAs profile initiative, the NIA scheme is about making things happen on the ground.

7.2 The Humberhead Levels Landscape

The Humberhead Levels NCA extends for 2275 sq km over three counties –Yorkshire, Lincolnshire and Nottinghamshire.[1341] It covers the area between the Vale of York at the line of the Escrick Moraine to the Vales of the Trent and Belvoir to the South. It is bounded to the west by the low ridge of the Southern Magnesian Limestone and to the east by the Yorkshire Wolds

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[1339] *See* National Character Area profiles: data for local decision making at <https://www.gov.uk/government/publications/national-character-area-profiles-data-for-local-decision-making>.

[1340] Natural England, *National Character Area Profile: 39 Humberhead Levels,* (n1338) 2.

[1341] ibid 3, 18.

(north of the Humber) and the Northern Lincolnshire Edge with Coversands (south of the Humber). It is a flat, low-lying area, with several major rivers that flow in from the north (Derwent, Ouse), the west (Aire, Went) and south (Don, Torne, Idle, Trent). They flow slowly across the Levels and join to form the Humber Estuary which flows out east to the North Sea. [1342]

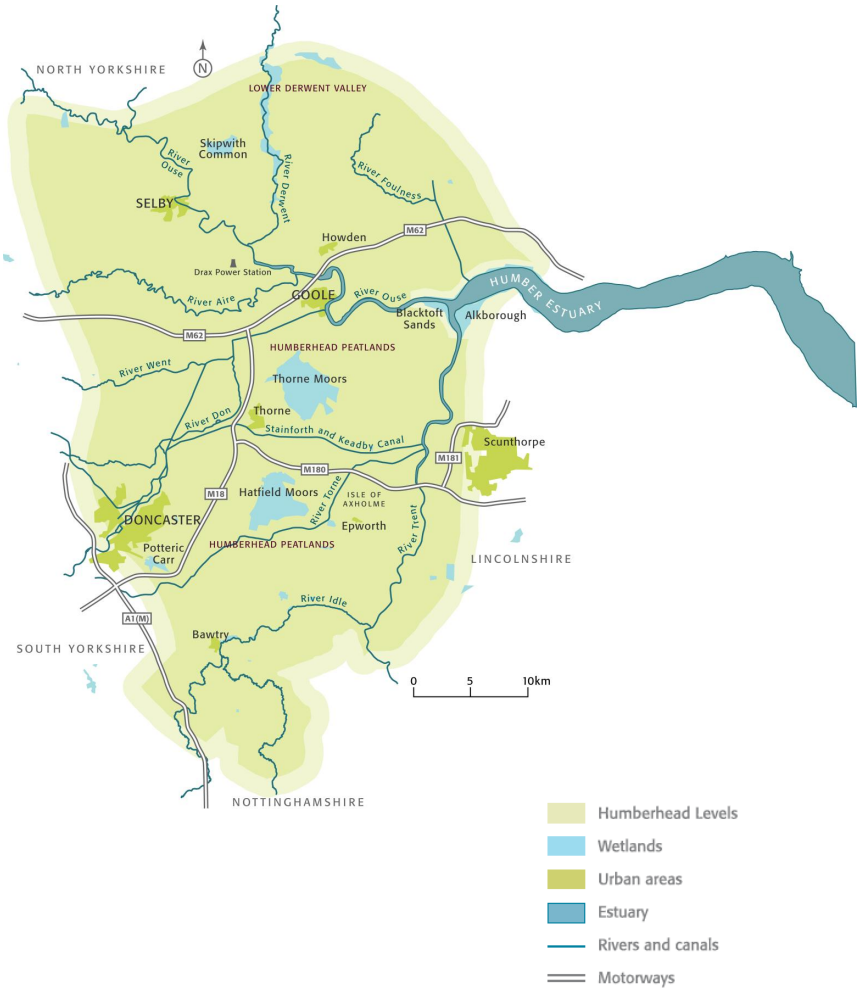

Figure 9 The Humberhead Levels NCA (© Natural England)

The Humberhead Levels NCA contains some of the most fertile and productive soil in the country, with 43% of the land classified as Grade 1 and

[1342] ibid 5.

2 and only a 15% below Grade 3.[1343] This highly priced farmland is intensively farmed and has been historically drained to enable cultivation. High input cereals and root crops predominate in the area and livestock rearing is limited. Land holdings are generally large with 24% of land holdings over 100Ha which make up 72% of the area. Also 24% of the landholdings are between 5 and 20Ha. Very small landholdings under 5Ha are rare. This feature has positive and negative implications. Having land holdings of considerable size, means less owners, less fragmented land due to ownership status thereby easier to apply a collaborative approach. At the same time, large land holdings can be problematic when financial schemes are 'ownership' rather than land oriented. Hence, the existence of an upper limit to the amount of funding per person might mean that not all land can enter these schemes.[1344]

The Humberhead Levels NCA contains a number of statutory designations.[1345] There are 5,722 ha. designated as SSSI (there is a total of 40 sites wholly or partly within the NIA) which overlap to a great extent with internationally important sites designated as Ramsar, SPA and SAC. These include i.a. the lowland peatlands at Thorne and Hatfield Moors (SPAs and SACs), the wetlands along the lower reaches of the River Derwent, and those stretches of the tidal rivers Ouse and Trent that fall within the Humber Estuary (SPA, SAC and Ramsar). The Humber Estuary is also a designated as a SPA, SAC and as a Ramsar site. Given the number of rivers and watercourses, the Humberhead Levels NCA is primarily characterised by wetland ecosystems. The rivers and the network of drainage ditches and dykes form ecological corridors to link the Humber Estuary with areas upstream. They also have an important function as ecological networks that can facilitate species movement in response to climate change.[1346]

Situated roughly in the centre of the Humberhead Levels NCA, the Thorne and Hatfield Moors are the largest area of remnant lowland raised bog

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[1343] ibid 11.
[1344] Interview with NIA land advisor (YWT) (Doncaster, 30 May 2014).
[1345] Natural England, *National Character Area Profile: 39 Humberhead Levels* (n1388) 18
[1346] ibid.

in England. They are of international ecological and historical importance. Lowland raised bog is one of western Europe's rarest and most threatened habitats. The peatlands had been extensively worked in the past for commercial peat production leaving the remaining area with too varied a water table to allow peat formation.[1347] In particular the mechanical peat extraction and drainage that took place in the 20th century threatened the integrity of the bog and the biodiversity it hosts. Likely enough, such works have since 2004 been halted and measures taken to restore the damaged peat areas.[1348] The moor landscapes host important communities of bog mosses and rich invertible populations. There are also belts of scrub and fen woodland amongst the lowland heath and bog that form feeding and breeding sites for over 200 species of birds here find feeding and breeding sites within the belts of scrub and woodland that can be found among the lowland heath and bog. One of them, the nocturnal, insect-feeding night jar was responsible for the area being designated an SPA and its natural habitat for it being designated an SAC. The number of nesting nightjars in Humberhead Peatlands forms a significant proportion of the Western Europe population.[1349]

Only a very small proportion of the land falls within 'urban' classification.[1350] Looking at a map, one can see limited settlements with only a small number of villages on drier grounds and a few industrial centres like Doncaster, Selby and Goole. Apart from that, there is a number of settlements scattered across the farmland landscape: isolated farmhouses and other traditional farm buildings and modern establishments that reflect the predominantly agricultural character of the area. The area has been systematically drained since the 17th century with large scale river diversions and land drainage.[1351] The current landscape has been the result of a long-term management, especially drainage activities, necessary to enable the intensive agriculture that has been taking place to date. The increased demand

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[1347] *See*<http://www.humberheadpeatlands.org.uk> accessed January 2018.
[1348] Natural England, *National Character Area Profile: 39 Humberhead Levels* (n1338) 8.
[1349] ibid.
[1350] ibid 20.
[1351] ibid 6.

for food production in one of the most productive soils of the country and the subsequent increased water demand, especially during the summer months, put pressure on the species and habitats and the integrity of the wetland ecosystem.

Restoration of the wetlands and Humberhead Peatlands, as well as proper water management to address the increasing water demand for agriculture but also the needs of local biodiversity, were a priority in the Humberhead Levels NCA. Natural England's revised profile of the area identified several 'environmental opportunities,' [1352] an umbrella term that encompasses opportunities for the social and natural environment; opportunities to combine nature conservation with agricultural production while promoting the cultural and historical features of the area.

7.3 The Humberhead Levels Partnership

To achieve a number of set target and objectives within Humberhead Levels NCA, the Humberhead Levels Partnership (HLP) was formed in 2001 in response to the Countryside Agency's 'Value in Wetness', a Humberhead Levels Land Management initiative and a £17m DEFRA funding programme for the restoration and conservation of the Humberhead Peatlands. [1353] The Partnership's main agenda was to investigate and test economically viable and environmentally sensitive approaches to water and land management.

The HLP is not a legal entity itself but a consortium of *Non-Departmental Public Bodies* (the Ouse and Humber Drainage Board, the Isle of Axholme and North Notts Water Level Man Board, the Shire Group Internal Drainage Boards, the Environment Agency and Natural England), *Local Governments* (East Riding of Yorks Council, Doncaster MBC, North Lincolnshire Council) and *Charitable Trusts* (the Wildlife Trusts of Yorkshire, Lincolnshire and Nottinghamshire and RSPB) bound by a Memorandum of Agreement. The four

[1352] ibid 4.
[1353] HHL NIA Business Plan (n1279) 7.

main aims of the HLP reflect a comprehensive understanding of ecosystems as combining natural and social elements:

- Supporting Local and Regional Economies
- Protecting landscapes and communities against the effects of climate change
- Increasing physical and intellectual access to the Humberhead Levels
- Promoting the Humberhead Levels and the work of the Partnership

The Partnership's work is a manifestation of how research, collaboration and policy overlap as well as how essential this overlapping is for nature conservation. The Partnership commissioned new studies to explore the concept of positive water management, the potential of nature-based tourism and the climate change impacts on the preservation of lowland peatlands and food security. At the same time, it was responsible for the implementation of delivery schemes such as the *Wetland Vision* and the Nature Improvement Area initiative.

Given the limited resources, it was considered necessary for the Partnership to prioritize areas within the HHL in order to focus its delivery work only on those that offered the best opportunities for conservation work. In 2011 the Partnership designed a delivery plan, a strategy that looks at what the Partnership could achieve delivering in four biodiversity opportunity areas within the HHL (the Humberhead Peatlands, Inner Humber & Lower

Trent, the Idle Valley and the Lower Aire and Went Valleys – *Figure 10*) [1354] and which runs up to 2021.[1355]

In the meanwhile, from 2008-2011 the HLP the HLP, with Natural England as the leading Partner, successfully delivered a Wetland Vision Pilot Scheme.[1356] Although only focusing on wetlands, the scheme sought to address the issue of habitat fragmentation by trying to link different projects together; [1357]it was about creation and restoration but also brought forward the idea of linking things together: nature conservation, water management and agricultural production. As such it laid the ground and provided the Partnership with valuable experience to administer the subsequent HHL NIA scheme.

[1354] Based on the 'The Biodiversity Opportunities Areas' work of the Yorkshire and Humber Biodiversity Forum led by NE that mapped areas with opportunities for conservation work, in an effort to integrate the responsibility areas and nature interests of the different organizations (the RSPB Futurescapes and Wildlife Trust living landscapes and their reserves) in a comprehensive way and provide a good ground for integrated landscape management. There were seven original target areas but following a scoring system of prioritization, the focus was directed onto four of them. Interview with the Humberhead Levels Partnership Secretariat (NE) (York, 1 April 2014).

[1355] HLP Humberhead Levels Deliver Plan 2011-2021 (kindly provided by one of the participants in the study). The HHL NIA Business Plan to a large extent echoes the aims and objectives of the HLP Strategy and Delivery Plan 2011-2021.

[1356] Interview with the Humberhead Levels Partnership Secretariat (NE) (York, 1 April 2014).

[1357] ibid.

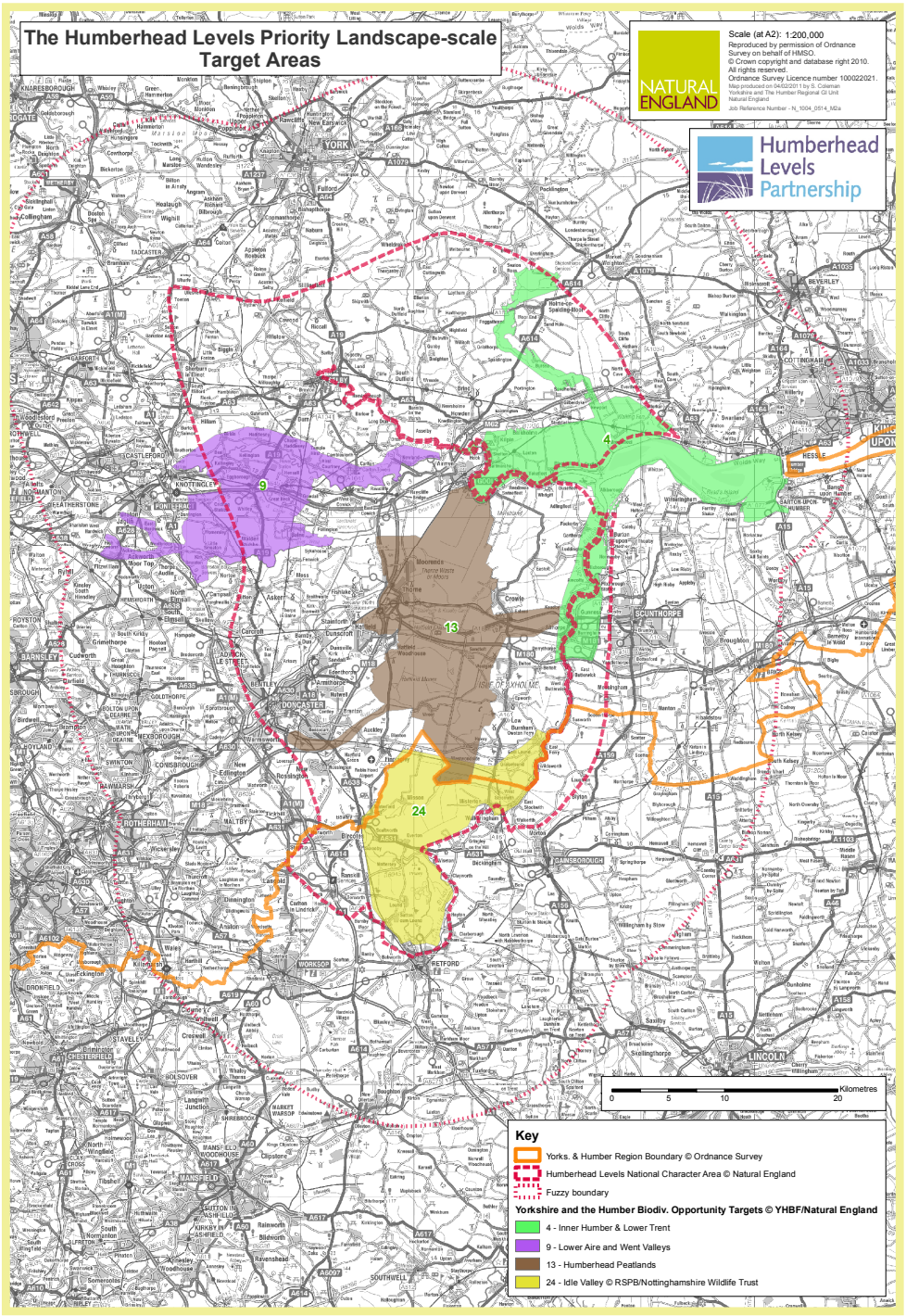

Figure 10 Humberhead Levels Priority Targets

7.4 The Nature Improvement Areas Scheme

7.4.1 The Lawton Report

While these initiatives were being implemented by in the Humberhead Levels NIA by the HLP, the review of English Wildlife Sites by a group of distinguished experts chaired by Sir John Lawton came along.[1358] The 'Lawton Report' was published in 2010 and contained a study undertaken by Sir Lawton and his colleagues at the request of Hilary Benn, the Environmental Secretary at the time who was concerned by the alarming pressures on the English natural environment caused by climate change and other factors.[1359] The review concluded that although wildlife sites in England are highly valuable, they are not resilient or coherent enough to allow species to respond to climate change pressures. According to Sir Lawton, the current sites are neither big enough, close enough, sufficiently linked or well managed to comprise a coherent ecological network that will enable biodiversity to cope with the challenges of climate change. Designated sites, even when well-managed, are hidden jewels, scattered in landscapes, highly fragmented by intensive agriculture and development where species are unable to move or adapt quickly enough. Additionally, some of these sites are very small and although they allow for highly intensive management, this is mere gardening. These findings came as no surprise to the Panel given that sites and in particular the SSSI series were not designated with the aim of creating resilient ecological networks in mind.

Concluding their detailed and elaborated review of wildlife sites, Professor Lawton and his team stressed that what we need is:

> a step-change in our approach to wildlife conservation, from trying to hang on to what we have, to one of large-scale habitat restoration and recreation, underpinned by the re-establishment of ecological processes and ecosystem services, **for the benefits of both people and wildlife.** We are not proposing a heavy, top-down set of solutions. It is a long-term

[1358] *See supra* ch.1 s.1.5

[1359] Lawton and others (n36) foreword.

> vision, out to 2050, and **defines a direction of travel, not an end- point.** This vision will only be realised if, within the overall aims, we work at local scales, in partnership with local people, local authorities, the voluntary sector, farmers, other land- managers, statutory agencies, and other stakeholders. **Private landowners, land managers and farmers have a crucial role to play in delivering a more coherent and resilient wildlife network.** [1360]

The report contained the group's 24 recommendations to the government. These recommendations could be summarised in the four-word 'Better, Bigger, More and Joined' mantra.[1361] Recommendation 3 called for a national competition to establish 12 Ecological Restoration Zones (ERZs – very large-scale habitat restoration and re-creation projects). The ERZs recommendation was accepted by the Government who allocated funding for their creation and management albeit renaming them as Nature Improvement Areas (NIAs). As the next chapters will demonstrate, the NIAs operated at the interface of science and policy and provided a framework for the implementation of intertwined adaptive management models. Certainly, scientific expertise was necessary to guide recreation and restoration work, but wide collaboration and not merely state intervention was vital for the scheme to operate the way Professor Lawton envisaged it:

> It will require effective and positive engagement with the landowners and land managers. And it will need improved collaboration between local authorities, local communities, statutory agencies, the voluntary and private sectors, farmers, other land-managers and individual citizens[1362]

7.4.2 Natural Environment White Paper: 'The Natural Choice: securing the value of nature'

Lawton's report and recommendations were welcomed by the conservation community and state officials [1363] despite the change in

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[1360] ibid foreword (emphasis added).

[1361] ibid viii.

[1362] Lawton and others (n36) v.

[1363] Hilary Benn who instructed the group to draw up the report stressed: t*his is a landmark report. It shows that despite the progress that has been made, we now need to take a great leap forward to protect and enhance our natural environment. This will require leadership*

administration just before the report's publication. In 26 July 2010, Caroline Spelman, Environment Secretary and Hilary Benn's successor, confirmed the Government's commitment to effective consultation and ongoing dialogue with the public, launched a discussion document on the Natural Environment White Paper entitled "An invitation to shape the Nature of England", inviting comments and submissions by 30 October 2010.[1364] The response was overwhelming with more than 15.000 people and organisations sending ideas, a record number for a DEFRA consultation.[1365] Amongst those responding were conservation NGOs, scientific societies, local authorities, AONB partnerships and many individuals. As Stephanie Hilborne OBE, chief executive of The Wildlife Trusts, pointed out, the number of responses indicated the rapidly increasing awareness of the public on issues relating to nature conservation:

> "This overwhelming response provides a clear message to the Government that people care passionately about the natural environment and want to see bold and ambitious action to support its recovery.[1366]

The outcome of the consultation was the publication of the Natural Environment White Paper (NEWP) entitled 'The Natural Choice: securing the value of nature' in June 2011. This command paper, the first of its kind in almost 20 years, sets out the Government's vision for natural environment for the next 50 years. The paper's vision is not confined to the protection of the natural environment but extends to the need to improve its condition after years of continual biodiversity loss and degradation. As stated in the executive summary of the NEWP, the Government 'wants this to be the first generation

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from Government, but we know that big cuts are to be made in Defra's budget. The test for ministers is simple; warm words are easy - it's what you do that counts.'
Cited by Mark Avery, RSPB, at:
<https://ww2.rspb.org.uk/community/ourwork/b/markavery/archive/2010/09/28/lawton-review.aspx > accessed January 2018.

[1364] DEFRA, *An invitation to shape the Nature of England: Discussion Document* (July 2010)

[1365] <https://www.gov.uk/government/news/natural-environment-white-paper-discussion-document-record-response> accessed March 2018.

[1366] ibid.

to leave the natural environment of England in a better state than it inherited'.[1367] This, it proposes, will 'require us all to put the value of nature at the heart of our decision-making – in Government, local communities and businesses'.

The innovative aspect of the NEWP was that it addresses nature conservation not in isolation but rather as situated within a socio-ecological context, shifting the focus from the protected sites to integrated management. The ideas of landscape management, ecosystem restoration, enhancement and collaborative work are enriched in the White Paper and reflect the gradual recognition in policy of the non-equilibrium paradigm. The Paper also stresses the need for more flexible and innovative approaches.[1368] One of these, is the establishment of the Nature Improvement Areas following the Lawton recommendation for a competition on the establishment of Ecological Restoration Zones.[1369]

The NIA programme aimed to create bigger, inter-connected networks of wildlife habitats, to re-establish wildlife populations, improve species mobility and restore the natural environment. The NIA aims were not however limited to the natural but extended to the socio-economic environment. Hence, the scheme aimed to support food production, reduce flood risks and increase access to nature for local communities. In doing so, the scheme would provide for focused areas (the NIAs) in which delivery mechanisms, policies and funding that affect the way land is used and managed would be coordinated to achieve optimal results.

Partnership work, local knowledge, research and learning, and integration in decision making are key features of the NIA scheme as envisioned in the White Paper. The experimental scheme would initially consist of 12 Nature Improvement Areas. The Government would provide for that purpose funding of £7.5m over three years – but more funding was to be secured by the Partnership in charge. The NIAs would be areas of opportunity

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[1367] DEFRA, *The Natural Choice: securing the value of nature* (n85).
[1368] ibid para 2.36.
[1369] ibid para. 2.27ff.

for habitat creation and the restoration and creation of ecological corridors and networks that would be established and subsequently managed by partnerships of local authorities, local communities and landowners, the private sector and conservation organisations.

Hence, the NEWP and the NIA scheme were formally introduced into policy and highlighted the significance of concepts that are relatively new and novel and in any case for first time acknowledged in a White Paper. They also provide a framework for adaptive management to operate. Concepts like constant learning and collaborative decision-making, the building blocks of the adaptive management models for nature conservation, are fundamental to the proposed scheme.[1370] Novel but certainly not alien to those practicing conservation management or incompatible to the English nature conservation framework as implemented to date by the administrative authorities, the introduction of these concepts into a formal policy document should hardly surprise us; for such flexible initiatives as the NIA scheme to be introduced, the existing regime should provide a fertile breeding ground in order for them to be implemented as the logical next step in conservation decision-making. The previous chapters demonstrated that the English legal and policy framework allows for such flexibility and it is left to the decision makers to decide how flexible, experimental and collaborative management is going to be.

7.5 The Humberhead Levels NIA

The Lawton Report, the NEWP, the launch of the NIA competition, even the change to a Government keen on showing that it was favouring conservation, all coincided with the HLP management delivery plan. The Partnership already had a delivery plan, they had prioritised their landscape focus areas and all the partners had agreed on it.[1371] The initiation of the

[1370] ibid.
[1371] Interview with the Humberhead Levels Partnership Secretariat (NE) (York, 1 April 2014).

scheme came right on time to provide some much-needed funding to allow the Partnership to put into practice their delivery plan. Hence, the Partnership decided to submit an application for a Humberhead Levels NIA and draft a Business Plan which was a requirement

The HLP found itself in an advantageous position given the fact that they were already an established Partnerships with great experience in partnership working and project delivery. Having successfully delivered the Wetland Vision scheme the Partnership had great experience in project management, human and financial resources management, had developed good working relationships with local stakeholders and had at their disposal all the scientific information and research that was produced during the implementation of the scheme. [1372]

However, the preparation of the Business Plan was hard, given the time constraints as a result of the very tight time-frame of the competition. DEFRA launched the bid process in July 2011 and the deadline for Natural England to receive the Business Plan was December 2011. Hence, Partnerships that did not have anything already set and ready to go, would have found it very difficult to prepare a Business Plan that could show potential for management delivery. The HLP had, and this is the reason they had a fighting chance. However, it was still challenging work; everything had to be done very fast and this did not allow the Partnership for better strategic planning. In fact, if there was to be a criticism to the initiative, it was that it did not happen in a very logical way.[1373] For example, ecological connectivity was one of the priorities of the NIA scheme. Hence, the logical way would have been for the Partnership to design projects to achieve connectivity within the NIA boundaries. Given the limited amount of time, the HLP had to choose, net together and include in the Business Plan projects already or about to deliver, perhaps at the expense of

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[1372]Wetland Vision informed the idea of the NIA. In fact, the HLP was requested to provide information on what had and hadn't worked, as well as how it had contributed to a landscape approach to biodiversity conservation. Interview with the Humberhead Levels Partnership Secretariat (NE) (York, 1 April 2014). It can then be argued that the NIA scheme was the result of applying the adaptive mentality and 'lessons learn' principle in policy level.

[1373] Interview with HHL NIA project officer (YWT) (Doncaster, 24 April 2014).

projects that could have been more influential to the ultimate objectives of the NIA but needed more time to gather all evidence required for their careful design.

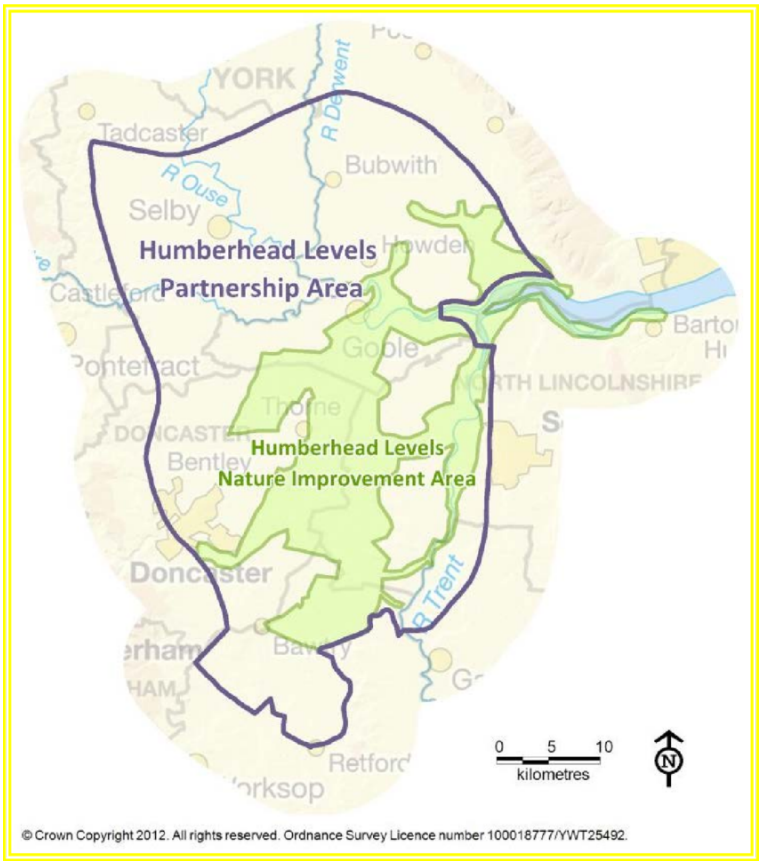

Figure 11 Humberhead Levels NIA within the Wider HLP Area

Nevertheless, the HLP bid was successful and the HHL NIA was one of the 12 (out of 70 applications) original NIAs. The NIA aimed to achieve a step-change in biodiversity delivery through an integrated approach to management that took place from April 2012 to April 2015. The HHL NIA managed to create and restore 1190 ha of habitat [1374] and successfully increased the numbers of breeding sites for marsh harriers and bitterns. The partners worked together with landowners and engaged a great number of

[1374] Humberhead Levels Partnership, *Nature Improvement Area: Inspiring landscapes and vibrant communities in a changing climate 2012-2015* (n1281) (henceforth Humberhead Levels NIA Final Report (2012-2015).

volunteers who contributed 46,000 volunteer hours across the NIA projects. It also developed the UK's first reed-based domestic fuel briquette. The work started with the NIA continues today thanks to a £248,000 grant from WREN's Biodiversity Action Fund for the Reconnecting the Humberhead Levels Project, and the EU Life+ funded Humberhead Peatlands NNR restoration works. The partners took on board the lessons learnt throughout the three years of the NIA scheme, kept what worked well and amended what was problematic, and a new cycle of management began.[1375]

[1375] Personal communication with HLP Secretariat (York, 4 May 2017).

8 Tracing models of adaptive management in the NIA scheme.

This chapter focuses on the framework established by the Lawton Report for the NIA scheme to operate,[1376] the NEWP[1377] and Natural England Guidelines,[1378] and examines the extent to which it allows for implementation of adaptive management as it was conceptualised in the previous chapters. In doing so, the chapter seeks to detect the core features or facilitating factors of models of adaptive management were previously identified: science driven decision-making, adherence to the non-equilibrium paradigm, advance of scientific research, experimentation and iterative learning for a scientific model of adaptive management, and stakeholder collaboration for the prevention or resolution of conflict.

As the discussion will reveal, the NIA scheme provides a framework for constant interactions of both models of adaptive management. It was mentioned at the beginning of this thesis that the models were not watertight and the distinction was made for the sake of the analysis. As the discussion moves towards the practical implementation of conservation management, the distinction between these theoretical models gets more difficult to determine.

In fact, the NIA scheme provides a structure to enable flexible management both in terms of science and experimentation and collaboration. Depending on the situation, management might be more about implementing scientific recommendations and collaboration is required in order to realise those science-driven objectives. However, as stressed above, the NIA programme does not only address nature conservation as a matter of science but also locates it within its socio-ecological context; therefore, in addition to science-driven objectives the NIA seeks to bring together different interests and targets management towards promoting the local green economy and

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[1376] Lawton and others (n36).

[1377] DEFRA, *The Natural Choice: securing the value of nature* (n85).

[1378] Natural England, *Nature Improvement Areas: Competitive Grant Scheme General Guidance Notes* (n96).

connecting separate habitats, as well as people, with their local wildlife. In the latter case, science and social interests enjoy a more 'equal relationship' in the sense that they have similar weight in management decisions and the concept of collaboration is not only introduced as a means to implement science-driven decisions but also influences decision making from its outset (the planning stage).

The discussion that follows, traces the interaction of the two adaptive management models in the general framework of the NIA scheme as outlined in the Lawton Report, the NEWP and the Natural England Selection Guidelines and lays the ground for the analysis of the next and final chapter of this thesis, which looks at the practical, 'on the ground' implementation of conservation management and how adaptive it is or how adaptive it can be.

8.1 The role of science in the NIA initiative

Looking at the NIA programme from its conception to its implementation, it can certainly be argued that science has a central role within the scheme. To begin with, it is a group of experts who set in motion the establishment of the NIAs in the first place. The Lawton Report is a largely scientific evaluation that was undertaken by a group of experts from different scientific disciplines led by Sir John Lawton, a biology professor. It is an evaluation of the nature conservation law and policy framework, but it is one done against scientific criteria. The main question Professor Lawton and his colleagues were asked to address was largely a matter of scientific judgement: whether English wildlife sites collectively represent a coherent and resilient ecological network capable of responding and adapting to the growing challenges of climate change.[1379] Hence, the evaluation was carried out on the basis of ecological theories that stress the importance of ecological networks;[1380] the starting point of the review was that in order to be able to

[1379] Lawton and others (n36) v.
[1380] ibid vi, 14ff.

cope with the challenges of climate changes and continuous pressures on the natural environment, it is essential wildlife sites in England represent an ecological network. The panel proposed that the overarching aim for England's ecological network should be:

> to deliver a natural environment where: Compared to the situation in 2000, biodiversity is enhanced and the diversity, functioning and resilience of ecosystems re-established in a network of spaces for nature that can sustain these levels into the future, even given continuing environmental change and human pressures.[1381]

This aim should be underpinned by three objectives that in their majority refer to issues falling within the ambit of natural sciences

1) To restore species and habitats appropriate to England's physical and geographical context to levels that are sustainable in a changing climate, and enhanced in comparison with those in 2000.

2) To restore and secure the long-term sustainability of the ecological and physical processes that underpin the way ecosystems work, thereby enhancing the capacity of our natural environment to provide ecosystem services such as clean water, climate regulation and crop pollination, as well as providing habitats for wildlife.

3) To provide accessible natural environments rich in wildlife for people to enjoy and experience.[1382]

In order to determine the extent to which these different sites separately and collectively comprised a coherent and resilient ecological network, the team tested a wide range of evidence gathered against five attributes they appointed to such a network:[1383]

– The network will support the full range of England's biodiversity and incorporate ecologically important areas, including special biodiversity.

[1381] ibid vi.
[1382] Ibid.
[1383] Ibid vii.

- The network and its component sites will be of adequate size, taking account of the needs of our natural environment to adapt to climate change.
- The network sites will receive long-term protection and appropriate management.
- Sufficient ecological connections will exist between sites to enable species movement.
- Sites will be valued by, and be accessible to people, including sites close to where they live.

As we can see, the majority of the criteria [(i), (ii), (iv)] against which the evaluation was carried out, were scientific. Lawton's group drew up a wide range of evidence including academic literature and evidence submitted to the panel by more than 45 organizations that are mentioned in annex 2 of the report. It is not surprising that the larger part of literature cited belongs to scientific disciplines and that the majority of organizations that submitted evidence are scientific - or science-driven (e.g environmental NGOs-organizations and statutory agencies).[1384]

As mentioned in the previous chapter, the panel's findings that English wildlife sites are not resilient or coherent enough to allow species to respond to climate change pressure[1385] followed a series of 24 recommendations on how to establish resilient ecological networks. [1386]

The recommendations are mainly directed to the government, local authorities and statutory agencies and advice on how to realise the ecological network by creating more, better, bigger and joined sites, that is to[1387]:

- Improve the quality of current sites by better habitat management.
- Increase the size of current wildlife sites.
- Enhance connections between, or join up, sites, either through physical corridors, or through 'stepping stones'.
- Create new sites.
- Reduce the pressures on wildlife by improving the wider environment, including through buffering wildlife sites

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[1384] Lawton and others (n36) Annex 2 106.
[1385] *See supra* s.7.4.1
[1386] Lawton and others (n36) 70ff.
[1387] ibid viii.

Recommendation 3 referred to the need to establish Ecological Restoration Zones (ECZs) which were named Nature Improvement Areas in the White Paper. Again, we can identify scientific constructs such as ecological connection and ecological processes:

> Ecological Restoration Zones (ERZs) need to be established that operate over large, discrete areas within which significant enhancements of ecological networks are achieved, by enhancing existing wildlife sites, improving ecological connections and restoring ecological processes

To sum up, the Lawton Report was an evaluation of the conservation framework in England carried out by scientists, against aims decided by science (sites consisting a coherent and resilient ecological network) and on the basis of scientific criteria. It is then safe to assume that science has indeed a central role to play within the NIA scheme. This assumption is further confirmed when looking closely at the NIA Guidance Notes published by Natural England, following the announcement of the competition for the allocation of funding to the 12 original NIAs. The Guidance Notes contained several features that the authorities were looking out for in the NIA applications; that is, i.a. opportunities to improve existing wildlife sites, to enhance the local ecological network by enlarging sites, creating or restoring new wildlife habitats and establish corridors, stepping stone or buffer zones; to enhance the functioning of ecological process and wider ecosystem services such as carbon sequestration and water management.[1388]

Furthermore, the Guidance Notes required 'sound evidence' to provide the basis for project design and underpin the work for project delivery thereby placing science at the heart of management planning and delivery. Finally, although, as discussed below, the initial application and proposed designation was made by a partnership, the three-stage process was overseen by Pr. Lawton and a panel of experts who were also the ones to decide on whether an application would go through to the next stage or not and the ones to make

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[1388] Natural England, *Nature Improvement Areas: Competitive Grant Scheme General Guidance Notes* (n96) 5.

the final selection of the 12 NIAs.[1389] It is therefore clear that within the scheme, science continues to hold the key role that it traditionally has had in nature conservation decision making.

8.2 Adherence to the Non-Equilibrium Paradigm

The need to introduce the Nature Improvement Area scheme stems from the recognition of the complex, dynamic and ever changing character of ecosystems and the inability of the established in English law system of site designations to secure resilience.[1390] Professor Lawton in his report refers to change and uncertainty and the need for 'flexible adaptive management in the face of an uncertain climate future'.[1391] The NIA scheme is introduced to address such complexity with the creation of a coherent and resilient ecological network.

In the preceding section, it was argued that science is central to the scheme and that scientific criteria are employed in the selection process. However, they differ substantially from the ones applied on SSSIs. They are wider and not strictly confined to 'special interest by reason of [any of] its flora, fauna, or geological or physiographical features'.[1392] Certainly, demonstrating opportunities for projects that would enhance biodiversity was vital. However, the scheme took account of and emphasized features that fit nicely within the non-equilibrium paradigm and are largely ignored by a system that has traditionally been endangered-species/habitats centred. These features include opportunities to enhance the functioning of ecological processes and wider ecosystems services, potential for extending or completing the network by identifying restoration areas, stepping stones and corridors and buffer zones.[1393] It is about conserving what we have but also

[1389] ibid 9.
[1390] ibid 13-15.
[1391] Lawton and others (n36) 73.
[1392] WCA 1981 s.28.
[1393] Natural England, *Nature Improvement Areas: Competitive Grant Scheme General Guidance Notes* (n96) 10-12.

restoring and recreating what we have lost.

The Lawton Report further ascertains the interaction of humans with nature in line with the non-equilibrium paradigm assertions of humans being part of, rather than excluded from, nature. The report refers to changes in the social environment that need to be taken into account, as they continue to put pressure on biodiversity. For instance, demographic changes and economic growth are likely to lead to an increased demand for housing and food production.[1394]

This is not to say that the human element is overlooked on English traditional conservation designations. It has already been discussed in detail that the legal framework, although strict, is not intended to raise walls between the natural and human elements but, when possible, seeks to bring them together. The NIA scheme however brings this interrelationship between nature and humans to the forefront. Especially as the scheme covers large areas with increased human activity, the NIA programme acknowledges the dynamic between the natural environment and human societies and merging interests becomes a main objective of the scheme. It is an end itself instead of merely the 'means' to facilitate biodiversity management.

Based on this understanding Professor Lawton and his team assert:

- The need for an ecosystem approach where nature conservation is integrated into other policies. In particular, planning has a vital role to play, with local authorities planning coherent and resilient ecological networks. [1395]

- The need to take into consideration ecological dynamics, processes and anticipated change when the competent authorities designate sites and

[1394] Lawton and others (n36) 21.
[1395] ibid 71.

determine boundaries. Also, the need to revise their conservation objectives to respond to the effects of climate change.[1396]

- The need to reconnect people with nature by enhancing ecological networks in urban environments[1397]

- The need to broaden policy to include restoration of the natural environment, instead of confining efforts to merely conserving what we have left.[1398]

- The need to include people who work in the field by providing incentives and appropriate advice to undertake conservation work.[1399] Without underestimating the importance of legal protection of biodiversity, Professor Lawton and his team recognise the Higher Level Environmental Stewardship Scheme as 'the single most important tool for maintaining and expanding the most significant areas of priority habitats and priority species'.[1400] Equally important are stewardship schemes to be employed towards the creation and enhancement of buffer sites, stepping stones and ecological corridors. The review further points out the need for a more coherent and tailored application of environmental stewardship and the importance of encouraging landowners to co-operate.

Indeed, the NIAs seek to bring together natural and human interests in such a way that both biodiversity and human societies will benefit. Hence, one of the requirements laid down in the Guidance Notes was that proposed NIAs would have to show consideration to the integration of different land uses and

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[1396] ibid 78.
[1397] ibid 76.
[1398] ibid 71.
[1399] ibid 85.
[1400] ibid 82.

even include within their land coverage urban environment.[1401] Also, the NIA proposal would have to show opportunities for integration of biodiversity and ecological enhancement alongside economic growth, as well as demonstrate benefits to local communities.[1402]

Arguably, the NIA programme treats ecosystems as complex, dynamic social-ecological systems; it seeks to bring together diverse interests aiming to provide better places for wildlife, to improve the natural environment for people, and to unite local communities, landowners and business through a shared vision, shifting the focus from species and habitats to ecological processes and socioecological interactions.

8.3 Research, learning and experimentation

Although in management delivery schemes such as the NIA programme, the focus is on effective management and projects delivery, the scheme is also a learning experience. Continuous research, learning and experimentation are central concepts. Monitoring requirements were already in place since the announcement of the competition.

The White Paper states:

> We will capture the learning from Nature Improvement Areas, and review whether further action is needed in planning policy, regulation or capacity building, to support their development. [1403]

And continues:

> To enable informed decisions about NIAs and the repair of wider ecological networks, farmers, land managers, local authorities, civil society and others need to have easy access to information and advice about the natural environment where they live and work. The Government's environmental bodies are reforming the way

[1401] Natural England, *Nature Improvement Areas: Competitive Grant Scheme General Guidance Notes* (n96) 10-12.
[1402] ibid 10-12.
[1403] DEFRA, *The Natural Choice: securing the value of nature (*n85) para.2.30.

> they work together, to provide more coherent advice to local partners. This means sharing information to help practitioners prioritise action based on environmental risks and opportunities. In support of this, Natural England is producing maps that show how landscape character areas, water catchments and local authority boundaries relate to each other. [1404]

The Guidance Notes that followed state:

> An important element of the Scheme is that successful partnerships will participate in the shared learning and best practise network that will be established to support the 12 successful NIAs.[1405]

On the basis of the above, it is evident that this scheme is not only about the end result e.g creating or restoring habitats, ecological networks etc. but also the process to it. The process does not end with the implementation of the last successful or non-successful management practice. On the contrary, the NIA scheme is equally designed to inform future management decisions. Learning is a driver and a result of the NIA programme. Learning on a scientific, policy and social context. Knowledge, experiences and best practice is to be exchanged among the 12 initial NIAs but also beyond the NIA network. The scheme also aims to create and keep updating an evidence base for the future[1406]

Experimentation works on different levels. The programme itself is a pilot scheme to test large-scale management by a Partnership of local stakeholders. In that respect, it differs from traditional statutory designations and the management taking place therein. On a different level and within the scheme, the NIAs are trying out different approaches.[1407] This is the rationale behind a variety of landscapes, objectives, and partnerships seen across the NIAs. Innovative approaches such as biodiversity offsetting are strongly

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[1404] ibid, 2.31.

[1405] Natural England, *Nature Improvement Areas: Competitive Grant Scheme General Guidance Notes* (n96) 12.

[1406] *See* < https://www.gov.uk/government/publications/nature-improvement-areas-improved-ecological-networks/nature-improvement-areas-about-the-programme>

[1407] Monitoring and Evaluation of Nature Improvement Areas: Year 2 Progress Report (n1281) iv.

encouraged to be put into practice.[1408] Experimentation can also take place within the NIA on a project-basis implementation.

To ensure that shared learning and knowledge dissemination aims would be fulfilled, the monitoring was embedded in the NIA programme from its conception. [1409] Successful Partnerships had to comply with standard monitoring and the review process supported by the agreed standard mechanisms in the Biodiversity Action Reporting Scheme (BARS) and/or the National Biodiversity Network (NBN). The successful NIAs were required to have monitoring and evaluation mechanisms in place and set out by stage 2 of the application process.[1410] Also successful partnerships had to attend shared learning and best practice events and provide regular progress reports demonstrating how shared learning and dissemination of expertise within and beyond the NIA project will take place.

As with most scientific matters, proper monitoring and data collection methods can vary and even become a contentious matter. To ensure a consistent approach to monitoring, a Monitoring and Evaluation Framework was put into place in 2012.[1411] The iterative process of learning and evolving also applied to the M&E framework itself, which was still developing.[1412]

Evaluation was carried out with respect to individual projects, individual NIAs and collectively at programme level. The steering group responsible for the establishment of the original NIAs would meet every six months to ensure the Scheme met the desired project outcomes (based on project progress / monitoring and evaluation reports.[1413] NIAs had to publish their own reports annually or even quarterly but also feed in their monitoring

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[1408] ibid.

[1409] Natural England, *Nature Improvement Areas: Competitive Grant Scheme General Guidance Notes* (n96) 23.

[1410] ibid 12.

[1411] DEFRA and Natural England, *Nature Improvement Areas Monitoring and Evaluation Framework* (July 2012).

[1412] An updated version was published in 2014, Collingwood Environmental Planning, *Updated Monitoring and Evaluation Framework for Nature Improvement Areas* (Collingwood Environmental Planning Ltd, London, 2014).

[1413] Natural England, *Nature Improvement Areas: Competitive Grant Scheme General Guidance Notes* (n96) 6.

results for the annual Monitoring and Evaluation report of the entire scheme.[1414]

Reflecting the innovative approach of focusing on ecological processes and networks rather than solely on species and habitats, and combining ecological and social objectives, the M&E framework is structured around four themes further divided into sub-themes:[1415]

- Biodiversity (Habitat, Species, Connectivity and Invasive species)
- Ecosystem Services (Cultural services, Supporting services, Regulating services, Provisioning services)
- Social and economic benefits and contributions to wellbeing (Social impacts, Wellbeing and Economic values and impacts)
- Partnership working (Mobilisation of resources, Efficient and effective delivery, and Leadership and influence)

For each of these themes, several indicators were developed and attached to every theme/sub-theme. Some of them were core indicators. For core indicators, the submission of monitoring results to by the NIAs was mandatory. Other indicators were just optional. Looking at the themes, sub-themes and indicators, one can appreciate the innovative character of the scheme: assessment was requested to be carried out on topics such as habitat connectivity, ecosystem services and social and economic benefits and wellbeing.

The crucial role of monitoring for the success of the scheme and its vital role to the fulfilment of its objectives was also reflected in the fact that a workshop was organised in November 2011 to introduce NIA partners to monitoring techniques and requirements as well as familiarise them with BARS II,[1416] an official reporting system that was created to support the UK

[1414] There were three reports in total. One in 2013, one in 2014 and a final report assessing the scheme throughout the three years in 2015, available at: <https://www.gov.uk/government/publications/nature-improvement-areas-improved-ecological-networks/nature-improvement-areas-about-the-programme > accessed March 2008.

[1415] Updated Monitoring and Evaluation Framework for Nature Improvement Areas (n1412)

[1416] Natural England, *Nature Improvement Areas: Competitive Grant Scheme General Guidance Notes* (n96) 23.

Biodiversity Action Plan (BAP). BAP was a web-based information system that allowed everyone involved with conservation to contribute data and information with regard to action plans and record progress towards the targets and actions of the plan.[1417] It also held an accessible database with information widely accessible by the public on species, habitats, actions and activities.

Ideally, following the evaluation of actions, conclusions would be reached on what worked well and what did not work so well across the four main themes, and future plans reassessed. However, especially during the first year of the programme, such a task posed significant challenges: everything was moving too fast and the people involved did not have time to familiarize themselves with the monitoring requirements or organize and set up coherent monitoring on such a large scale. [1418] By the same token, there was a lack of baseline information for all these different things the framework was requiring the NIAs to report on. [1419] Nevertheless, the M&E stressed the importance of taking into account the fact that, in many areas, the science is developing and/or contested and many of the approaches to be implemented are new and largely untested.

From a more practical perspective, there are also questions of who is going to do all the monitoring work that is required. Although I will return to this issue when looking specifically at the Humberhead Levels NIA management, at this point it should be mentioned that a large number of people is required to undertake monitoring tasks over such a large area. Since monitoring requires certain skills, training volunteers and willing landowners to undertake such tasks is a success of the partnership approach adopted by the NIA programme. Still, the fact remains that continuous effective large scale monitoring requires such human and financial resources that in practice it

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[1417] http://webarchive.nationalarchives.gov.uk/20120304174937/http://ukbars.defra.gov.uk// accessed January 2018.

[1418] Interview with HHL NIA programme manager (YWT) (Doncaster, 24 April 2014).

[1419] Interview with Natural England Land Advisor (York, 21 June 2013) The NE officer suggests that they should have been doing this for years and describes the information status as 'very patchy'.

might not always be feasible.

8.4 Collaborative Management-Decision Making

Lying at the heart of any conflict resolution model is collaborative decision making. As discussed in previous chapters, collaborative decision-making and its tools of negotiation and consensus building not only contribute to the resolution of conflict once it has arisen but, most importantly, they also allow us to address conflicts before they even appear.

The NIA scheme is built on the idea of a Partnership of stakeholders. It expands the network of people involved in decision-making at different stages of the programme implementation. The consistency of that network varies among the different NIAs – reflecting its experimental nature - but also at the different stages of the programme implementation of each NIA. Hence, as for the HHL NIA, the Humberhead Levels Partnership overseeing the project and the one putting together the funding bid and which developed the NIA's vision, aim and objectives, has a different composition to the NIA Delivery Partnership, and in turn there is different membership when it comes to the various working groups, etc. [1420] In a slight analogy to the designation/management decision making on statutory legislation but always within the context of the NIA partnership centred approach, the Humberhead Levels Partnership, the one responsible for designating the HHL NIA and setting up its aims and objectives consists of conservation organizations and representatives of the executive (statutory agencies, local authorities, etc.). In this respect, it has a more scientific/technocratic orientation than the Delivery Partnership whose scope was much wider. Depending on the project needs, delivery partners also included private landowners and local businesses brought together to implement projects that would realise the HHL NIA objectives.[1421]

[1420] *See infra* s.9.2.1 and s.9.2.2.

[1421] Humberhead Levels NIA Final Report (2012-2015) (n1281).

The element of collaboration is deeply embedded in the NIA philosophy. The Nature Improvements Areas were intended to 'unite local communities, landowners and businesses through a shared vision for a better future for people and wildlife'.[1422] The idea was for partners to work together towards common goals and targets having reached a common understanding on the actions required. It was further acknowledged that the 'problems facing biodiversity are complex and require a range of coordinated measures generally involving multiple actors'.[1423] The rationale is therefore twofold and captures both aspects of complexity relating to nature conservation: on the one hand, the need to bring diverse interests together to meet everyone's expectations in order to address the social dimension of complexity; on the other, the complexity of ecological processes and biodiversity problems require as many sources of information, experience and co-ordination as possible. A partnership approach expands the network of participants and allows for both aspects of complexity to be addressed. Hence, although collaboration and partnership is an essential and defining element of a collaborative conceptualization of adaptive management, it also makes a significant contribution towards achieving the purposes of a scientific model, addressing ecological complexity and the limitations of science.

The element of co-management is so vital to the NIA construct that only Partnerships were eligible to apply for the NIA funding. In order to ensure pluralism in the NIA management, the Natural England Guidance Notes excluded individuals and sole organizations from the bidding procedure and required the presence of at least two out of a list of potentials applicant categories.[1424] The Partnerships were expected to propose the land area, their vision, aims, objectives and aspirations. Hence, for the first time a bottom-top approach was adopted and implemented.

[1422] Monitoring and Evaluation of Nature Improvement Areas: Year 1 Progress Report (n90) 6
[1423] ibid 104.
[1424] Natural England, *Nature Improvement Areas: Competitive Grant Scheme General Guidance Notes* (n96) 7-8.

Given the experimental and flexible nature of the scheme, the NIA partnerships vary significantly in terms of partners' number and structure. Certainly, the number of members and the composition of the Partnership correlated with the representation of the various interests. Hence, a Partnership of 'significant landowners' and the 'private sector' and 'social enterprises' would be substantially different to one of conservation NGOs and statutory agencies such as Natural England and the Environment Agency or the Forest Commission. In the first case, it could be reasonably expected to concentrate more on social and private interests while in the second case it would be expected that emphasis would be put on biodiversity.

In fact, most Partnerships comprise of various bodies and organizations. The presence of local authorities and Wildlife Trusts was strong with the latter being a partner in 11 out of 12 NIAs.[1425] In four out of twelve NIAs – including the HHL NIA - Wildlife Trusts are the lead partner. The strong presence of organizations and bodies traditionally working in favour of conservation interests should not surprise us given the fact that it is a 'Nature Improvement' scheme.[1426] Additionally, 10 out of 12 Partnerships existed before the NIA scheme was launched which, given the tight time-schedule of the bid-approval process, was also to be expected. It is remarkable that the only farmer-led NIA, the Marlborough Downs NIA, was one of the Areas with a Partnership established specifically for the NIA delivery.[1427] Organizations such as the Wildlife Trusts, RSPB and Natural England have vast experience and have traditionally been members of such Partnerships, which were usually formed in order to deliver large scale natural environment projects.

Nevertheless, there seems to be some confusion over the exact number and type of Members of the NIA. For instance, with regard to the HHL NIA, the YWT website states the Partnership has 12 partners. The HHL Business Plan lists 13 Partners at the Executive and 19 as NIA Delivery Partners. On the other

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[1425] Monitoring and Evaluation of Nature Improvement Areas: Year 1 Progress Report *(2012-2013)* 38.
[1426] ibid 38-44.
[1427] ibid.

hand the NIA-Year 1 Full Report at p.27 mentions 19 partners (different to the Delivery partners in the Business Plan), then at p.39 lists 10 partners (Yorkshire Wildlife Trust, Natural England, Environment Agency, Lincolnshire WLT, Ouse and Humber IDB, RSPB (Newcastle), North Lincolnshire Council, East Riding of Yorkshire Council, Nottinghamshire WLT, JBA Consulting) while at p.41 includes NFU/land managers within the NIA types of partners without having included them in the aforementioned p.39 list. This is very confusing, and the reason why is because of the several steering and working groups attached to the HHL NIA.[1428] The next section focusing on adaptive management in the HHL NIA will discuss in detail the interaction and information flow from top to bottom and bottom to top between the different groups and the Humberhead Level Partnership which oversees the implementation of the project.

8.5 Conclusions

Looking at the programme in its entirety, its origins, visions aims and objectives and guidelines for implementation, it can be argued that it was set up to facilitate - if not mandate - the implementation of a mixed version of the adaptive management models. The following paragraphs taken from the year 1 Monitoring and Evaluation Report essentially describe this entanglement of the two models of adaptive management, referring to science, knowledge sharing, experimentation, collaboration and bringing together various stakeholders:[1429]

> The 12 initial Nature Improvement Areas (NIAs) aim to provide better places for wildlife, to improve the natural environment for people, and to **unite local communities, landowners and business through a shared vision**. They will **try out different approaches**, and the variety of objectives, issues and partnerships seen across the NIAs is part of this purpose. Nevertheless, a consistent approach for monitoring and evaluation is necessary to be able to assess what works well, and

[1428] Interview with the Humberhead Levels Partnership Secretariat (NE) (York, 1 April 2014).
[1429] In bold there are features linked to adaptive management models.

> potentially not so well, and to take stock overall. **The NIAs are applying several concepts where the practical use of science is still contested and/or developing, for example relating to restoration of habitat connectivity and ecosystem services**. Implementation of such new **and largely untested** approaches poses significant challenges. **This innovative, experimental** and developmental context needs to be borne in mind when considering the results of this evaluation of the first year of progress in NIAs.

> The establishment of NIAs represents a **significant new approach** to conservation of biodiversity and restoration of ecosystem services in England operating at a landscape scale. It aims to build on existing information, knowledge and practical experience of landscape-scale initiatives, **but place partnerships with local communities and civil society at its heart.** It is also intended to provide an opportunity for the NIA partnerships **to embed public dialogue for decision making in their areas**, and contribute to future national development of biodiversity, landscape and ecosystem policy. Each NIA has developed their own **Business Plan which set out locally determined priorities and action planning,** reflecting among other things the diversity of size and types of NIA, different partnership arrangements and the variety of focal habitats and species seen across the NIAs.

The chapter that follows takes a close look at the implementation of the NIA scheme in the Humberhead Levels and examines the overlap and interrelationship between the two models. What needs to be kept in mind is that out of 49,869 ha only 7,276.6 ha are designated as SSSIs. This means that across the majority of the land covered, laws and regulations – or more precisely the lack thereof - prioritise private interests instead of that of nature, or more precisely, a scientific depiction of nature. In these cases, while the status quo and the use of land primarily for agriculture is being maintained, conflict is likely to be latent, in the sense that there is no expressed dissatisfaction by the farming community; however, the use of land and natural resources for agriculture might indeed have detrimental effects on biodiversity.

However, the implementation of certain projects under the HHL NIA Business Plan may disturb the established status quo and thus create frictions between those willing to implement the projects and private landowners. And

here is where managing adaptively to prevent conflict becomes of relevance. As Sir Lawton said, the NIAs are 'consortia of the willing'.[1430] Collaborative adaptive management enters the scene both at the planning stage and at the implementation stage as subsidiary to a more science-driven target setting. The interests of a range of stakeholders are accounted for during the decision-making process - either directly through their participation and collaboration, or indirectly due to the collective experience of HLP partners - thereby preventing conflict from arising.

[1430] Lawton (n110).

9 Addressing complexity in practice: Management Delivery in the HHL NIA

9.1 The (slightly weaker) role of science in the HHL NIA

The role of science has been central in the Humberhead Levels NIA at all major stages of management implementation: the strategic, when the main vision and overarching aim for the designated area were set out; the project planning, when deciding on particular projects to fulfil the aims and objectives of the NIA; and the implementation and the monitoring of management results.[1431] However, the influence of science in shaping decisions varies among the different stages whereas in contrast e.g. to the SSSI regime, there is no stage of decision-making where science has been the only factor to be considered.

To begin with, looking at the membership of the Humberhead Levels Partnership and the main actors of the NIA, one cannot help but notice the prominent role of science. Many of the partners are either conservation NGOs (with traditional links to research and scientific expertise) or expert agencies such as Natural England and Environment Agency.[1432] These are either representatives of the public sector (statutory agencies) or the interests of the natural environment (NGOs). Furthermore, members of scientific teams of the partner organisations, particularly the NGOs, had a crucial role to play in designing and implementing several projects[1433] and many scientists were positioned in key roles at the NIA, first and foremost being the NIA programme manager.

Recruiting or allocating scientists to deliver NIA projects was to be expected given the scientific nature of many of these projects, which are directly linked to the aims, objectives and ultimately vision of the NIA and have

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[1431] *See* documents cited in *supra* n1279, n.1289, n1281.

[1432] *See supra* s.8.4.

[1433] Many of the NIA projects were projects already being undertaken by NGOs within and around their Nature Reserves.

been greatly informed by science since the Lawton Report, as we have already seen. The business plan set the overall vision, aims and objectives of the NIA together with the projects to deliver them. More specifically the NIA had a vision[1434] and five key aims that would deliver the vision. It also had a set of objectives and then some projects that would deliver those objectives to deliver those aims to deliver the vision; as long as these aims concerned technical matters like habitat creation and restoration, ecological connectivity, water management, science had a crucial role in shaping all those objectives and designing several NIA projects.

Nevertheless, given that the NIA was a scheme for nature as much for people, aims were not only limited to technical matters. In addition, the scientific interest of a certain patch of land to the HHL aims was not the only consideration when deciding on the HHL NIA boundaries. A number of other considerations influenced the final decision on boundaries, some relating to the mixed nature of socio-ecological aims and objectives, others to more pragmatic reasons relating to the well-known issue of conflict and its prevention thereof.[1435] Finally, the technical nature of the monitoring and evaluation framework[1436] also suggests the key role played by science during monitoring and evaluation.

I examine these issues in the following paragraphs:

9.1.1 Setting Aims and Objectives: Combining Ecological and Socio-economic Considerations

Nature within the context of the NIA is not depicted solely in scientific terms but also valued for aesthetic or cultural reasons. At the same time, although the NIA scheme is a 'nature improvement' initiative, human societies are not seen as ideally excluded from it but, in line with the New Ecology

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[1434] HHL NIA Business Plan (n1279).

[1435] *See* discussion infra s.9.1.2.

[1436] Updated Monitoring and Evaluation Framework for Nature Improvement Areas (n1412)

paradigm, as an inherent part of nature or as needing to get closer to it. In this sense the scheme can be seen as combining the scientific justifications of the SSSI/SAC/SPA designations with the aesthetic and cultural grounds of designation of NPs and AONBs. At the same time, the HHL NIA vision thereupon comprises of both concepts relating to the sciences of ecology and biology but also aspirations for bringing people and their natural environment closer together:

> The vision is to return existing wetlands to favourable condition, reconnect disparate wetlands through enhancing the hydrological integrity of the network of rivers and drains; and to create new wetland 'stepping - stones'. The NIA programme will work with farmers to create buffer zones around strategic sites and increase the porosity of adjacent farmland to wildlife movement. This will be by better, integrated management which benefits wildlife and maintains the economic value of the farmland. This will be a landscape where farming, conservation, sustainable tourism and the local community work together to adopt an ecosystems approach to deliver biodiversity gain and, thereby, provide an inspirational environment for people to live and work.[1437]

Therefore, it is arguable that the NIA initiative was not a purely scientific initiative but rather a diverse multi-layered programme combining aims and objectives – and consequently tasks – of a scientific nature with aims and objectives relating to economic and social benefits. Acknowledging the multi-dimensional nature of the programme, the Monitoring and Evaluation Framework requires information on Biodiversity, Ecosystem Services but also the economic social impact of the NIA. Nevertheless, looking closely at the five key aims of the HHL,[1438] it is noticeable that the majority them are primarily of a scientific, ecological or technical nature:

1. Creation of key habitats of the inner estuary in additional sites;

2. Achieve sustainable water management in an arable landscape through enhancement of riparian habitats along connecting rivers and drains;

[1437] HHL NIA Business Plan (n1279) para.3.3.1.
[1438] ibid.

3. Increase the hydrological integrity of England's largest lowland raised mire system;

Key aim 4 combines ecological and economic considerations:

4. Deliver sustainable management of existing biodiversity assets through the development of the local green economy;

Key aim 5 on the other hand focuses exclusively on social benefits

5. Increase community links to biodiversity sites to increase voluntary support for site management, heritage conservation and interpretation.

It follows that, for projects designed to fulfil the first three aims, science had a major role in shaping management planning; habitats creation, sustainable water management and hydrological integrity all fall within the ambit of biology, ecology and related disciplines. Nevertheless, this does not mean that these projects have no social or economic implications. Within the NIA concept there are no water-tight boundaries between the ecological and social realms, and even projects that seem to be exclusively science-driven are likely to have social implications.

For instance, the Broomfleet Washland project sought to create an additional key site of 39 ha of wet grassland, reedbed and wet fen plus a small amount of wet woodland. The neighbouring project Broomfleet Pits would also deliver another 10 ha of wet grassland and reedbed. Together, the two projects created habitat opportunities for a number of BAP species including Bittern, Lapwing, Hairy Dragonfly, Water Vole, Otter and Great Water Parsnip[1439] but along with promoting the interests of biodiversity, Broomfleet Washlands was also expected to benefit local communities by playing a valuable role in flood protection.[1440] Additionally, as with most NIA projects it

[1439] HHL NIA Business Plan (n1279)and Humberhead Levels NIA Final Report (2012-2015) (n1281)
[1440] Humberhead Levels NIA Final Report (2012-2015) (n1281)

would attract many volunteers who would contribute to on-site work, engaging local people with activities promoting nature's interests.

9.1.2 NIA Boundary Designation and Management Delivery: Taking a pragmatic approach to management

The second reason the somewhat weaker role of science than within the SSSI regime, is that the HHL NIA is a delivery scheme; a programme with delivery requirements. It required tangible results by the end of each year and collectively at the end of the original three years of the scheme, rather than limiting itself to wishes and aspirations. [1441]As a result, the HHL NIA scheme took a pragmatic approach. Science of course had a major role when deciding on the boundaries of the NIA and indeed, the NIA was developed on the basis of the Biodiversity Opportunities Areas. However, the final NIA boundary and 'funny' shape[1442] was the cumulative result of several factors.

Certainly, some criteria were scientific and related to the ecological links between the Peatlands (designated NNR, SACs and SPAs) and the Humber Estuary (designated Ramsar Site), the existence of a complex network of rivers and drains that connect North Nottinghamshire to the Humber, the existence of peaty soils, statutory designations etc, (figure 13, table 2). However, there were also a number of non-scientific reasons, some of them related to specific requirements set by Natural England for NIAs, some to practical aspects of implementation and some to the non-science-driven objectives of the HHL NIA.

To begin with, there was an upper designation limit of 50,000 ha constraining the Partnership who put together the application and business plan, limiting how much land they could include in the scheme. Second, there was a very tight time schedule for the completion process. As mentioned,

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[1441] Interview with the Humberhead Levels Partnership Secretariat (NE) (York, 1 April 2014); *See also* Natural England, *Nature Improvement Areas: Competitive Grant Scheme General Guidance Notes* (n96) laying down strict monitoring and reporting requirements. *Also,* infra n1471.

[1442]Interview with HHL NIA programme manager (YWT) (Doncaster, 24 April 2014).

DEFRA launched the competition in July 2011 with the deadline for the second stage business plan application, 16 December 2011**.** Given the fact that the HLP had to show great potential for delivery during the second stage, the focus naturally was on viable, active projects that had already applied or were about to apply for funding.

The Partnership had a spreadsheet with all the projects undertaken by partners in the four HHL NCA Biodiversity Opportunity Areas (figure 10) which were set at the centre of the designation process.[1443] This started the shape heading downwards from the Inner Humber and the Humberhead Peatlands NNR, across the Peatlands, then attaching the Idle Valley and the Trent; these areas provided the main focus (see fig. 1) Then, little patches were added, land linked to other projects undertaken by the Partners e.g. the north part of the NIA is linked to a YWT project at North Cave Wetlands on sand and gravel extraction and a washlands project on managing flood waters. The 'snake' along the Humber was due to RSPB work in the area.[1444]

However, in addition to these areas of scientific/biodiversity interest, there were areas included within the NIA that had very little to do with science. The inclusion of these areas served the wider, multi-layered vision of the NIA and its aim on community engagement; the need to bring people closer to their local biodiversity. Hence, Far Ings and Idle valley at the bottom end were included because of their visitor facilities, which enabled the Partners to *'[…] engage people, […] have events, […] actually educate them about the NIA there'*.[1445]

[1443] ibid.
[1444] ibid.
[1445] ibid.

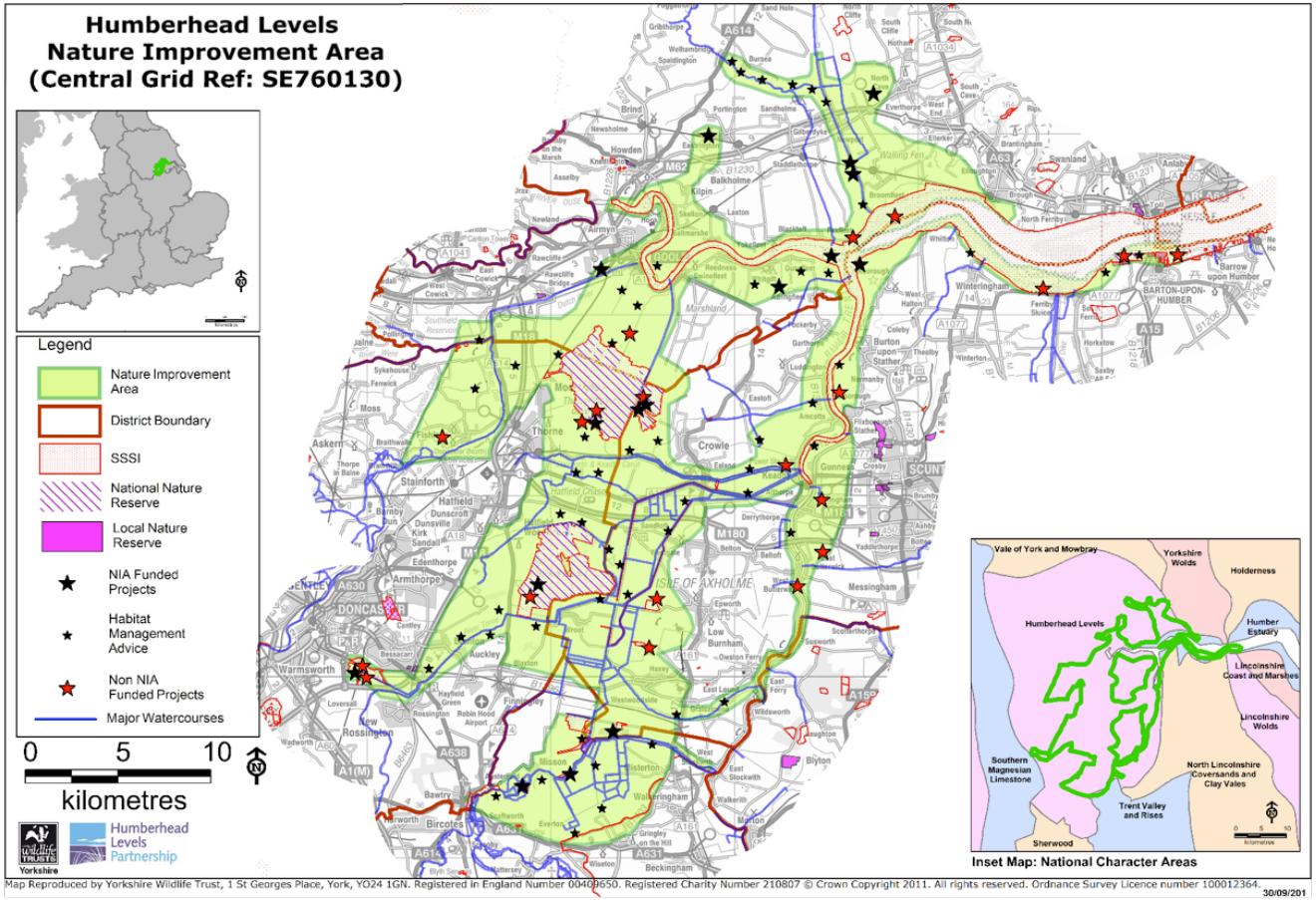

Figure 12 The Humberhead Levels NIA

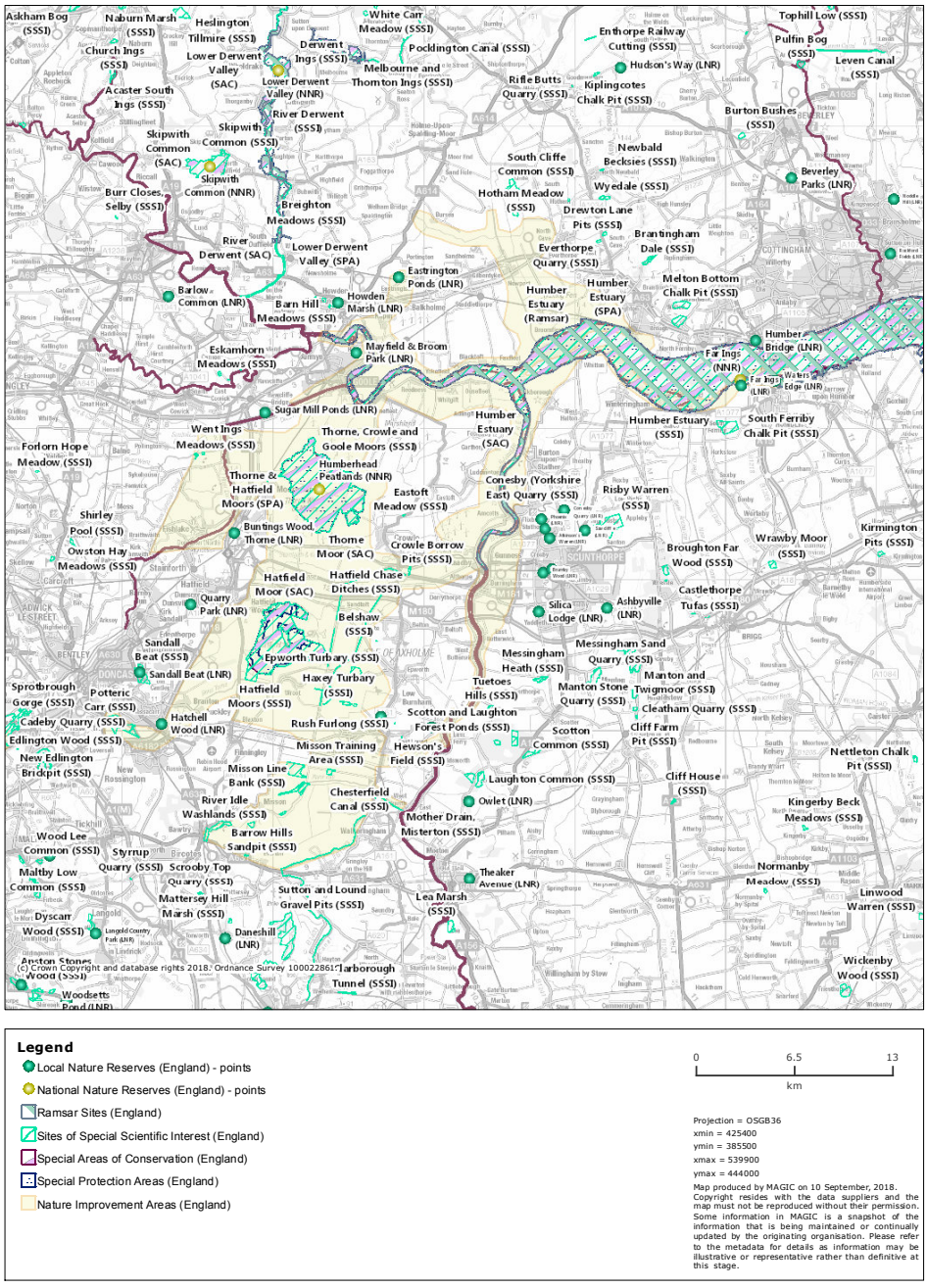

Figure 13 Humberhead Levels NIA Statutory Designations[1446]

[1446] Map generated using '*Magic*' authoritative geographic information website at <http://magic.defra.gov.uk/home.htm >.

Tier	Designation	Name
International	Ramsar	Humber Estuary (part)
European	Special Protection Area (SPA)	Thorne and Hatfield Moors Humber Estuary (part)
European	Special Area of Conservation (SAC)	Thorne Moor Hatfield Moor Humber Estuary (part)
National	National Nature Reserve (NNR)	Humberhead Peatlands Far Ings
National	Site of Special Scientific Interest (SSSI)	a total of 16 sites wholly or partly within the NIA*
Local	Local Nature Reserve (LNR)	Waters Edge Far Ings Eastrington Ponds Buntings Wood, Thorne (part) Mayfield and Broom Park (part) Axholme Line (part)

*Hatfield Moors; Thorne, Crowle, Goole Moors; Potteric Car; Mission Training Area; River Idle Washlands; Hatfield Chase Ditches; Epworth Turbary; Mission Line Bank; Haxey Turbary; Haxey Grange Fen; Went Ings Meadows; Crowle Borrow Pits; Barrow Hills Sandpit; Humber Estuary (partly); Chesterfield Canal (partly); Mother Drain Misterton (partly)

Table 2 Humberhead Levels NIA Statutory Designations

Furthermore, the NIA was all about delivery, which is why all human and financial resources were to be confined to areas with real and realistic opportunities for conservation work.[1447] In this respect, the rules and criteria imposed by the Government e.g in terms of size could as one interviewee stressed actually be something positive, as the spatial constraints ultimately facilitated the selection process. In order to comply with the rules and make the most of their resources, the HLP decided to leave two areas of Grade 1 and Grade 2 agricultural land outside the HHL, as any management would be very limited (see white patches in figure 2). Nevertheless, this did not rule out the possibility of pursuing opportunities for management favouring nature conservation and promoting NIA objectives. Even within these areas, wetland advisors[1448] would seize the opportunity to work together with any willing landowner, inform them about the NIA scheme and introduce them to the concept of environmental stewardship.[1449]

Moving from boundary designation to actual management implementation, it stands to reason that science would inform the decisions on the management interventions needed to achieve the objectives. In fact, like most science-driven projects, those on habitat creation and ecological connectivity were led by the conservation trusts and their scientific staff. But, as I have stressed before, the NIA was a 'consortium of the willing' and because of this, the 'adaptive' in adaptive management not only refers to active, scientific, even a little experimental management but also to joining people of opposing interests together through negotiation and collaboration. It is true that project design was largely a scientific process. Project implementation however was more open, involving a wider network of participants. Without the cooperation of the landowners, the NIA would not have been able to deliver their Business Plan.

[1447] Interview with the Humberhead Levels Partnership Secretariat (NE) (York, 1 April 2014); Interview with HHL NIA programme manager (YWT) (Doncaster, 24 April 2014).
[1448] Interview with the Humberhead Levels Partnership Secretariat (NE) (York, 1 April 2014).
[1449] Ibid.

Hence, to return to the Broomfleet Washlands, a perfect example of a science-driven collaborative adaptive management project, 10 ha of wet grassland and reedbed were created as a result of partnership work between the RSPB and a local mineral extractor. They also improved and created habitat for wetland birds, in particular the bittern. Likewise, the lead partner, the Ouse and Humber Drainage Board (O & H IDB) in collaboration with the RSPB and Natural England have supported a HLS Agreement with the washland's tenant farmer. As a result, currently, the washlands extend to some 39 ha of wet grassland and reed bed and are managed for the double purpose of enhanced flood storage and habitat protection. [1450] This habitat management work was undertaken with careful regard for the site's land drainage function, ecological processes and private interests reflecting the interaction between scientific and collaborative decision-making and management implementation. The next section covers in detail the central position of collaboration within the HHL NIA.

9.2 Collaborative Decision Making and Management

Looking at the management that took place in the HHL NIA, it can be seen that collaboration was vital for the fulfilment of the NIA vision and at least equally important to the contribution of scientific expertise. Bringing people together to resolve or prevent potential conflicts of interests was both an end itself - e.g. when considering how to integrate different land-uses and develop local green economy[1451]- but also often the only way to realise science-driven objectives and recommendations, for instance, when seeking to restore or create new habitats like the case of Broomfleet Washlands described above. The tendencies reflect the interrelationship between the scientific and collaborative adaptive management models. Collaborative management can

[1450] Interview with RSPB officer (Newark, 4 April 2014); *Also,* Hull and East Riding CaBA Partnership, *Hull and East Riding Catchment Plan* (March 2017) 18-19.
[1451] This is reflected in aims 4 and 5 of the HHL NIA Business Plan (n1279).

be a 'stand-alone' model of management or the means to implement a more scientific model of decision-making.

How important and effective stakeholder participation and 'log-rolling' techniques were in the management of the NIA is reflected in the fact that, in contrast to the preceding Wetland Vision project, there had been little land acquisition no land acquisition took place while additionally the NIA managed not only to stay within budget but also demonstrated a 4.5x return on the original DEFRA NIA grant.[1452] Additionally, if we give 'collaboration' a wider meaning beyond that of directly interested stakeholders but everyone involved in the scheme, the HHL NIA had 46,000 volunteer hours contributed across projects and reserves worth over £246,000.[1453] Hence, the value of collaboration extends beyond the resolution of conflict. In practice, without working together with volunteers as well as landowners willing to 'sacrifice' part of their land for conservation purposes, it is doubtful that the delivery partners would have had the human and financial resources to effectively carry out their projects.

The effectiveness of the programme depended heavily on involving the right people. The network of partners participating in decision-making varied depending on the stage of the management cycle, and within the same stage on the individual circumstances of each case. At this point, a distinction needs to be made between 'partners' and 'people' as these two concepts differ significantly. Partners were usually (and as far as the HLP is concerned exclusively) organisations, local authorities, statutory agencies and private companies but rarely individuals. These Partners would appoint more than one individual to represent them in the Partnership and the various NIA groups. These individuals were not necessarily the same across all groups and all NIA activities. As will be revealed further on, who these individuals were

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[1452] Humberhead Levels NIA Final Report (2012-2015) (n1281) *3, 34.* The wetland Vision Project was strongly based on land acquisition projects while the HHL NIA was more advice, collaborative work oriented. 109 Ha of Land were acquired as a result of Wetland Vision Projects compared to only 17Ha during the NIA project implementation. *See* ibid 35, Table 3.
[1453] ibid 3.

was equally important to who the Partners were and which interests they represented.

The importance of engaging qualified and skilled individuals in the collaborative management of ecosystems was stressed in the previous chapters. In HHL NIA it is a common understanding among those engaging with projects delivery therein, that working in such a scheme requires 'soft partnership skills'.[1454] Ability to interact, communicate, gain others trust and develop working relationships was seen as essential to the success of the programme. For instance, the personal networks of the NIA partners' staff were instrumental in widening the NIA network and engaging the right people in the NIA activities.[1455] This is particularly true in projects such as the Wetland Advisor and Connect that sought to engage a large number of individuals (landowners and local communities respectively). Equally important was the experience and knowledge of the NIA staff of the area, both in terms of its ecological and social aspects. The area covered area was significant and the scheme was set up relatively quickly, which is why working together with people such as the NE land advisors who had long experience in the area was crucial.[1456] These individuals were familiar with both the local biodiversity opportunities but also – and equally important - the local landowners and their personal attitudes towards conservation management.

In this respect, effective collaborative management was linked to the experience as well as the continuity of staff, particularly the core staff. It was a common approach among all NIAs to assign project management to partner organisations with existing knowledge, expertise or experience in particular areas of activity.[1457] In turn, the partners would assign project management to

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[1454] Almost all interviewees stressed the importance of building good relationships with local landowners.

[1455] Interview with HHL NIA programme manager (YWT) (Doncaster, 24 April 2014).

[1456] Interview with HHL NIA programme manager (YWT) (Doncaster, 24 April 2014); Interview with NIA land advisor (YWT) (Doncaster, 30 May 2014).

[1457] Monitoring and Evaluation of Nature Improvement Areas: Year 1 Progress Report (n90) 23.

staff they considered best able to coordinate and deliver them.[1458] In practice this meant that people who were already familiar with and engaged in projects before the launch of the NIA and who had experience and knowledge of the socio-ecological – but also institutional - conditions of each area, who continue to engage with these projects within an NIA context. [1459]

The HHL NIA was fortunate enough to have the same HLP chair and work closely with the same NE advisor for almost the entire lifespan of the scheme.[1460] However, due to staff changes among the partners, the people who knew the project from its outset at 2011 were not working on it three years later.[1461] This, as would be expected, had a negative impact on the smooth running of the programme.[1462] Hence, maintaining consistency in the network was crucial not only in terms of representing the wide range of 'stakeholder interests' but also in terms of the individuals selected and allocated to get the job done.

The following paragraphs discuss the collaborative management that took place in the HHL and the quantitative and qualitative changes to the network of people involved at different levels and stages of management. Analysing who was involved, and in what capacity, will help us to determine how scientific and/or collaborative the management of HHL NIA was. As the diagram below shows, at the top tier to the far left we find the Executive Board, which has a membership of 15. Moving to the right, the diagram shows three steering groups representing the NIA, Funding and Communications.[1463] The NIA, being a delivery scheme, has several working

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[1458] This could have been either by appointing existing members of staff or recruit staff specifically for the NIA. As to the HHL NIA the Business Plan indicated that there would be a new full-time NIA programme manager. Individual projects were managed by specific partners under the coordination of the programme manager. *See* Monitoring and Evaluation of Nature Improvement Areas: Year 1 Progress Report (n90) 22-23.

[1459] That was the case for instance with the NIA (YWT) land advisor and RSPC programme leaders.

[1460] Interview with HHL NIA programme manager (YWT) (Doncaster, 24 April 2014).

[1461] ibid.

[1462] ibid: The programme manager changed twice in the first two years of the programme.

[1463] Interview with the Humberhead Levels Partnership Secretariat (NE) (York, 1 April 2014): One year into the scheme the NIA steering group was divided into a smaller NIA steering group and a stakeholder group for wider participation.

groups attached to it, which are essentially implementing the different NIA projects on the ground.[1464]

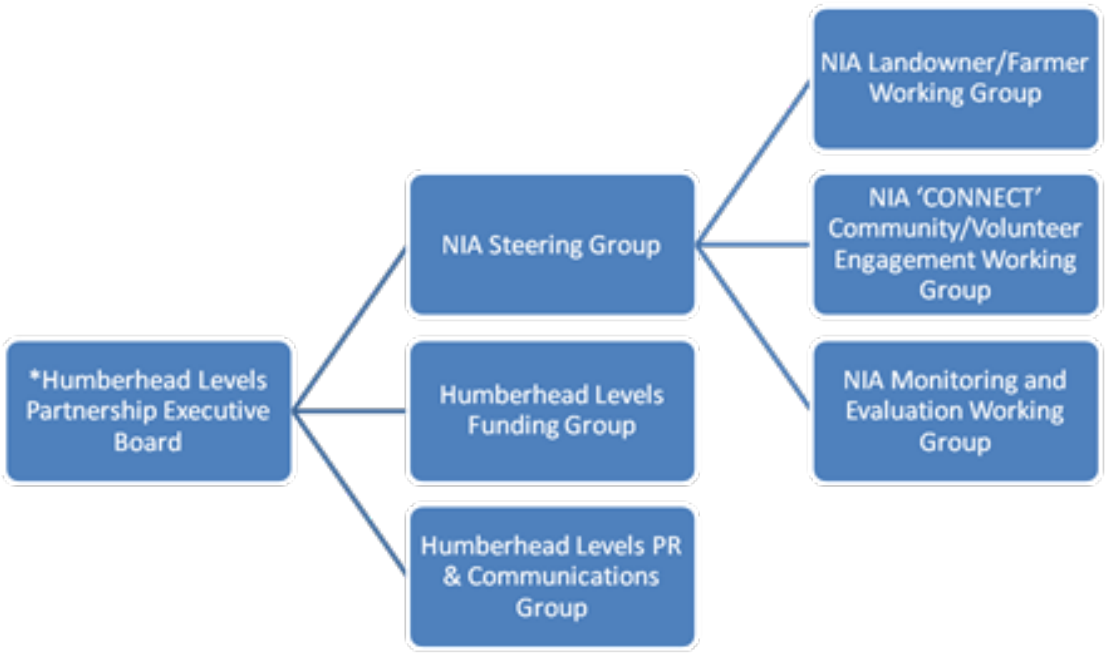

Figure 14 Structure of the Humberhead Levels Partnership[1465]

9.2.1 The Humberhead Levels Partnership - The Executive Board

The Humberhead Levels Partnership is the parent organisation of the HLL NIA that pre-existed the announcement of the scheme competition. It was they who participated in the bidding process and put together the business plan. At the higher level of hierarchy, we find the Executive Board. The Board has a strategy, a Terms of Reference and a Delivery Plan and its geographical patch is the whole NCA.[1466] It sets the direction, the strategy not solely as it concerns the NIA - the HHL NIA is merely one of the programmes the HLP is engaged with - but for all management and the various projects going on in the

[1464] ibid.
[1465] In the Humberhead Levels Partnership: Strategic Plan 2011-2022 kindly provided by one of the interviewees.
[1466] Interview with the Humberhead Levels Partnership Secretariat (NE) (York, 1 April 2014); *See also supra* figure 11.

wider Humberhead Levels NCA.[1467] The 'Executive' as it usually is referred to, ensures that projects are on track and meeting their objectives. At the same time, it thinks strategically, into the future; about what the next project will be and how the lessons learned from previous experience will feed into this new project. [1468] The Board is chaired by NE since it is the leading partner of the HLP.

The HLP Executive was in large part responsible for steering the NIA vision, aims and objectives and for designing the projects set out in the Business Plan. The NIA had to report back to the Executive Board whether these projects were actually delivering these objectives and aims and vision.[1469] This was the task of the NIA Programme Manager representing the scheme. [1470] The Programme Manager had to participate in the Board's quarterly meetings and present a short summary of the progress report required by NE.[1471] The Board might inquire about specific projects, whether there was anything that they could be of assistance with, or suggest ways to improve management. The Board would also try to resolve any issues in cases where a project was failing, or a partner was not engaging enough; in these cases, the NIA represented by the programme manager would openly discuss the issue in the Board, in the presence of the Partner against whom the complaint was raised.[1472]

Certainly, setting mutually accepted aims and objectives is a challenging task. As the HLP Chair points out, to achieve this, people in a Partnership need to be brought together around a common cause:

> *'everybody's got to come cause there's something in it for them and they've got to buy into … they've got to have sympathy with what the*

[1467] Interview with the Humberhead Levels Partnership Secretariat (NE) (York, 1 April 2014).
[1468] Interview with the Chair of the Humberhead Levels Partnership (York, 21 June 2013).
[1469] Interview with the Humberhead Levels Partnership Secretariat (NE) (York, 1 April 2014).
[1470] ibid.
[1471] The programme manager had to send quarterly progress and audit reports to NE to keep funding coming, ibid.
[1472] Interview with the Humberhead Levels Partnership Secretariat (NE) (York, 1 April 2014).

Partnership is wanting to achieve. So the first task in our Partnership and a lot of others is to be very clear on what the Partnership is wanting to achieve; […] and then all the partners have got to say "yes I want a part of that, I am going to sign up for that as well" so part of the early task of the Partnership is to really establish what the aims of the Partnership are going to be and what the vision for the future is, And also once you've done that, you've got to then work out what your plan is going to be'[1473]

In the case of the HLP, the Partners had already designed a ten-year delivery plan, a long-term vision for the entire Humberhead Levels NCA, and the NIA scheme emerged just in time to help realise this plan.

Although sharing a common vision – nature improvement - the fact remains that the different partners represent different interests, which means there are bound to be multiple interest overlaps as well as conflicts. But this is exactly why working in partnership is essential. The Partnership will try to bring everybody together to find common ground and take full advantage of what each of the Partners has to offer to the HLP and the NIA. The following paragraphs contain an overview of the HLP Partners and discuss the extent to which their priorities overlap or diverge from those of nature conservation.

Natural England (NE): Natural England is the lead partner in the HLP. Its main priority is to realise government policy (Biodiversity 2020 and the White Paper) and work with Partners to ensure that there is a joined-up approach to delivering those objectives. As the competent authority for nature conservation, NE is bound by a biodiversity duty and its primary focus falls on the SSSIs and NNRs.[1474] NE benefits from the NIA, as the scheme helps them to deliver their commitment to maintaining SSSIs. The NIA funding allowed for land advisors to be hired to undertake work that to a large extent

[1473] Interview with the Chair of the Humberhead Levels Partnership (York, 21 June 2013).
[1474] NERC Act s.2; WCA Part II.

overlapped with that of NE such as introducing farmers to the AES and giving advice on nature conservation management.[1475] In a way, the organisational and practical conservation work that was undertaken by the charitable trusts' personnel and their hundreds of volunteers eased the burden on NE who following budget cuts had very limited staff resources.[1476]

Natural England had multiple roles within the HLP and NIA. Even though it was not the lead partner in the NIA, being the statutory agency for nature conservation they had a somewhat wider spectrum of responsibilities when compared to the rest of the Partners. Natural England, although not the accountable body for the NIA, remained nevertheless accountable for the taxpayers' money.[1477]

In fact, the money flow in the NIA was as follows:

Natural England and the Yorkshire Wildlife Trust, the leading body of the NIA, had a funding agreement - a signed, legal document that stated what the NIA scheme would deliver, what the lead body's role would be, funding allocation and expected outcomes.[1478] Thence, the YWT would pay other partners to deliver their projects. Although NE refrained from exercising tight control over funding allocation, they nevertheless had to ensure that money was spent in accordance with Treasury Rules and that there was rational utilization of the available funds.[1479]

For this reason, the Programme Manager had to submit a claims report to NE each quarter. This was essentially a progress report and was designed to identify risks and any issues that jeopardised project delivery; it contained the information necessary to

[1475] Interview with the Humberhead Levels Partnership Secretariat (NE) (York, 1 April 2014).
[1476] ibid.
[1477] ibid
[1478] ibid.
[1479] ibid.

enable Natural England to gain a complete understanding of financial expenditure and in general oversee the scheme's implementation.

Natural England also played an additional, supportive role in the NIA liaising between the Programme Manager and DEFRA. So, for instance, with certain projects there were state aid rule implications.[1480] This was the case with the Biomass project aimed at kickstarting the green economy and whose project officer was charged with developing a market for a new biomass product that would also benefit local biodiversity. In this case, the NE representative at the HLP (also the HLP secretariat) would be the first point of contact for the Programme Manager.[1481]

Natural England was also acting as an informal supervisor/mediator in order to build good relationships with the Programme Manager and the other partners in the steering group, to ensure that everyone had a clear understanding of what the scheme was about and what was going on across the NIA and to make sure that the lead body was communicating clearly with everyone.[1482] Having said that, it is not as though NE interfered and mandated how the YWT run the scheme; it was rather providing helpful advice in a diplomatic way in order to secure the smooth progress of the programme.[1483]

NE also had a national coordinator's role in the scheme, supervising all 12 NIAs and assessing the programme progress as a whole.[1484] A NE appointed programme manager was supervising the NIA scheme implementation and was responsible for assessing the funding claims of the 12 NIAs. The NE HLP representative acted as a liaison between the HHL NIA Programme Manager and the NIA scheme national Programme Manager. [1485] She would also participate in

[1480] ibid.
[1481] ibid.
[1482] ibid.
[1483] ibid.
[1484] ibid.
[1485] ibid.

teleconferences with the national team to discuss and compare any common issues that arose among the NIAs as well as potential ways to address these.[1486]

Finally, beyond this supportive/advisory role, having NE as a partner enabled the HLP to share NE's extensive knowledge and experience of both the natural and social environment of the local area. It was NE that produced the Biodiversity Opportunity Areas maps for everyone to use. Additionally, NE have at their disposal extensive research carried out by themselves and their predecessors (English Nature and Nature Conservancy Council). Furthermore, Natural England staff had been working in the area for years and had developed very strong relationships with the local landowners and farmers. The latter were more likely to trust their local advisor or someone working with their local advisor, than an NIA member of staff they had never seen before. The long-term experience of NE staff meant that they were also aware of areas of opportunity; they knew where different habitats were and what the farms were like.[1487] They knew which farms were participating in the AES and they would make informed suggestions e.g that NIA funding be offered to the neighbouring farm to complement work already being done, and they also knew which landowners were unlikely to co-operate and thus better avoided.

What is crucial though is NE's competence as an administrative authority. It needs to be stressed that the Partnership was not delegated any decision-making powers and could not replace the administration in cases where the latter was required by law to issue e.g a permit or licence, or was willing to enter into a management agreement funded by AES.[1488] Hence, the local planning authorities

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[1486] ibid.

[1487] Interview with HHL NIA programme manager (YWT) (Doncaster, 24 April 2014)

[1488] Hence, despite the partnership approach, the HHL NIA model of management is not the one Berkes , George and Preston (n864) (*see also supra* s. 5.2.1) describe as Joint Decision Making but instead stands somewhere between the Advisory Committee and Management

remained the competent authority to provide planning permission to dig a pond, the Environment Agency remained the competent authority for water abstraction licenses and NE was the one to enter into an AES with landowners. This had a great impact on the workings of the HLP; the practical implementation of any project and plan they undertook was ultimately subject to the competent authority's decision. Hence, having the decision-making authority as a Partner within the HLP and participating in aims setting and project design reduced the chance of a subsequent refusal of a permit or license - or at least should have reduced it.[1489] In the case of NE, it allowed for an attempt to align NIA objectives to the AES to complement work funded by NIA resources.

Environment Agency (EA): Like Natural England, the Environment Agency is also a statutory agency. Given that hydrological connectivity is one of the HHL NIA key aims, its main relevance to the scheme is that it is the competent authority for water management in England.[1490] The Environment Agency is the principal flood risk management operating authority and manages flood risk from designated main rivers, reservoirs, estuaries and the sea.[1491] The EA manages the use and conservation of water through the issue of water abstraction licences for activities such as drinking water supply, artificial irrigation and hydro-electricity generation. Therefore, as

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Boards. It is more than an advisory power since the HLP and NIA have an active role in both designing and implementation. But no management plan or decision they make is binding and they had definitely not been delegated any administrative decision-making power. Any operations that needed a licence, permit or consent had to go through the usual channels of approval.

[1489] *See* infra. 9.3.2.

[1490] *See* Environment Act 1995 Part I and Water Resources Act 1991.

[1491] Environment Agency *Understanding the risks, empowering communities, building resilience* (Crown Copyright 2011) available at <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/228898/9780108510366.pdf>.

with NE, having the EA participating from the outset allows the aligning of its policy to NIA objectives and reduces the risk for tensions at later stages of implementation.

Ecology and conservation also fall within the remit of the EA, which like all public authorities is bound by the biodiversity duty. The EA nevertheless has a wider agenda[1492] and therefore less common ground with Biodiversity 2020 and the NEWP, which means that conservation interests did not necessarily, coincide with EA ambitions for and views about an area. This is yet another example of the complexity of conservation conflicts; the conservation 'battlefield' is usually depicted as having the private interests on one side against the public sector and NGOs on the other. In reality, conflicts of interest may arise between or among any stakeholders and 'alliances' can vary on a case-by-case basis depending on the extent to which the priorities of those involved come into line with each other.

Given that the agricultural industry depends heavily on the EA for water abstraction licences, the latter could also provide some leverage for the applying the roll-logging techniques of adaptive management:

'[…] the internal boards or the environment agency they deal with the drainage of the land and the management of the water courses and they also have got influence because they get permission or consents and they've got series of rules that they can employ to stop people from doing damaging things and from the nature conservation point of view we can say to them well if you manage this water course in a different way, slightly different It would help the nature conservation objectives of the partnership […] if you didn't drain you turf every year but every other year or if you had a buffer strip alongside you drainage ditch and the internal drainage boards and the environment agency can persuade the land owners to do that as well, so that's where the benefit of the partnership start to come together.'[1493]

[1492] See Environment Act 1995 s.2.

[1493] Interview with the Chair of the Humberhead Levels Partnership (York, 21/6/2013).

Internal Drainage Boards (IDBs): More than ten IDBs participate in the HLP either individually or collectively through consortia of IDBs. The IDBs have similar powers to the EA and are the public authorities whose primary role is to manage water levels and reduce flood risk. IDB work involves the maintenance and improvement of watercourses and related infrastructure such as pumping stations, weirs, sluices, culverts and embankments within their drainage districts. What is noteworthy is that the IDBs' area of responsibility is not determined by administrative boundaries but by water catchment areas within a given region. An IDB's consent is required for works related to obstruction of waters such the construction or alteration of a weir, bridge, embankment prior to such work taking place. IDBs are also non-statutory consultee for planning applications[1494] and similar to the EA are bound by a duty to further the conservation and enhancement of all statutory designated sites within their districts. It follows that much like work undertaken by the EA, water level management by IDBs was an essential component to fulfilling NIA aim of sustainable water management and an increase in the hydrological integrity of the area. It was also to be expected that certain works undertaken by the NIA would require IDB consent for their actual implementation.

What differentiates IDBs from the EA and other statutory bodies is firstly that they only administer districts that directly benefit from their operations. Second and in relation to the first distinction, is that they maintain a close connection to the private interests of their catchment area thereby making them the HLP partner representing landowners' interest in the HLP Executive.[1495] IDB work is mainly funded by the local beneficiaries of the water level management work

[1494] Town and Country Planning (Development Management Procedure) (England) Order (2010) Sch.15.
[1495] See National Audit Office Internal Drainage Boards (HC 2016-2017, 1080).

they provide. Essentially this means that they get money from levying taxes on landowners/occupiers/farmers to drain their land.[1496] On the other hand, IDBs are comprised of those elected by and representing the levy-paying landowners in the area together with members nominated by the local authorities covering that area.[1497] Hence, landowners and often counsellors sit on and manage the IDBs creating strong links to the local agricultural community.

Local Authorities: Three local authorities are members of the HLP.[1498] Local authorities represent the interests of the wider community but are also the competent authorities for a number of licensing and permitting procedures and primarily for granting planning permission.[1499] In a sense they 'democratise' the Partnership. Even though they are bound by the 'biodiversity duty' and required to give regard to conservation in their work, like the EA, their political agendas are nevertheless much wider and often encompass conflicting priorities. Having local authorities in the NIA allows for an alignment between conservation interests and the development of local plans, for example. It also allows for collaboration and coordination of development across an area covered by different local authorities. Much of the work undertaken by the NIA required planning permission, which remained within the competence of local planning authorities. Having local authorities on the table would ideally facilitate this process and allow projects to be implemented without delays.

Charity Trusts: The Royal Society for the Protection of Birds (RSPB) and three Wildlife Trusts sit on the HP Executive Board. Their

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[1496] ibid figure 3.
[1497] ibid para 1.14.
[1498] N.Lincolnshire Council, Doncaster Metropolitan Borough Council, ERY Council.
[1499] Town and Country Planning Act; The local authorities (Functions and Responsibilities) (England) Regulations 2000.

contribution to the HLP and the HHL NIA is crucial and vital for the programme's success, for a number of reasons. First and foremost, nature conservation is their main objective. These are the partners exclusively representing nature interests within the Partnership and whose mandate shares a great deal of common ground with the Biodiversity 2020 and the NEWP objectives. Their work concentrates on promoting biodiversity conservation through raising public awareness, campaigns and petitions but also actual practical conservation work within and outside their natural reserves. They have also traditionally been a major pressure group in the UK policy making process.[1500] They are major landowners and consider land purchase as the most secure way to ensure long-term conservation of biodiversity. RSPB manages more than 200 reserves,[1501] the Yorkshire Wildlife Trust more than 90,[1502],the Lincolnshire Wildlife Trust almost 100[1503] and the Nottinghamshire Wildlife Trust more than 50,[1504] the majority of which are owned by the respective organisation.

What is more important is that they have extensive experience in conservation management, which address both its scientific and social dimensions. More specifically, the conservation NGOs are staffed by scientific personnel in charge of project design and the management of the reserves. The RSPB in particular operates a centre for conservation science whose aim is to develop practical solutions to 21st century conservation problems. Prior to government initiatives promoting landscape conservation, the RSPB and the Wildlife Trusts had already developed their own landscape conservation schemes to address the problem of fragmentation, acknowledging the fact that managing their

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[1500] *See* in general at < https://www.rspb.org.uk/> and <https://www.wildlifetrusts.org>.
[1501]< https://www.rspb.org.uk/our-work/our-positions-and-casework/our-positions/agriculture-and-land-use/farming-land-use-and-nature/uplands/the-rspb-in-the-uplands/ >accessed August 2018.
[1502] < https://www.ywt.org.uk/nature-reserves> accessed August 2018.
[1503] <https://www.lincstrust.org.uk/get-involved/top-reserves> accessed August 2018.
[1504] < https://www.nottinghamshirewildlife.org/nature-reserves> accessed August 2018.

own reserves in isolation would have little positive impact and would therefore be of only very limited benefit to biodiversity

The idea of collaboration is deeply embedded in the philosophy of the charitable trusts. Both the RSPB and the Wildlife Trusts attach great importance to building relationships of goodwill, trust and understanding with the landowners that manage land adjacent to their reserves and between landowners and the land considered to be of high biodiversity value. Hence, in spite of not having the armoury of NE (the ability to enforce the law and/or provide financial incentives through AES) they have nevertheless managed to work with landowners, develop good practice and even train them to undertake basic conservation management.

Apart from experience and public relations, the work undertaken by conservation NGOs save a great deal of public money. RSPB and the Wildlife Trust have a very large membership [1505] and are also recipients of substantial donations and legacies. Therefore, they have their own income to fund the management of their reserves and purchase land of biodiversity value. Add to that their very own army of volunteers, who contribute hundreds of hours of their time on the field and we may well see that their contribution to practical conservation work is indeed essential.

In particular the YWT had a central role to play in the NIA as it was appointed lead Partner. It took over some responsibilities from NE who is the leading Partner of the HLP and had been leading the preceding Wetland Vision Scheme.[1506] This change of leadership had a twofold result. First, it saved the taxpayers money, since much work previously done by NE staff was undertaken by YWT, which carried

[1505] RSPB has more than 1.000.000 members ,https://www.rspb.org.uk/globalassets/downloads/documents/aboutthespb/annual-review-archive/annual-review-2016-2017.pdf > and the Wildlife Trusts collectively have more than 800.000 members

[1506] Interview with the Humberhead Levels Partnership Secretariat (NE) (York, 1 April 2014).

> out most of the hard work on the ground as well as the administration of the NIA. Second, it watered down Natural England's powers – NE in any case by its very nature had and continued to be in a position of superiority - and boosted the element of collaboration. Before, NE had tight and exclusive control;[1507] it was the partner giving out the money and at the same time deciding how it was going to be allocated. In the HHL NIA it is an NGO that administers the funding and leads the programme.

There are two conclusions to be drawn from the above discussion of the Humberhead Levels Partnership Executive. First, despite the partnership approach, the HHL NIA model of management is not the one Berkes et al[1508] describe as Joint Decision Making but rather stands somewhere between the Advisory Committee and Management Boards. It is more than advisory power, since the HLP and the NIA have an active role in both designing and implementation, but no management plan or decision they make is binding and they had definitely not been delegated any administrative decision-making power. Any operations that needed a licence, permit or consent had to go through the usual channels of approval, hence a distinction between the State-regulator and the regulated still remained. However, there are multi-level interaction and a web of relations and agreements that resemble the co-management network of Carlsson and Berkes, 'linking different parts of the public sector to a similarly heterogeneous set of private actors, all within the same area or in the same resource system'.[1509]

Second, at first glance, the HLP looks slightly technocratic in the sense that it lacks strong private sector representation. The Executive Partners are either public bodies and administrative authorities or conservation NGOs with proven scientific expertise. However, and this leads us to the second

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[1507] Interview with the Humberhead Levels Partnership Secretariat (NE) (York, 1 April 2014).
[1508] *See supra* 5.2.1.
[1509] Carlsson and Berkes (n869) 69; *See also* s.5.2.2 and figure 4; and its adaptation to represent the relations in the HHL NIA infra figure 14.

conclusion, a closer look reveals that the Partnership does in fact represent several interests thereby allowing it to safeguard pluralism and contribute to conflict prevention. The IDBs have strong links to the farming community and bring to the table their perspective, local authorities represent the interests of their constituents which can align (e.g green spaces for local communities) or clash (e.g housing development) with biodiversity conservation, NGOs work at the interest of biodiversity, etc. And if there is some common ground between NE and the relevant charitable trust, on the other hand, partners such as the IDBs have other things to concentrate on. And this is where the challenge of the Partnership lies: to align interests and manage to bring everybody together into a structured form of co-operation while pooling expertise to carry out projects in order to fulfil a shared set of objectives.

A wider representation and consideration of interests is also achieved through a number of groups found at the lower tiers of the hierarchy, which are open to wider participation (stakeholder group and working groups).[1510] These groups focus on management implementation and project delivery rather than project design. They do however report back to HLP.[1511] At the same time, there are individuals who participate in more than one group, which allows for information flow across several groups to ensure constant improvements in co-operation as well as amendment of the original plan if major obstacles occur.

Additionally, the partner organisations at the Executive Board and the Funding Group who prepared the Business Plan and laid down the key projects and main themes had long-term experience in working in partnership with landowners and farmers.[1512] Furthermore, a consultation with the private sector (NFU and CBLA) did take place during the preparation of the Business Plan and this ensured that major stakeholders were signed up for project

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[1510] *See infra* 9.2.2.

[1511] Interview with the Humberhead Levels Partnership Secretariat (NE) (York, 1 April 2014);

[1512] ibid: That was mainly due to the Wetland Vision programme and the personal experience of the specific individuals involved.

delivery. [1513] Ultimately, the HHL management plan was the combined outcome of partners' input on viable projects, collaboration opportunities on the ground and areas where any work would be very limited if not zero, together with information gathered through meetings with stakeholders. [1514] Finally, a last remark would be the previous success of the HLP in delivering the Wetland Vision, which strongly suggests HLP effectiveness in merging interests and pursuing ecologically, socially and economically advantageous solutions that benefit the region as a whole.

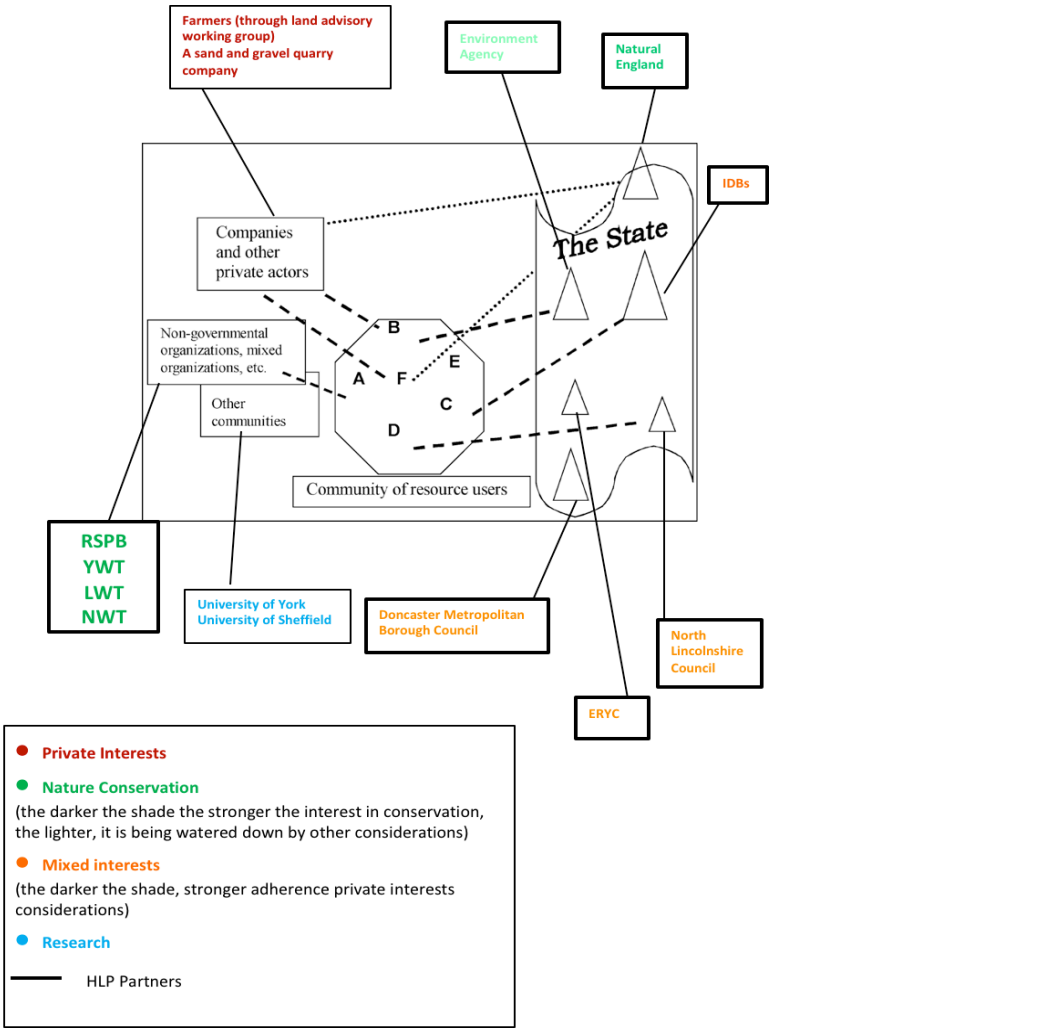

Figure 15 Adapted from Carlsson et Berkes (fig.4): example of a co-management network to the HHL NIA Partnership

[1513] Minutes of the Humberhead Levels Executive Meeting, 10.20-13.00, 5 December 2011, Doncaster MBC, Scarborough House. (acquired through FOI request); Hence, major landowners such as Pollybell Farms are mentioned in the Business' Plan as delivery partners.
[1514] Minutes of The Humberhead Levels Executive Partnership 10.00-16.00, 5th September 2011, Idle Valley Rural Learning Centre, Retford.

9.2.2 The NIA Groups: Steering, Stakeholder and Working Groups

Just below the HLP Executive we find the NIA Steering and Stakeholder Groups. The latter was added later to the scheme implementation because of the need to extend the network of individuals involved.[1515]

The NIA Steering Group: The NIA Steering Group was set up to support delivery and project management in the NIA. It comprised of the YWT, NE, the Nottinghamshire Wildlife Trust (NWT) and the Ouse and Humber IDB acting as chair. The steering group oversaw the NIA. Information was flowing from and to the steering group from both directions: from and to the working groups with regard to specific projects, and from and to the HLP Executive. The pragmatic approach of the NIA necessitated that all groups had to be made to actually work. This is the reason why the steering group was chosen to be a small group. [1516] The steering group was the one to approve projects proposed by the working groups, allocate money from the Small Capital Fund[1517] and ensure that all work done, and all money spent was going to deliver the outcomes of the business plan, the NIA's management framework. The steering group was no place to discuss details.[1518] However, often, the Partners in the Steering group would invite people as guests e.g if a partner was experiencing problems in project delivery or if there were some really good opportunities they would ask the partner to do a presentation. [1519]However, often this could prove tricky, which was certainly the case when the project

[1515] Interview with the Humberhead Levels Partnership Secretariat (NE) (York, 1 April 2014).
[1516] ibid.
[1517] The small capital fund was given to farmers/landowners to do capital works such as create or restore habitats, create pods and hedgerows and some HLS work. It was meant to complement the HLS and fund work that the NE would not or could not, thus expanding on what was being delivered.
[1518] Interview with the Humberhead Levels Partnership Secretariat (NE) (York, 1 April 2014).
[1519] Ibid.

officer and RSPB leader of the Biomass Project were invited to make a presentation on the project's progress and ended up using half the meeting time.[1520] The steering group would also discuss issues that had arisen and could be dealt with jointly;[1521] if it failed to resolve them, it would then turn to the HLP Executive.

The NIA stakeholder group: The stakeholder group was set up to encourage broader participation. However, 'broader' should be interpreted strictly to include the Wetland Advisors,[1522] the project officers, and the two universities participating in project delivery. Practically, the stakeholder group aimed to connect the different projects.[1523] There was no wider participation of the private sector. NFU and one major landowner and delivery partner were invited, but did not attend. Clearly, stakeholder participation at the higher tiers of NIA governance was slightly limited and restricted to a narrow audience.[1524] However this does not mean that the network of people engaged with the work of the NIA was not wide enough or that their interests would not be considered, as the NIA had its own informal ways of engaging the wider landowners' community and aligning their interests to nature conservation.

There are several reasons why the possibility of engaging a wider audience at this high level was ruled out, although NIA officials admit that it might have been useful.[1525] Some of these reasons were practical. Although in theory it sounds appealing, in practice having a

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[1520] Ibid.

[1521] ibid: For reasons of data protection not all issues could be discussed in group meetings. There were legal considerations when talking about the private sector or private individuals and their businesses. In these cases, the partner experiencing problems e.g tensions with landowners at project delivery would report and discuss the matter with the programme manager.

[1522] ibid: The wetland advisors were the ones 'working on the ground' with landowners to do conservation work on their land.

[1523] Ibid.

[1524] Although other interest parties could attend the meetings.

[1525] Interview with the Humberhead Levels Partnership Secretariat (NE) (York, 1 April 2014).

big number of people attending these groups is very difficult. These groups were there to take decisions and a small group is more versatile than a larger one. What normally happened in these situations is that people would talk in great detail on matters of interest to them, exhausting the time available and diverting the entire discussion away from more important matters:

> *'if you've got all the farmers sat there as well, it could take hours of discussion…and you might not get anywhere'*[1526]

Additionally, engaging a wider audience in this formal structure would be so time consuming that the NIA would never be able to meet the strict deadlines within which money should be spent:

> *There are different ways that [wider] engagement […] happens. But if you were to do it in a group like this, in this formal structure, the formal structure and the way the public sector funds its setup and all the hoops you have to jump though, you will honestly never get it done. You would never get the money spent. You spend so much money try to get it work.*[1527]

A second reason is that it is highly unlikely that people in the farming business, or any business for that matter, would stop ploughing their fields to participate in a nature conservation meeting that takes place during working hours. Even though the NFU was invited to attend the stakeholders group and various NIA workshops, they rarely attended.[1528] The same holds true for a major landowner, often even delivery partners that were invited but did not attend. The private sector is not usually interested in participating in meetings for matters that fall outside their remit. For them it's about business

[1526] ibid.
[1527] ibid.
[1528] ibid.

mentality; they need to justify things according to their own standards in order to decide to spend some of their valuable time getting involved with NIA meetings. Nevertheless, there were cases of agriculture companies that have units specially set-up for similar purposes – sustainable and environmentally friendly management. However, often these units are not based close enough to allow the personnel to attend regular meetings. Also, what was mentioned by many interviewees – the NFU included - and which is often overlooked in academic literature is that farmers are businessmen and competitors and as such we should not take it for granted that they will be keen to work with each other.

So, if the NIA wanted to have the private sector attending any of its groups – and if not the high tier steering and stakeholder groups perhaps the bottom level working groups - they should have done a 'selling job';[1529] they should have 'sold' the NIA product, in the sense of providing the right incentives to landowners to attend and learn more about the scheme and what they could potentially get out of it. But doing this would not have been straightforward:

> *How do you communicate to a very busy farmer that it's worth their time coming along to this working group? And you don't just want to say it's about money because you want them to be interested in more than that otherwise you might get the wrong motivation and then the group won't work very well. So how do you engage them properly and tell them what all is about. So, this is communication, and that takes time and money*[1530]

These were the reasons that the interviewees believed made wider representation of interests within the NIA groups problematic in practice. However, there were some other reasons of a more legal nature that complicated farmers/landowners' attendance of the NIA

[1529] ibid.
[1530] ibid.

groups. The NIA only had a small pot of money to give out to farmers. Having individual farmers participating in decision-making groups and providing input on developing criteria for spending a grant would give them an unfair advantage over those who did not participate. Furthermore, another reason identified in the interviews related to issues of confidentiality as there might be issues of data protection – even confidential business information - when discussing individual landowners and farmers with other landowners and farmers.

The reasons set out above make wide participation in NIA groups – the working groups discussed below included - practically problematic, even posing a threat to the flexibility of the scheme: in the end, rather than having a flexible, adaptable scheme we would end up with a cumbersome, bureaucratic procedure. Instead, as mentioned above, informal procedures can be more effective in working together and engaging the wider farming community:

> *But if you were to invite them formally into a group I just think they would be so many problems. The problem would be data protection for start. So, we would have to go and ask them before you go into this group, could you fill this form, and would you mind us talking about your farm and your business to a lot of other people in this group. You would have to go through lot of resources and that causes lots of complications. It will slow things down; you've got to deliver that small pot of money in 12 months, otherwise you lose it. I am just thinking of it in a practical way. And then, also the people that had already been involved from the beginning, the other farmers might come on and say, 'ah but how come this person knew about this from the beginning but I didn't?' 'Oh because, you didn't…you said you didn't want to be involved' 'But I want to do now' you know, and you would end up with all these complicated scenarios, replacing something that it already works well unofficially.*[1531]

[1531] ibid.

Working Groups: At the bottom of the HHL tiered system of governance we find several working groups established to provide specific expertise on larger scale projects (Community Engagement 'CONNECT' project, Monitoring and Evaluation, and Land Advisory). Participation in these groups was at once more restricted but also wider when compared to the Stakeholders Groups. It was more restricted in the sense that attendance was limited to people engaged with these projects and occasionally the Programme Manager. At the same time, participation was broader since they were open to a wider group of individuals. Hence, at the CONNECT group you might have had one or two members of the community who had been involved with it, e.g a volunteer together with the CONNECT project officers, or at the Land Advisory group you would have the projects officers, wetland advisors but also the NE HLS advisors; the latter to provide details on landowners engagement with the HLS scheme and share their local knowledge and experience. The working groups, in particular the Land Advisory and CONNECT, were the liaison between work on the ground and the higher tiers of NIA governance. For the purpose of this discussion, I will focus more on the Land Advisory group, which was entrusted with the challenging work of introducing biodiversity management to the wider farming community, the aim being to achieve ecological connectivity and address the ongoing issue of habitat fragmentation. As I discuss in detail below, this group – like all working groups - would report to the steering group and the stakeholders group any progress made and any problems that it might have encountered while implementing the NIA plan.[1532]

In light of the above, it is arguable that a model of wide participation is difficult to materialize in practice, especially in terms of a delivery scheme such as the NIA, where decisions need to be made, money to be spent and

[1532] ibid.

concrete action to take place within precise deadlines. It is true that as it is often asserted in literature, having a wide spectrum of individuals sitting in key positions of the NIA decision-making groups could provide valuable input that would allow for less conflict at the stage of implementation or a larger number of actively involved farmers and landowners. Moreover, given that local people have managed their land for years and have a great deal of knowledge about what is going on that land, it might also reveal opportunities for conservation work.

It would be ideal to have the people on the ground participating in the original planning, the setting of aims and objectives or the setting of criteria for engaging with NIA projects. However, for the reasons explained above this is unlikely to work in practice. Even for the Partners' staff and the project officer, participation in all these groups is challenging. Also getting the right people to participate in order to make full use of the opportunities this Partnership approach offers is challenging. There are only a few people who can attend these meetings; some need to attend more than one group. Surely there is a difference in information flow when, for instance, the NE representative is the same individual in the HLP, the steering group and the stakeholder group? In this case they would have first-hand knowledge of what was discussed in all groups instead of relying on a colleague's report and conveyance of another group's proceedings. But for the majority of people, NIA related work was only part of their duties and responsibilities.

And if the Partnership was to open participation to e.g. working groups to the wider farming community and if it really wanted farmers to attend, those groups would have to come together outside working hours, in the evenings which in turn would mean that the Partners' staff would have to be paid overtime.[1533] But how would the NIA resource that? Wouldn't it have been preferable to invest these resources in actual conservation work, even if on a more limited scale, especially given the fact that actual attendance couldn't be guaranteed? It is always going to be a cost-benefit analysis and in

[1533] ibid.

the real world this ideal scenario of having everyone sitting around the decision-making table is not easy to realise.

Having said that, the NIA did find ways to reach out to the private sector and the wider farming community. The NIA was a 'consortium of the willing' and the Partnership was successful in bringing together the 'willing'. To a great extent this was the result of the Partners and the Partners' staff own network of people and pre-existing good working relationships with local communities. The following section will explore how the 'informal' workings of the NIA brought the desired elements of flexibility and collaboration, which build up an image of interlinked models of adaptive management.

9.2.3 Adaptive Nature Conservation Management in Practice

This section will focus on the delivery of one of the largest-scale NIA projects, the Wetland Advice, in order to demonstrate how science driven and collaborative management interrelate and merge. The project illustrates how collaborative management led to the implementation of primarily science-driven decisions. The Wetland Advice was a successful project that managed to engage a large number of landowners in pursuit of ecological connectivity. It was perhaps one of the most challenging projects due to the large number of people that the partners had to motivate to undertake conservation management. The area is predominantly agricultural and contained productive farmland and hard-working people who were often suspicious of nature conservation or very hesitant to change their long-term, traditional management practices. This project provides an excellent example of how communication, trust and good working relationships can achieve results that strict legislation often fails to. As an RSPB officer said:

> *It's the stick that doesn't tend to work well rather than the carrot*[1534]

[1534] Interview with RSPB officer (2) (Denby, 24 February 2014).

9.2.3.1 The Wetland Advice Project

9.2.3.1.1 What is the Wetland Advice Project

The idea for a wetland advice project arose in response to the increased habitats fragmentation.[1535] Lots of sites both statutory (SSSIs and NNR) and non-statutory nature reserves managed by the charitable trusts, were becoming isolated and therefore vulnerable. The idea was to move away from 'gardening' isolated reserves towards a well-connected network of priority sites through ecological corridors and stepping-stones. The goal was to restore significant areas of priority BAP habitats (lowland wet grassland/floodplain grazing marsh, reed bed, wet woodland and fen). The project would focus on key areas within the NIA that could deliver a) Improvements in SSSI and Local Wildlife Site condition b) Buffer zones around key sites and c) Linear habitats linking key sites via rivers and drains, with additional blocks of habitat as stepping stones.[1536] Several BAP species would benefit from the project and several ecosystem services would be improved. [1537] The focus on linear habitats along the floodplain would also help increase the resilience of habitats and species to climate change. [1538] At the end of the three years, the project had managed to deliver over 219 ha of habitat restoration and creation, 59 ha work in SSSIs and 26Ha of work on LWS.

The project was not an entirely novel idea but was mapped on the successful *Wetland Vision,* a pilot programme that preceded the NIA scheme. Building on lessons learnt, experience and good working relationships that were established during the Wetland Vision, the Wetland Advice did not develop from scratch, suggesting that those involved with nature conservation management were familiar and promoted the ideas of iterative learning and adaptation.

[1535] Interview with HHL NIA programme manager (YWT) (Doncaster, 24 April 2014).
[1536] HHL NIA Business Plan (n1279).
[1537] ibid.
[1538] Humberhead Levels NIA Final Report (2012-2015) (n1281). *See* figure 16.

9.2.3.1.2 The Conflict

Looking at the different projects that took place in the NIA, the majority of them were carried out on land owned by the public sector and charitable trusts. To an extent this was to be expected, given that most projects were already underway by the respective agencies/NGOs before being added to the NIA agenda and hence were being implemented in land - primarily nature reserves - owned or managed by them. [1539]

However, the very nature of the Wetland Advice project, which sought to connect nature reserves surrounded by private land, meant that conservation work had to be done thereon. The great challenge was that land in the Humberhead Levels is not just any land. It is highly fertile Grade 1 and 2 agricultural land. As a result, conservation activities might impact agricultural areas by taking highly profitable patches of it out of production or interfering with production; and that foreshadows tensions, because for the farming community this land is their business, their revenue. The lack of statutory legal obligations favouring biodiversity management outside SSSIs, implied that voluntary landowner engagement was the only way the partners could give effect to their objectives.

It came as no surprise that, on the initiation of the programme, the National Farmers Union and the Country Land and Business Association (CLA) raised concerns about the scheme's impact on the private sector. NFU stated that NIA objectives should be balanced with "the need for farmers to manage their businesses" and CLA was worried about further development control constraints.[1540] To these concerns DEFRA replied that "it's a matter for local authorities to decide what weight they wished to give to the NIA''[1541] following

[1539] Interview with the Humberhead Levels Partnership Secretariat (NE) (York, 1 April 2014); Interview with RSPB officer (2) (Denby, 24 February 2014).
[1540] <https://www.yorkshirepost.co.uk/news/environment/farmers-reassured-after-green-projects-go-ahead-1-4313757>.
[1541] ibid.

the standard practice of administrative discretion in English legal and policy system.

But to reiterate, the NIA scheme was not about imposing any obligations on the private sector; the NIA designation itself conferred no special powers on any authority to impose any restrictions. It was as Sir Lawton said a 'consortium of the willing', of those willing to work together to realize the NIA vision. This approach was confirmed by Kevin Bayes, the person in charge of drafting the NIA Business Plan and the Humberside Levels project manager at the time the scheme was launched, who stressed:

All we are offering is collaboration and advice. We know how important this area is for arable crops.[1542]

Advice, negotiation and collaboration were thus the armoury of the NIA throughout the three years of implantation. The priority was to work with farmers and reach commonly accepted solutions that would work for them and at the same time serve NIA objectives; nothing was imposed:

We're not deciding for the farmers and landowners for them, we're not telling them what to do[1543]

This was the reason why compromises were sometimes possible when negotiation techniques and private sector engagement were not able to resolve issues.[1544] Hence, there would be cases that the NIA would not get to pick up sites offering the most opportunities for biodiversity and the creation of ecological corridors and stepping-stones. They NIA staff, especially those from a scientific background, had to be pragmatic:

Even if the science is perfect, without the landowners you can't get anywhere[1545]

[1542] ibid.
[1543] Interview with the Humberhead Levels Partnership Secretariat (NE) (York, 1 April 2014.
[1544] ibid and Interview with HHL NIA programme manager (YWT) (Doncaster, 24 April 2014): This is why there are patches of land left outside the original designation.
[1545] Interview with NIA land advisor (YWT) (Doncaster, 30 May 2014).

9.2.3.1.3 Engaging the 'willing'

As stressed in the previous section,[1546] farmers and private landowners were not participating in the NIA formal groups. The truth is that they were not invited in the first place; nevertheless, stakeholder meetings were open to all but only once had the NIA project officers and NIA partner staff seen farmers attending the group. So the question was how to engage a busy farmer who works all day on his/her field, with projects that fall outside their usual remit; how to get his/her attention and then, how to make him/her participate in work prompting nature conservation interests? The NIA had to make it worthwhile for the farming community to spend time on a nature conservation scheme. The Wetland Advice Working group had a central role to play in this respect. The group's main focus was to engage landowners with projects that would collectively add up to reach the NIA aim on ecological connectivity. At their disposal they had the Small Capital Grant, the NIA funding mechanism for small-scale capital work and some limited access to environmental stewardship.

- The NIA Landowners/Farmers working group (land management group)

The land management-working group, originally set up during the Wetland Vision scheme, was the heart of the Wetland Advice Project. The group was attended by the NIA wetland advisors whose aim was to engage the farming community with conservation work towards the NIA objectives. It was also attended by NE staff involved with the HLS and wider partner staff e.g RSPB bird advisors who had experience and many connections to the farming community. As a result, the group could co-ordinate the AES alongside the NIA small capital fund to finance projects with landowners and ensure coordination across partners and projects.

The land management group were the people working on the ground, offering advice to farmers and discussing potential projects on their land,

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[1546] *See* s.9.2.2.

introducing them to and assisting them with AES applications. These were the people who knew what was going on the field and since the idea of land advisors was not novel, as some had worked on certain land patches for years, this is the reason why it was at the Land Management working group where the Wetland Advice projects were designed and decided, before reported back to the steering groups for approval and then put into practice.

– *Targeting land and landowners*

Selecting patches of land to include as well as what work was to be carried out was the outcome of a mixed process. On the one hand, it was pure science. As expected, the primary target areas of the NIA were the Thorne and Hatfield Moors NNRs.[1547] The benefit of working in partnership was that these sites could be aligned with the sites out of NE's direct control, that is the Partners' wildlife sites that would function as stepping-stones or satellite sites. The YWT when working on Living Landscapes had done studies on how to improve habitats between these sites and connect them together, mapping little corridors linking priority habitats;[1548] these links became key focus areas. However, the NIA could only do a number of agreements given that the small capital fund was indeed very small and the HLS, which could have funded some additional work, was coming to an end.[1549] So, the working group even before reaching out to farmers had developed some simple scoring criteria on selecting where and how they would spend the NIA funding:

> *Basically, they'll have to create or restore so many hectares of hedgerows, management of ditches and dikes, wet grassland and that sort of thing [...] are they adjoining a SSSI that would get us higher score, are they adjoining land that's already in the HLS for similar reasons that would score higher, you know, that sort of thing. So it's joining up, if it's*

[1547] Interview with HHL NIA programme manager (YWT) (Doncaster, 24 April 2014).
[1548] ibid.
[1549] ibid.

completely isolated and you've got nothing going on, on either side that's beneficial to biodiversity then it would probably score lower.[1550]

On the other hand, more pragmatic factors such as areas with landowners who were willing to do work, who had been working in Partners' projects or were already in the HLS scheme were also considered. [1551]Areas where conflict was unlikely to alleviate and landowners would not agree to give up land for conservation, even if it was best for biodiversity, would be left outside the project design or as previously discussed,[1552] even the NIA itself.

Project design was an iterative process; there were no solid, inflexible decisions on what to do and where to do it. In a sense, the projects were roughly designed in that group and built along the way following discussions and negotiations with landowners and farmers. It was a toing-and-froing process.

– *Engaging landowners*

Getting farmers' co-operation presented two major challenges. First, was to actually reach them. Farmers are business people, whose primary focus is ploughing, harvesting, grazing and so forth; all efforts to engage them should always start from the premise that doing business is and always will be their top priority. This brings us to the second challenge: persuade farmers to undertake conservation work. The NIA had to provide in the right way, the right incentives to persuade farmers to do small capital works such as digging ponds, creating and restoring hedgerows, reseeding, etc.

As mentioned earlier, in terms of landowners' engagement the approach taken by the NIA was an informal one. Traditionally, famers do not particularly enjoy filling in forms, signing papers and being bound by things or listening to scientists talk for hours in scientific jargon.[1553] The final outcome

[1550] Interview with the Humberhead Levels Partnership Secretariat (NE) (York, 1 April 2014).
[1551] Interview with HHL NIA programme manager (YWT) (Doncaster, 24 April 2014).
[1552] *Supra* n1544.
[1553] Interview with NIA land advisor (YWT) (Doncaster, 30 May 2014).

would very much depend on relationship building, trust, right down to the way the advisor approached and talked to the farmers.

After the initial targeting stage, the NIA advisors closely working together with Partners' land-advisors, tried to reach the landowners and engage them to the work of the NIA. Farmers' engagement was a two-pronged approach:

> *Partly trying to encourage landowners to come to us, it's how we promote the fund. Then partly being proactive and going out and getting certain landowners. It's that two-pronged approach.*[1554]

Approaching landowners would usually start with a phone call. For those already involved with Environmental Stewardship finding contact information was relatively straightforward. Through Magic Maps the advisors could chart everyone in Environmental Stewardship. Then, being a registered business, it was easy to find a contact number on the web.[1555]

Another way was through Partners' connections. Most of the NIA partners like the EA, NE, RSPB had their own network of landowners. The NIA advisor would then ask them to distribute a letter that contained information on the scheme and an invitation to apply for NIA funding. Due to data protection issues, the advisor was not able to get the details directly from the Partners and thus would ask them to distribute the letter.[1556] Another way to engage people was through workshops and a series of training events to introduce the scheme and how it worked, to raise awareness of the NIA by inviting people to come along and learn more. Word of mouth also works, especially among peers; if it worked well for a neighbour and did not cost or lose them any money, then this is a very good motivation for others to take part. If the presentation at such events is made by landowners rather than conservationists, it is even more persuading. Farmers are more likely to get

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[1554] Ibid.

[1555] Ibid.

[1556] How well the letter was distributed in different areas influenced the response rates. However, rarely would farmers make the first step. Only four landowners were involved as a result of this kind of approach.

through to other farmers than conservationists, of whom the farming community is often overly suspicious.[1557]

Actual in situ visits were also a very effective way to reach out to people. The Wetland advisors would do rounds and introduce themselves, ask them if they knew about the NIA, talk about the small grant scheme, try to persuade them to take the small grant opportunity, or if that was not applicable - or they were not interested - to introduce them to environmental stewardship. If they were not interested then the advisors would try to find out why and report back to the working group, the stakeholder and steering groups. There was no formal procedure or any pressure to join the scheme:

> *[…] if a farmer doesn't want to get involved, they will shut the door and say 'don't bother me again'*[1558]

There were no incidents of impolite behaviour. In all fairness, rarely would the land advisors cold call.[1559] In most cases the farmers that were approached had previous experience in working jointly with the partners on several projects or were already involved with AES. It was really unlikely that the advisors would approach someone entirely new or someone who they knew was unlikely to be willing to engage to the project.[1560] They already had a good idea of people willing to engage. Often, it was just a matter of chance and Partners' staff having good links to the farming business.[1561] At the time of the interviews, the NIA had an established network of 40 landowners but at the end of the scheme the network had grown to over 56 landowners.

The truth is, however, that to a great extent the 'willing' landowner network was a successful outcome of the preceding Wetland Vision. The NIA,

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[1557] Interview with NIA land advisor (YWT) (Doncaster, 30 May 2014).
[1558] Interview with the Humberhead Levels Partnership Secretariat (NE) (York, 1 April 2014).
[1559] Even if cold calling, farmers would be polite enough to hear them through and might say "We'll think about it. Can you ring back in a few weeks' time?"
[1560] Interview with HHL NIA programme manager (YWT) (Doncaster, 24 April 2014).
[1561] ibid.

partially due to having less funding than Wetland Vision, did not manage to develop new landowner networks. [1562]

– *Working together*

The case study revealed that engaging landowners depended primarily on two things: one was giving farmers the right incentives to participate; the other was the way they were approached and talked to about joining the scheme.

As to the first, the Partners had to be pragmatic regarding how much work they could fund and who would allow them to do what. So, for instance, there was a difference between landowners' who farmed for a hobby and commercial farmers. The former are keener to engage in conservation work:

> *They've just got a bit of pastureland that they graze or have a neighbouring farmer graze. They just like to have the land and if they had more money they'd do more work. They'd probably be happy to turn that into a giant reed bed or anything really.*[1563]

However, the majority of people targeted were commercial farmers; some of them were indeed pro-conservation, but for most farming came first. This is their business and source of income:

> *You know, farming, it's a difficult career. All farmers struggle to make a profit, no matter how pro-conservation they are, they've got to think about the finances.*[1564]

This is why they would need the right incentives and/or to be assured that their production would not be affected. Incentives were primarily financial. The main source of finance was the Small Capital Fund, a fund of £76,000 that

[1562] Interview with HHL NIA programme manager (YWT) (Doncaster, 24 April 2014).
[1563] Interview with NIA land advisor (YWT) (Doncaster, 30 May 2014).
[1564] ibid.

was to be allocated to eligible farmers for capital work.[1565] Allocations of the Small Capital Fund would be in the form of a private agreement between the farmer and the YWT as the lead body of the NIA. Therefore, accountability lay with the YWT to return the money to NE/DEFRA if the agreement did not work and the project did not deliver; in turn the YWT would have to claim the funding from the farmer.[1566]

Not all farmers were eligible for the NIA grant. The small capital fund was a competitive scheme and funding would be allocated to farmers scoring higher on a set of NIA objectives.[1567] In the end, enough interest was shown to the extent that the NIA could not fund everything due to limited resources. This was one of the 'lessons learnt'; high engagement demand could be used as evidence for the need for further funding beyond the end of the scheme.

If the grant scheme would not suit the farmer, or if the farmer was not eligible for the grant scheme, the advisor would also offer the option of environmental stewardship. Unfortunately for the Wetland Advice project, the use of AES for the NIA was very limited due to the programme reaching an end when the NIA started. Certainly, the work funded by the AES was different than the grant scheme. It was a blanket cover box-ticking document that would ensure ongoing management rather than capital works and in principle would not necessarily and directly promote NIA objectives. Another complication was that while the NIA funding was allocated through the YWT for the NIA, the HLS agreements would still have to go via the local NE advisor. This is the reason why having NE HLS advisors in the Working Group was very important; it helped aligned environmental stewardship to the NIA objectives.

In general, farmers would be keener to join stewardship schemes as they would actually get the financial incentive. Capital funding would not really reach the farmers' pockets. Hence, the likelihood of doing work on their land increased if they already had plans to e.g dig a pond that they would now

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[1565] Other sources of funding could also partially finance projects. This was the case with the creation of a wet woodland area where the NIA was trying to get the project funded by the Woodland scheme.

[1566] Interview with the Humberhead Levels Partnership Secretariat (NE) (York, 1 April 2014).

[1567] Interview with HHL NIA programme manager (YWT) (Doncaster, 24 April 2014).

not have to pay for by themselves. But if they had to do work themselves or spend their own money, it was unlikely – though not impossible - the advisors would get their approval:

> The benefit of the Stewardship Scheme is that they've been getting this financial incentive; so, they get this annual payment for doing work that they've agreed with Natural England. But for the NIA, this capital fund that I dish out, it's more of a one-off payment so it's purely just to create the habitat feature and that's it. A lot of times we pay a contractor to come and do it. They're not getting a penny for it. They're just getting a new pond or a hedgerow or something; so there isn't really any financial incentive there for them. A few landowners have already got plans for ponds or woodlands and then they hear about the fund and they think I don't have to pay for it myself then. But if you're approaching somebody who doesn't have any existing plans it is more difficult, and I think generally the only way you'll get them to agree is if you put it on a bit of land that isn't profitable for them. It's a kind of mutual agreement, they don't do anything, or it's not costing them anything and then they don't really mind. They support us in our work and that's it.[1568]

Having said that, the NIA offers examples of landowners who were willing to fund conservation work themselves for no other obvious reason than being pro-conservation.[1569] Furthermore, within the HHL there was a growing organic vegetable market. Hence, some farmers were very keen to be part of the NIA project network and thus grow an 'environmentally friendly' reputation that would attract more customers, ultimately outweighing any cost incurred by the business.

And that brings us to the second essential feature of effective landowner engagement: the approach used to reach and persuade farmers to join the scheme. These people had a business to run. The advisor role was to persuade them to spend some of their time on doing something other than this

[1568] Interview with NIA land advisor (YWT) (Doncaster, 30 May 2014).
[1569] ibid.

business. All the interviewees confirmed that building good working interpersonal relationships and mutual trust were vital, a sine qua non to landowner engagement. The farmers had to feel that they were being respected and appreciated. In the end, due to good communication, the Partners would find that landowners were willing to go even further than their agreement responsibilities:

> *there is a huge amount of trust in it; you're absolutely spot on and that's the thing we gamble with. But what we're finding is that in the early years, the land managers […] see it just as a means of supplementing their income […].*
>
> *But what we're finding over there is that suddenly they're understanding exactly what it is that we're looking for and suddenly they're finding out about plants and birds and invertebrates,* ***things they probably didn't really know that great deal about and suddenly they're getting very interested in, themselves;*** *and one of the quirks that we found is that now they're doing far more monitoring than we would have ever done and they're reporting it back to us….so if you give them that sense of, [we] had this debate with some farmers over the last year, but* ***if you trust the farmers and the land managers and you give them a sense of control and a sense of ownership then in most cases they would deliver.***[1570]

Being pragmatic, understanding their individual needs and the specific characteristics of their occupation was paramount:

> *Agreeing a time and a date is quite difficult, especially if you are planning ahead. If it's sunny they'll be out spraying. Setting up the meetings to see them; sometimes you turn up and they've just forgotten all about it and they're off in the fields somewhere. Sometimes I have to ring a few days in advance to see what they're doing. It's quite last minute. So if you're trying to set up something in advance… a lot of farmers might say yes but I don't believe they're going to turn up. Even if they do turn up it may be good if they do feel part of something. If*

[1570] Interview with the NE land advisor (York, 21/6/2013).

> *they're already a group…they might already know each other. It would be a good social event. Also a chance to talk about things. If you've got someone there on your side and can say, "We've done this, we've done that. We've got a grant of X amount of money to do this."*[1571]

If land advisors went in with a pre-set idea, using scientific jargon and coming across as an 'expert', the farmer would not even hear what they had to suggest:

> I've always been on quite good terms with them all. I ring them up for a chat sometimes to see how they are. So we've always got a good relationship. But if I go in and start telling them how to run their farm I think they might just sort of humour me by nodding along. I think to be successful it has to come from someone that's respected within the business and farming community.[1572]

In contrast and reflecting the very essence of the adaptive co-management model, flexibility was the key; interviews shared the idea that the process was and had to be a constructive dialogue aimed at reaching a commonly accepted agreement. It was really important that the farmers felt the advisors understood them and their needs and were not there to force their opinions on them.

> *I'm not very imposing with my ideas, I tend to go and see where the opportunities are. Sometimes it would have been ridiculous to suggest five ponds. At the end of the day they're a farming business and none of this would work without their engagement. I think perhaps one of my strengths is forming good relationships with the landowners, so you've got trust. I'd never really suggest something which isn't feasible for them because you appreciate they've got a business to run. So, the*

[1571] Interview with NIA land advisor (YWT) (Doncaster, 30 May 2014).
[1572] ibid.

> *things we propose are generally easier to achieve or more appropriate for their land. It's things like field corners that they can't use or are too awkward to farm – they can't get machinery around or something. Or areas of their farm which is low productivity, so there's no financial loss for them. We may as well get some habitat gain if we can. Working with them to make the decisions.* ***I've never really gone in with a pre-set idea, it's always quite flexible.***[1573]

> *It's not set in stone with regard that we are saying we want to do this this and this. There is some flexibility in that scheme where we will go and find out, we go in a fact-finding mission and see who's interested and who isn't.*[1574]

Land advisors had to be realistic on what they could or could not do, as well as prepared to compromise. Often farming was a family business going back many generations. Land advisors were therefore dealing people who had owned and managed their land for years and considered themselves 'experts' in their 'field'; people who would find it difficult to change long-established practices. Good negotiating skills on behalf of the land advisors were essential when trying to persuade the more suspicious older generation of farmers to be more accepting of new ideas:

> I think it's how you tell them, how you propose it. Because quite often it's a family owned business and it's been handed down to them from generation to generation. So a lot of farmers are used to their tradition; and that's how they've always done it ; they've always cut their hedges in summer. We suggest leave it in summer over the bird breeding season and just cut it in winter. Or maybe just cut one side and leave the other and alternate. **It's just small changes like that, that can have quite a lot of significant benefits**. Sometimes, because I don't come from a farming background, I think they see me because I did a degree as fresh out of university, telling them what to do and I'm a young girl. […] We all kind of know it. That's what's needed. But if you've got a landowner who

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[1573] ibid.

[1574] Interview with the Humberhead Levels Partnership Secretariat (NE) (York, 1 April 2014).

> doesn't want to change or doesn't see why. There needs to be an incentive. A lot of people are stuck in their ways.[1575]

With the right approach, awareness and advice, landowners would find out that nature conservation management was often about small things that would not particularly adversely affect them. What was more important was that there were cases where the advisor's suggestions would have a positive impact on a farmer's business. Therefore, conservation management had an inherent incentive effect; in the end, any proposed work would benefit them as well as nature and they would find that adapting their land management to encourage biodiversity might actually become a part of their business.

> Maybe selling the benefits to them. Like leaving buffer strips. OK you're taking out some of your land from agriculture production, but then if you're providing a habitat for pollinators then you might get a greater crop yield and actually it comes in full circle.[1576]

> If we can just get awareness from the landowners. Some of their farming practices they can modify them in a more sensitive way without damaging their business at all. Just small little changes like the catchment sensitive farming group or initiative. One of the things they suggest is if you're farming on a slope and there's a river at the bottom, some farmers plough up and down and that actually means more soil runoff. It's bad for the rivers but it also reduces the nutrients in the fields and they have to put more fertiliser on. And the small change is just to plough the other way around.[1577]

The continuous and successful interaction between land advisors and farmers, with both offering advice and expertise, resulted in much work being carried out beyond or in addition to work funded by the scheme; and without any formality. Often the tasks were very simple and easily carried out by the farmers themselves; they were cases where the landowners were willing to

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[1575] Interview with NIA land advisor (YWT) (Doncaster, 30 May 2014).
[1576] ibid.
[1577] ibid.

allow the work to be done but could not do it themselves due to a lack of machinery, or the needs of livestock e.g. when grazing was required. In these cases, the solution could be as simple as finding a willing neighbour who could assist by lending equipment or allowing the cattle to graze his/her land.

> *There's a site where we laid a hedge, seeded a whole field, wildflower meadow, create a few wader scrapes and put up some fencing. The guy there, farming's not his business; he's just got a field at the side of his house and he doesn't have any agricultural machinery or any kit to carry out management. But we still provided a bit of advice, talked to the neighbouring landowner and he's going to graze the meadow certain times of the year. So, we're kind of giving them the knowledge to carry it out.*[1578]

> *He's not a farmer; he didn't have the materials, knowledge, skills. We didn't have any more money. We laid the hedge and thought that would be stock proof but the farmer who was going to graze the land was a bit unsure whether it would be, and he wasn't really happy about putting his cows in there. It's quite a short hedge really and he thought they might just batter through or jump it. We agreed to put up this fencing, which we did by ourselves.*[1579]

Vital to the implementation of the Wetland Advice, and especially to the completion of works with no available funding, was the contribution of the volunteer base of the charitable trusts. The volunteer base allowed the partners to perform tasks the landowners were unable to do themselves, but also to secure some level of future management to maintain the positive effects of the project.

> *At the moment, everything we've created doesn't need management at this stage. It's going to be in five years' time really. Like meadows, we'd want to come in and cut them at certain times of the year. Have an*

[1578] ibid.
[1579] ibid.

annual management thing. But on the whole, we'd need something like five, ten, fifteen years to do it but I've always said to the landowners that we can offer some sort of support. We do have the volunteer base so if they need help with something; like the fencing work at that site I was talking about, we didn't have any money to pay the contractor, so we did it ourselves. We needed to do it. The landowner couldn't do it.[1580]

9.2.3.1.4 Conclusions

To conclude, wide landowner engagement worked well enough in this informal way. Many interviewees made it clear that adding more formality to the process would have discouraged landowners from participating, as they do not like to feel that they are held to something. Certainly, this had certain disadvantages. Capital work was a single operation and unless environmental stewardship was in place, the NIA partnership could not ensure future management would be done in a manner that would maintain the biodiversity benefit. There was no formal agreement in place, hence there was a risk that in the absence of such agreement all the work done and money spent could be in vein - if for instance newly created ponds were to be drained in the future. The truth is that it is one thing for landowners to give up a piece of land and another to devote an important part of their personal time and/or endure the cost of ongoing management. However, the alternative, attaching some measure of formality especially in the absence of further funding after the end of the three-year programme, would have a deterrent effect on them joining in the first place. This is why volunteers had a pivotal role to play in ensuring some form of continuity.

Nevertheless, armed with goodwill on behalf of both parties this informal flexible approach seemed to be working, certainly within its limitations. Financial incentives, good reputation, positive impact on the business or merely being naturally pro-conservation and enjoy having a pretty meadow on their land, together with the advice, assistance and knowledge

[1580] ibid.

sharing on behalf of the NIA partners resulted in the engagement of more than 50 different landowners. Some landowners were even paid to undertake training in order to be able to do basic monitoring, which was essential but difficult to carry out by NE. And they were eager to do so, doing more than originally agreed.

Certainly, there is space for improvement. But this was to be expected. Besides, 'lessons learnt' a central concept of adaptive management was also partly the reason why the NIA scheme was launched. It was as much as learning process as it was a delivery framework.[1581] Some of the problems that emerged e.g the bad timing with the AES, related to the fact that the scheme was set up too fast, over a very short time scale that did not allow for more comprehensive and strategic planning. Other problems were due to regulatory constraints. The flexible, adaptive approach that was put into practice in the Humberhead Levels nevertheless had to operate within a given legislative and regulatory framework. The following section looks at some cases where this framework – or its implementation - was not flexible enough to support the smooth application of adaptive management.

[1581] *See* 'lessons learnt' in Monitoring and Evaluation of Nature Improvement Areas: Final Report (n97) 118ff referring among others to the importance of a shared vision, partnership-led landscape scale land management, flexible design, bringing conservation organizations together with local businesses, land managers, research institutions and local authorities but also longer-term activity.

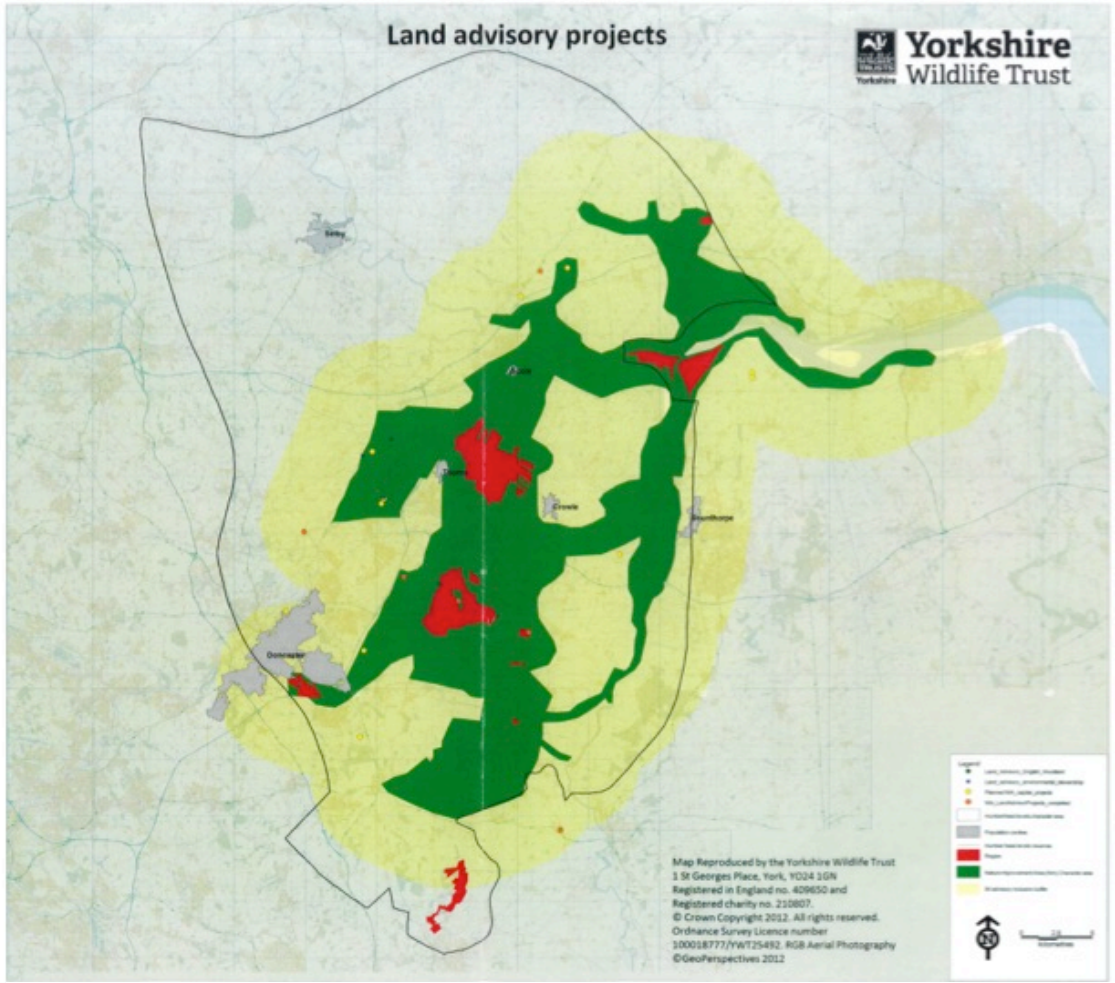

Figure 16 Land Advisory Project within the HHL NA

9.3 Practicing models of adaptive management within the English legal and regulatory context: Is it possible?

The exploration into the NIA's implementation suggests that, in practice, nature conservation management can be different than it is on paper. In some cases, it might be easier and less complicated than one would think when looking at all the different laws and regulations regulating human actions that have an impact on the natural environment. It can be something as simple as thinning a few trees or creating a few skylark plots; offering advice on the part of agencies and NGOs and some goodwill on the landowners' part and the work in utterly informal way, even without the use of financial incentives, but nevertheless with significant benefits to wildlife.

In some cases, however, things get more complicated and in practice more difficult to realize than originally thought by those designing management projects. The scheme operates within a given legal and regulatory framework and certain operations might require the approval of one or more administrative authorities or be limited by laws and regulations that in some cases might be even unrelated to conservation or environmental protection in general.

> *The problem is that there is a lot of work in turning something from policy into reality. And sometimes it doesn't work how is supposed to (work) in writing, in policy. And you could say that about absolutely everything.*[1582]

Nevertheless, the following paragraphs concluding the exploration of Part III will show what was suggested in Part II: that the English legal system in general is flexible enough to accommodate an adaptive approach to conservation management, to allow this network of people to work together, for partners to offer their knowledge and experience, for the volunteers to offer their time and enthusiasm, for both experimentation and collaboration

[1582] Interview with the Humberhead Levels Partnership Secretariat (NE) (York, 1 April 2014).

to take place. However, at the same time, the NIA initiative exposed some of the issues that need to be addressed in order to effectively implement adaptive large-scale ecosystem management. The study of the HHL confirms the conclusion of previous chapters that the legal and policy system has evolved on the basis of traditional concepts of property, jurisdictional boundaries and allocation of administrative competence, which in some cases prevented the Partnership from reaching its full potential. Having said that, as explained below, the system is flexible enough to address these issues. Administrative discretion is the key feature of the English legal system allowing for experimentation, learning and collaboration to occur.

It is widely understood by those who work to realize the NIA's objectives that flexibility is the key; that formalities might be very restrictive when it comes to making things happen on the ground. Equally, no one suggested that there is no place for legally enforceable rules in nature conservation management, which has to take place within limits enforceable by statutory legislation that maps out the framework in which flexible approaches can flourish. The importance of statutory legislation, which operates as a safety net during the implementation of voluntary schemes and approaches, was highlighted by the interviewees:

> *the one thing about legislation, everybody knows where they stand, you know, I know it's more complicated but in general, the general feeling is that the law has to be complied with by everybody you know from general public to firms or...there's no grey areas I mean I know there are grey areas but you know on the whole, people know where they stand don't they? Whereas In a more voluntary approach [...] you haven't got that certainty and you have to rely on other ways in trying to achieve it and it's always vulnerable to exploitation, lobbying or you know that sort of thing.*[1583]

The problems that occurred can be addressed with a more strategic and carefully planned implementation of future schemes plus some changes made

[1583] Interview with the Chair of the Humberhead Levels Partnership (York, 21/6/2013).

by the administration to the operation of environmental stewardship, the most important tool for large-scale management in the nature conservation toolbox.

What follows is a discussion of the barriers that law and policy and/or their implementation by the decision-making authorities set on the Partnership's efforts for optimal outcomes within the HHL NIA ecosystem. There were three main sources of difficulties the Partnership was faced with. The first was related to state aid rules and the limitations set by the way funding was allocated to the landowners. The second related to the decision-making process of public authorities whose approval was required for the implementation of specific operations to proceed. Finally, the way environmental stewardship operated hindered the adaptive management of the area to its full potential.

9.3.1 State aid rules and funding allocation

Nature conservation management not only operates within the nature conservation or environmental legal framework but also the wider English legal order. Hence, every decision made needs to be made in conformity with the entire body of legislation. State aid regulations challenged the implementation of projects that sought to combine the enhancement of the natural environment and the development of local economy or wider landowner engagement projects such as the Wetland Advice discussed above. There were times the Partners had to ascertain that there would be no state aid implications before proceeding to project delivery. State aid rules required that a maximum amount of money could be given to each individual from the Small Capital Fund.[1584] The NIA could only give up to £6,000 to each landowner. This threshold prevented it from doing necessary work on big landholdings:

> *if they've got big, big patches of land if you want to do wetland connectivity you'd have to do like a pond in every field. You might have a massive landholding and you've got a couple of ponds and they've*

[1584] Interview with the Humberhead Levels Partnership Secretariat (NE) (York, 1 April 2014).

used up all their funding that they're eligible for. The next chance you've got might be five, six, seven kilometres away if not more. […] We can only give six thousand pounds to each landowner.[1585]

Things got even more complicate when more than one funding scheme was used e.g HLS and the Small Capital Fund, to finance projects on the same landholding. Hence, state aid rules - which do not form part of the nature conservation or even the wider environmental framework - posed a significant constraint to the implementation of collaborative management and as a result, the NIA objectives on ecological connectivity.

9.3.2 Administrative approvals and consents

One of common issue arising was that certain projects required planning permission by local planning authorities. This, as expected, slowed down – if not prevented - the implementation of certain projects. Although it was often the case that works such as pond creation were carried out by landowners without planning permission,[1586] as soon as the NIA was funding such work the Partnership had to follow best practice and apply for all permission needed.[1587] This complicated matters as there were cases of landowners who, even though consenting to the work taking place on their land, were not willing to spend time going through the planning permission process;[1588] In addition, to make things even more problematic, planning permission would differ depending on the planning authority, or there could be projects which required planning permission from different planning authorities.

It is reasonable to expect that working in Partnership would help to resolve these issues. Bringing everybody concerned to the table means that

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[1585] Interview with NIA land advisor (YWT) (Doncaster, 30 May 2014).
[1586] Landowners used to dig ponds without planning permission which was required for certain uses of the ponds. But actual checks were very rare and such works were often carried out informally.
[1587] Interview with HHL NIA programme manager (YWT) (Doncaster, 24 April 2014).
[1588] Interview with RSPB officer (3) (Newark, 4 April 2014).

the competent authorities are likely to be involved and make their position on potential projects known before they are required to issue a decision approving a permit or giving consent. However, the application of this ideal and sound theoretical model of management presented practical difficulties related to the observations made earlier on distinguishing between partner organizations and the actual individuals that represented these organizations and participated in NIA proceedings. Hence, while local authorities do sit on the HLP Executive and the NIA stakeholder group, this does not necessarily mean that the people participating in meetings worked for the planning department. Local authorities have many departments and due to staff limitations, it was very difficult in practice to get people from all of these departments in the room:

> *[…] we do have local authorities sitting on the table, […] the local authorities are on the stakeholders group because they are usually involved in delivering projects on the ground. However, some of those are not planners, there are not from the planning department. And the local authority has so many different departments. On a practical level you couldn't have lots of different staff from the different departments.*

Therefore, if having planners sitting on the NIA groups is not possible then having the person who works for the local authority to report back to the planning department and inform them about the NIA plans would be the next best option. However, even that was not always working in practice and communication between the HLP, the NIA groups, the partners and the project manager was not always ideal.

> *The problem is that you'll never get them to a meeting when there's another member of the council there, there will only be allowed one person, cause they won't be allowed to just find numerous people, cause there are so many restrictions on staff. So, it's about, it's almost about that extra work behind some of the meetings […], it's like me going back in discussing with the rest of Yorkshire Wildlife Trust about things, which goes on. But not every partner does as much of the back room work for whichever reason; it just kind of starts falling down a little bit.*

So in theory, it's nice in theory they're signed up, but years down the line as well….so some of them may have been in initial project meetings, the planners might not have been engaged for two years so I've turned up and no one has talked to them for a year and a half.[1589]

The idea would be that the person that is representing the local authority might not work for the planning department, but you would expect them to go along and speak to the planners and say 'look this is an issue arisen in the NIA, is slowing down the process can we speed things up a bit', but in reality it works for some local authorities, others it doesn't….[1590]

It follows that on a day-to-day basis, communication will very much depend on the individuals who are involved and on practical issues such as personnel changes, retirement, etc. What is crucial is not only how well the idea of a scheme like the NIA is embedded in the different organisations but also how familiar the staff of these organizations are with these schemes and the way they operate.

But also, usually we find that engaging with the planners is really difficult and it's only in certain teams that it kind of crosses into the Humberhead Levels Partnership. So, Doncaster, it's been quite successful probably cause of biodiversity offsetting. So the planners are quite engaged and it's easy to talk to them, plus we've got lots of experience 'cause they're literally five minutes off the road. But that North Lincolnshire council is a very different relationship and then it's different again once we get to Yorkshire. And then you'll find it's very difficult to get a planning person along to a meeting and it's very difficult to find out how we can get to their meetings[1591]

[1589] Interview with HHL NIA programme manager (YWT) (Doncaster, 24 April 2014).
[1590] Interview with the Humberhead Levels Partnership Secretariat (NE) (York, 1 April 2014).
[1591] Interview with HHL NIA programme manager (YWT) (Doncaster, 24 April 2014).

Similar complications arose when the Environment Agency refused to grant a water abstraction permit, which led to the abandonment and cancellation of a very promising and aspirational project, the Idle Washlands, led by the RSPB.[1592] The RSPB was going to work in collaboration with a major landowner with whom they had been building up long term good working relationship. The landowner was an organic farm, which believed that being environmentally friendly would be in its commercial interest and the project was a shining example of adaptive management in both forms explored in this thesis; a project primarily serving a science-driven, biodiversity objective and at the same time of benefit to agricultural production, a product of closed collaboration between a conservation NGO, the Environment Agency and a major landowner

The project was financed by the Water Framework Directive and NIA funding to produce a feasibility study into the creation of a winter storage reservoir that would also deliver biodiversity benefits (BAP habitats and WFD objectives) and the creation of a winter storage reservoir, which would deliver BAP habitat and would improve 18km of River Idle for fish and macrophyte habitat. Hence, the project would benefit biodiversity but also help the farm with water storage for crop irrigation and promote sustainable water usage, which was a critical issue with the River Idle closed for additional summer abstraction.[1593] At the same time, the site would be used as a demonstration site for informing other land managers on sustainable water management. The landowner had agreed to undertake long term management of the reservoir. [1594]In line with adaptive management principles, the feasibility study would evaluate whether it was technically for the winter storage reservoir to deliver water needs and biodiversity objectives. If the project proceeded and the storage reservoir was constructed, the EA would be in charge of monitoring and evaluating the project's benefits to the WFD and the landowner

[1592] Interview with RSPB officer (3) (Newark, 4 April 2014); Also Humberhead Levels Partnership, *Humberhead Levels Nature Improvement Area: Ambition Report* (n1279).
[1593] HHL NIA Business Plan (n1279).
[1594] Ibid.

responsible for the long-term management of the water reservoir. It was an experimental project all set to begin.

However, ninth months into the NIA it was found that there was actually regulation on water abstraction control on the river catchment and that the EA was not going to issue the necessary license for the project to proceed.[1595] The EA catchment abstraction management strategy (CAMS) setting out the EA water management strategy in the Idle and Torne catchment area had the River Idle closed to new abstractions licenses for years. Despite efforts to negotiate an exemption on behalf of the RSPB, the license was not issued, and the project never proceeded.

The Idle Washlands project case allows certain observations to be made on the complex interplay between the various actors involved in the implementation of conservation projects. First, this is a case where the private interests (the organic farm) aligned with that of biodiversity. As stated, the project was going to deliver BAP habitat creation and WFD objectives and the landowner was willing to work collaboratively with the RSPB. The unresolved conflict originated from the administration and more specifically the Environment Agency, as well as an environmental statutory body. Therefore, the interrelations between the different stakeholders are complex enough to indicate that each case will be different. It might be that in most people's minds it would be the NGOs and statutory agencies representing biodiversity interests on the one side and the private sector on the other. However, as mentioned before, this is not always the case given the fact that environmental statutory bodies are having duties other or additional to the conservation of biodiversity and/or are bound by laws and regulations that may restrict their decision-making authority. Hence, in the case of Idle Washlands, the EA practice towards water abstraction in the area prevented the delivery of a project that according to the RSPB experts would have a positive impact on biodiversity and the farming activities of the landowner.

[1595] Interview with HHL NIA programme manager (YWT) (Doncaster, 24 April 2014); Interview with RSPB officer (Newark, 4 April 2014).

The second observation is closely related to the multifaceted nature of the EA agenda and the issues of representation and smooth communication mentioned above in relation to local authorities. The Environment Agency, a member of the HLP was also a delivery partner on the Idle Washlands project. However, this engagement was substantially different and did not include the EA officer that would find the license application on his desk and might have never heard of a project called 'Idle Washlands', a situation similar to the local authority planners discussed above. But even if the local officer was sympathetic, he should not have been expected to go against the written policy all by himself. Added to this was the fact that, at the time, the HHL area was covered by three different regional EA offices who did not necessarily have knowledge of each other's decisions.

> *[…]is where the organisational elements come in. So, we have somebody linked to flood risk or partnership-working that are two different people on a partnership meeting, but terms of different project teams on the ground linked to catchments that's a different unit within the environmental agency; the communication isn't always perfect. Plus, up until the first of April last year their regions met at the Humberhead Levels; so, there's three different regions; and two mainly, but that meant that the teams struggled as well, so Yorkshire doesn't necessarily talk to the West Midlands and the Midlands manage Birmingham […] say there probably wasn't the right engagement at a high level within the environment agency to cascade down to the staff*[1596]

The above examples demonstrate how decisions on simple things such as a planning permission for a pond or a water abstraction license, which take place on the ground at lower hierarchical levels, made by people whose paths did not intersect with the HLP or the NIA group meetings, delayed or stopped the delivery of otherwise well-planned small and large-scale projects with great potential. However, this does not mean that the legal framework is too rigid to allow for managing adaptively. This is evidenced by the fact that the

[1596] Interview with HHL NIA programme manager (YWT) (Doncaster, 24 April 2014).

HHL NIA generally delivered the expected outputs and was a successful initiative within its limitations;[1597] as the analysis on the Wetland Advice showed, the legal and regulatory framework and administrative practice allowed for flexible, formalities-free management. Furthermore, both the EA and the planning authorities enjoy a broad margin of discretion when deciding on permits. Even when there is established practice or even a management plan like the CAMS, these are not binding for the decision-makers.

Hence, strictly speaking, law was not what imposed constraints on the NIA projects. What needs to be reconsidered is how the NIA Partnership operated and communicated its ambitions to the administrative authorities and vice versa. In the Idle Washlands case, the conflict with the EA might have been avoided or resolved with wider representation of the agency departments within the NIA decision-making groups and/or with better communication of NIA projects to the EA staff on the ground who have the final say when it comes to granting licenses.[1598]

Collaborative adaptive management is not about the size of the network but its consistency; that is to say, it requires carefully choosing which individuals – not just organizations or agencies - to include in order to realize the seamless implementation of projects. Hence, in the case of the Idle Washlands, had the people dealing with water abstraction licenses been involved from the outset, it is likely that they would have either: i) excluded the possibility of granting a license from the beginning and as such would have discouraged the Partners from including the project in the NIA management plan in the first place thereby saving time, money and manpower; or it would have required the Partners to redesign the project to make it possible for the license to be granted; or ii) negotiated better and secured a license by presenting strong evidence of the beneficial effect of the project to the area's natural environment and the non-compromise of EA objectives.

[1597] Interview with the Humberhead Levels Partnership Secretariat (NE) (York, 1 April 2014)

[1598] Despite having the discretion to issue or not to issue a license, it is highly unlikely that the officers on the ground would go against the agency's established strategy or practice unless it was the agency's policy to give great weight to NIA objectives when making their decisions.

Another way to address these problems would be to introduce general planning permissions and licenses modelled on the permitted development rights, for certain projects deemed part of the NIA planning phase. Hence, instead of having to get individual planning permission for every pond, general permits for all ponds that need to be created to promote NIA objectives could be issued. It could be suggested to give the HLP development control or licensing powers e.g similar to the National Park Authorities for the areas within the NIA boundaries. This would most likely reduce the number of undelivered projects, due to the lack of planning permission or a license and guarantee consistency on decisions. However, collaborative decision making like the one that took place in the NIA in terms of setting aims and objectives and project design, or decisions taken through multipartite negotiation and/or compromise during project implementation, must ensure accountability. Hence, the partnerships should like the NP authorities be established in law as non-departmental government bodies and given statutory duties and powers, while the NIA should become a statutory designation. But changing the nature of the Partnership would result in a loss of flexibility and the introduction of many formalities, which might compromise the effectiveness of the scheme.

Therefore, in schemes like the NIA programme, planning permission, licencing and any other type of administrative consent should remain with the respective public authorities but be considered, at least in general terms, during the planning stage instead of that of implementation. The success of the HLP was that it had sitting on its Board representatives of most of the relevant administrative decision-making authorities. These individuals should act as liaisons between the NIA and their respective competent authorities in order to ensure that the people from the relevant departments (e.g planners) are there participating in the meeting and giving advice or if that is not feasible, conveyed the partnership's plans. Better communication and information flow across NIA groups, HLP partners and their staff is paramount. On a policy level, the NIA mentality should be embedded in public administration best practice, so that promoting its objectives becomes an issue of consideration during decision-making.

9.3.3 Agri-environment Schemes

Environmental Stewardship is a highly useful – if not the most useful - instrument in the armoury of nature conservation. Notwithstanding its valuable contribution to biodiversity objectives outside protected areas, the ES schemes at the time of the NIA implementation lacked flexibility to adapt to local and regional conditions. Having not been designed for large-scale ecosystem based management the AES schemes follow traditional models of property based regulation and fixed-time frames of implementation, which are are incompatible with the dynamic character of nature. This section identifies the shortcomings of environmental stewardship that prevented the Partnership from using AES to implement NIA projects to their full potential. Some of the difficulties in using AES had to do with the way AES is administered; these issues are easier to address with better communication between NE and the NIA Partnership, better temporal alignment of the environmental stewardship and NIA projects and more strategic use of agri-environment schemes. The use of AES was however further limited due to the way the scheme is designed, which allows no room for management to be adapted to the specific ecological and social-economic conditions.

To begin with, by the time the NIA scheme was launched the HLS and ES schemes were about to end. This meant that the NIA had very limited access to the environmental stewardship as a means to finance land management on private land. A very small amount of new agreements (six) were made with landowners within the NIA scheme. This is not to say that agreements already in force did not benefit the NIA objectives. HLS agreements made a significant contribution to improving the connectivity of the wider landscape and complemented capital works funded by the small capital grant. But given that most of the agreements pre-existed the NIA they did so by operating in a parallel rather than strategic comprehensive way with NIA projects.

Another issue was that management agreements were administered by NE and their compliance was ensured through inspections by the Rural Payments Agency. Hence, the NIA partnership could not enter into a

management agreement with a landowner through the lead body in the same way they allocated funding from the small capital grant. HLS agreement followed a different process through NE; a negotiation process between the landowner and the NE advisor that would result in a mutually acceptable agreement. It should be expected that when entering and shaping the agreement NE would first and foremost consider how it would serve their own priorities. Hence, it is likely they would prefer to offer agreements to landowners with agreements about to expire; if there was no continuation of money all the hard work and any benefits from it were going to be lost.[1599] Additionally, given that environmental stewardship is a national scheme, Natural England would prefer to refrain from showing any favouritism towards specific landowners by having farms accepted into the stewardship only because they would undertake management tied to the NIA priorities.

Then there are limitations related to the way environmental stewardship is designed to operate. Could AES actually fund the type of management the NIA projects required? As mentioned, the AES were not individually negotiated agreements; or more precisely, there was some scope for negotiation, which was nevertheless limited by the pre-set management options that the scheme offered.[1600] Having said that, in no case should the contribution of the AES not be appreciated, neither does it imply that the pre-set options based scheme is extremely rigid and over-restrictive to the implementation of an adaptive approach. The discussion with the NE land advisor responsible for the environmental stewardship in the wider area[1601] reveals that there was a degree of flexibility; it also confirms what was stressed in Chapter Six about a partnership approach based on negotiation and cooperation being central to the way nature conservation operates. In the end, the quality of the agreement and its potential impact is reflected in the NE

[1599] Interview with NIA land advisor (YWT) (Doncaster, 30 May 2014).

[1600] *See* discussion *supra* ch.6, s.6.2.1.3.2.

[1601] The interviewee was an AES advisor working i.a. on areas that fell within the HHL NIA designation. He worked with the NIA partnership, participating in the working groups and offering advice and experience to the NIA advisor. He was not working for the NIA though.

advisor's dedication and willingness to make the best use of the available options and negotiations skills:

> *However individual schemes can be significantly tailored to fit circumstances. The choice of management options is determined by the targeting statements and local priorities (which in the HHL NIA is mainly farmland birds and wetlands). As such any agreement would be expected to contain a significant number of options favouring these priorities. The individual prescriptions can also be tailored to fit circumstances, and the final result would be determined by discussion between the landowner and the NE advisor, with the Advisor having a certain minimum requirement that would need to be met before agreeing to the scheme. While the Advisor should keep in mind the wider aspects, and try and tie in individual agreements to the broader conservation objectives of the area, exactly which areas of land come forward are determined by the owners of that land, as are exactly which options are chosen, and inevitably the focus is on each agreement as it comes up.*[1602]

> *the NE advisor has to be happy that the agreement is worthwhile (in terms of money spent for biodiversity gain), so inevitably there are discussions/negotiations over what is wanted/acceptable, and over the detail of how the management options are to be delivered. While the Advisor may have an ideal of what can be done on a piece of land, this has to be manageable by the owner/occupier and fit with their farming scheme well enough so that the Advisor can be confident that the work/management will be done to an acceptable standard (i.e. will meet the detailed prescriptions and conditions for the individual options). It doesn't happen very often, but if the Advisor decides that what the owner is prepared to offer is not sufficient, then the agreement would not be proceeded with. In the last few years of the scheme it was much more targeted and so generally this did not happen*[1603]

[1602] Interview (in written form sent by email) with NE land advisor, 17 June 2014.
[1603] Interview (in written form sent by email) with NE land advisor, 17 June 2014.

Moving however to the NIA, Natural England officers agreed that the scheme was prescriptive and as such a 'little bit rigid' to be used in large-scale management. There had been cases where the NIA wished to amend certain options to fit their needs or fund management practices that were not included in HLS. As a result, the prescriptive nature of the HLS prevented the implementation of experimental projects:

> *Plus, in some cases, they won't fund certain things, so... There's one site on the edge of the river Humber, where they wouldn't allow, well HLS wouldn't allow them to graze a sort of reedbed /salt marsh [...] So, they could have chosen options, but the problem was that the outcome was a bit more experimental, so it's not being set up in a scientific way, but we will see if the management takes it somewhere. But, basically, HLS couldn't have allowed that. It was too one-way-or-the-other. With the options you've got, you could go for that, or that, while this is a little bit in between*[1604]

The HLS proved to be equally rigid in cases where ideally it had to be adapted to different ecological needs and to support the implementation of management in a comprehensive and strategic way. The pre-set management options offered by the scheme were the same across the country and could not be amended in order for management to be adapted as necessary to fit local needs. [1605] What further constrained the flexibility was the HLS ten-year commitment period. On the one hand, setting agreements of ten years' duration ensured management continuity, which was essential, given that conservation management needs time to bear results. On the other hand, this ten-year commitment period combined with a limited opportunity to modify their terms does not allow environmental stewardship to be flexible enough fully address changing conditions:

> *it's a ten-year agreement; while you can vary a little bit during the life span of that agreement, the prescriptions tend to stay the same*

[1604] Interview with HHL NIA programme manager (YWT) (Doncaster, 24 April 2014).
[1605] Interview with NE land advisor (York, 21/6/2013).

throughout the whole ten years. So the current scheme is a little bit rigid when it comes to doing these large landscape projects […] cause we want to adapt it slightly, cause in area A the conditions might be slightly different from area B and that may be slightly different from area C but our prescriptions are a little bit rigid. Cause these projects are looking at all of those areas A,B,C and we try to apply the same sort of prescriptions to all those three areas and the current schemes can be a bit rigid […]the Partners and the Board are looking at the whole picture; so ideally they would like to have a scheme which they could then adapt for area A, area B and C but it's all part of a cohesive plan whereas our agri-environment schemes at the moment they weren't designed to operate on a large scale; they were designed to work at area A, area B and area C individually not try to bring it together as a cohesive unit and that's one of the problems we've had

As a remark made by the NE office suggests, changes occurred not only to the ecological but also the socioeconomic conditions. In this respect, the HLS scheme was found to be not versatile enough to address fluctuation in agricultural economics:

[…] there's the high level stewardship scheme which is ***a ten year agreement*** *so it's on a much longer term but they have to deliver a lot more environmentally so they have to give up a lot more agriculturally […] so at the moment because the agriculture economics favour production, […] it makes it more difficult for us and partners to persuade them to go into high level stewardship. Now what they're getting, if they do enter […] they agree to deliver certain things and maybe around Wetland Habitat creation, you know… could be a whole number of encouraging birds or whatever it might be.*

Now in order for them to adapt their land management to wetland creation providing bird habitat, they get a payment from us and […] the calculation for that ***is based on income foregone.*** *So they give up some of their agricultural production income and we pay them to compensate for that loss… now… […] that income foregone calculation is based on […] right on*

> *the outset of the agreement but agricultural conditions and the agriculture economics will change throughout the lifespan of that agreement. So, we're constantly battling with this sort of toing and froing of agriculture economics, what we do say is that when* ***we can provide you certainty over a ten year period that you will get that amount of income*** *for doing that environmental land management work but during the life cycle of the agreement you know incomes will be fluctuating a lot.*[1606]

As a result, the ten-year fixed agreements did not allow any room for future modification to reflect changes in the agricultural economy or to make them more appealing to private interests. The terms/management options could be amended before the end of the ten-year period. This however significantly constrained the experimental element of adaptive management and made it difficult for the NIA or NE to implement an adaptive management cycle. Most NIA projects are three years long but adjustments in response to monitoring might need to be made even earlier than this.[1607] Hence, if there was a need for changes to the management carried out within the HLS, the ten-year commitment on the selected fixed options of the latter would have prevented it. At the same time, the amount of payment the landowners were to receive would have been the same regardless of whether they were giving up high or low-quality agricultural land. Thus, they would prefer to give up land of lower agricultural interest that might not have been the best site for a nature conservation project. [1608]

A final issue raised in Chapter Six was that of multipartite agreements. There had been cases where the NIA would ideally want the engagement of multiple landowners (e.g. in water course wetland improvements). But as discussed, in practical terms, even if the AES or any other funding scheme allowed for multipartite agreements it was very difficult to find landowners who were willing to work with each other. To return to environmental stewardship, the only available option would be to have everyone apply

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[1606] ibid.
[1607] Interview with the Chair of the Humberhead Levels Partnership (York, 21 June 2013).
[1608] Interview with HHL NIA programme manager (YWT) (Doncaster, 24 April 2014).

together as a group.[1609] They would still need to sign separate agreements since they would get separate payments, but it would be more strategic. Such an agreement presupposed that the wider area was under the responsibility of one person or at least a single group of advisors, with knowledge of the ecological features of the land but also the needs of their owners and their flexibility when it came to negotiation.[1610] Experience has however shown that working with a group of people is in practice extremely difficult. It takes a lot of time and a huge amount of effort to bring everyone together and agree on a commonly accepted plan, especially given the fixed management options, and with the tight time frames of schemes like the NIA it is uncertain to what extent such an approach would bear fruits or be value for money, time and human resources.

> *The ideal would be to have a broad-based multi-party agreement to cover a whole area, as this would maximise the chances of linking up options across an area. However, the current voluntary system makes that almost unworkable (I am not suggesting a compulsory scheme!) Each owner will have different requirements and getting many different people to sign up to the same thing requires a huge amount of effort. We have had to do this in the case of agreements on Common Land, where legally all the commoners have had to agree, and in some cases, this has required literally years of work to achieve, and can be put at risk if one person then changes their mind, or just is unable to work with others.*

To conclude, the case study confirmed the issues that were raised in Chapter Six in terms of the AES flexibility. The NIA or any similar future scheme could be the opportunity for more strategic use of the AES to provide a framework targeted at the NIAs or similar areas; offering tailored management instead of pre-set options for different areas and introducing a scoring system where scoring would be higher for management linked to NIA

[1609] Interview with NIA land advisor (YWT) (Doncaster, 30 May 2014).
[1610] Interview with NIA land advisor (YWT) (Doncaster, 30 May 2014).

priorities, as well as the opportunity to modify terms if adapting management to changed conditions or new information requires it. A more targeted and flexible AES would also allow or at least facilitate coordinated management among different landowners.

On the other hand, it should not be overlooked that having a fixed option AES is more time and cost efficient when compared to negotiating individual agreements. In any event there is going to be a bare minimum; if nothing else, at least there is some habitat feature on that land. So it is about finding the right balance between seeking optimal results and no results at all. Hence, the NIA and similar future schemes could provide the focus for a higher tier stewardship similar to the HLS. Management agreements would be offered to landowners of key priority areas targeted by the NIA partnership before negotiations on the exact content of the agreements commence. This will allow each NIA to make better use of the AES and align it with their own priorities - their local socio-ecological needs. Then, for the remaining land outside of these key areas, a lower tier of agreement could follow the pre-set options model for a bare minimum of conservation management. So, the management landscape could be something like the figure below

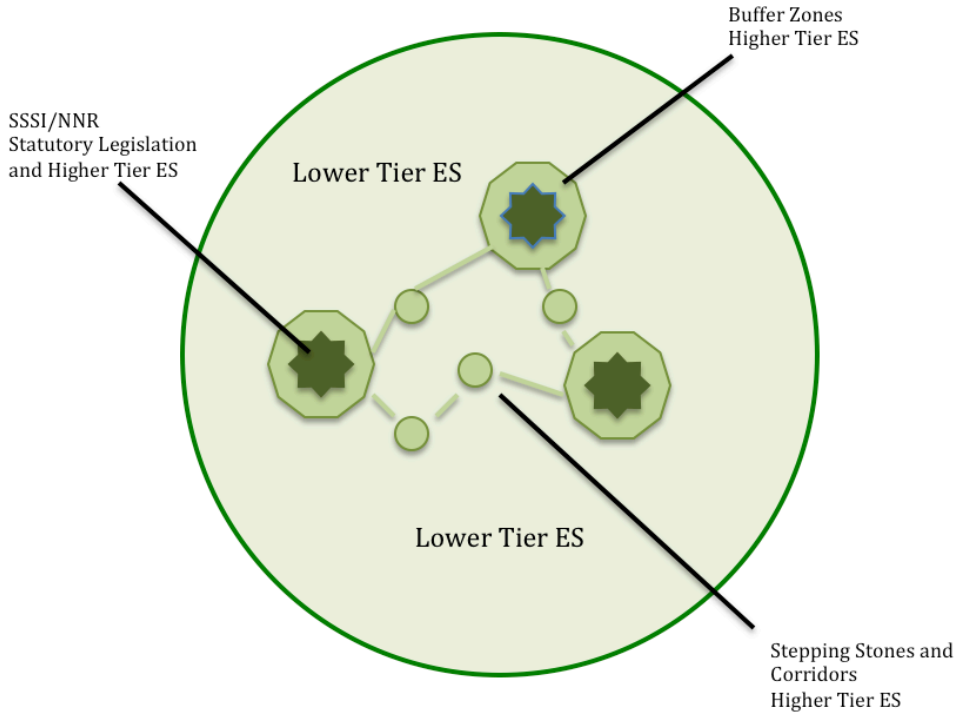

Figure 17 NIA focused Environmental Stewardship

9.3.4 Conclusions

The analysis of the practical implementation of pro-conservation land management in the HHL NIA leads to several observations. First, as a general conclusion, the management that took place therein was in key aspects adaptive and incorporated elements of both models of adaptive management that were developed earlier in this thesis. Experimentation and iterative learning were central - the scheme itself was a pilot programme - and science was a key driver of decision-making, especially in the planning stage. However, conservation and nature improvement were addressed in their socio-ecological context, hence socioeconomic objectives were added to the NIA priorities. Collaboration was vital in all stages from planning to implementation, either as a means to implement science-driven decisions/projects or to design management projects with multiple benefits (ecological, social, economic cultural).

The truth is that nature conservation management system in its entirety, from a legal/regulatory and practical perspective, was ripe to incorporate Lawton's recommendation for the NIA establishment. The idea of landscape conservation was was already gaining ground among the RSPB and the Wildlife Trusts, which had already set their own large-scale projects, 'working in partnership' had been central to the administrative authorities' policy and the NGOs and been working in the area for years, building good relationships, advancing science and having a large number of volunteers ready to do practical conservation work that would have otherwise never happened due to funding limitations.

Second, the theoretical models of participation and co-decision among multiple parties along an extensive network of people, will not work in practice, in real life, where decisions need to be made within strict time constraints. A tier-system of governance and decision-making, with seamless information and communication flow across all levels, is more realistic and thus more effective. This leads us to the next observation, which is the lack of non-essential formalities. In terms of large-scale projects that require the

broad cooperation of the farming community, an informal flexible system seems to have worked well; on the contrary there were concerns that making the scheme more formal would render the whole procedure more cumbersome, which would ultimately hinder the realisation of NIA objectives.

Third, important as it is to have the right synthesis of the Partnership or brilliant scientists providing scientific input, it is also crucial that we have the most suitable individuals to participate in the various groups and stages of management. The analysis showed that people with good communications and negotiation skills are essential and can substantially influence the degree of success of the programme.

Furthermore, although the interviewees agreed that flexibility is essential for the implementation of these type of programmes, they also considered legislation important to shape a framework for that flexibility to operate but underpinned by the requisite degree of security.

Finally, the case study revealed that while in general terms the legislative and regulatory framework were able to accommodate adaptive decision making, there were nevertheless cases were laws and regulations and/or the application thereof raised barriers to the implementation of certain projects. However, what needs to be stressed is that most of the problems were not due to primary legislation. Indeed, the English legal system proved to be flexible enough, mainly due to the wide discretion it allows for administration. Hence, in the majority of cases better communication and planning would resolve some of these issues; for others (e.g the AES) it is necessary to make certain changes in order to be able to make the most of adaptive management.

10 Conclusions

This thesis sought to address social-ecological complexity in the context of the English nature conservation legal and regulatory framework. It focused on ecological uncertainty and nature conservation conflicts that challenge the implementation of day to day nature conservation management.

It suggests that downwards biodiversity trends continue, because of the law's failure to address biodiversity loss in its dynamic social-ecological context. Nature conservation decision-making operates on a mosaic of complexity: unpredictable ecosystem responses, scientific uncertainty, constantly changing and diverse values, views and perspectives. As a result, nature conservation is faced with uncertainty and conflict.

In response, the thesis argued that the most recent understanding of ecosystems as social-ecological systems requires policy makers to explore more dynamic and less adversarial approaches to address ecological complexity and conservation conflicts. Such an approach is one based on adaptive management, seen through two different lenses: one as a science-driven mechanism emphasizing iterative decision making, aimed at addressing ecosystem uncertainty and unpredictability; and a second, as a framework for collaboration among interested stakeholders who despite their diverse interests share a common objective of nature conservation.

A science-driven model of adaptive management is a structured, iterative process that allows for robust decision making in the face of uncertainty. Decisions are constantly evaluated on the basis of continuous monitoring and adjusted on the basis of lessons learnt so as to reach the desired outcome. Collaborative adaptive management on the other hand, focuses on the complex interrelationships among multiple stakeholders that influence or are influenced by conservation decision making. Contrary to the law's traditional binary adversarial approach to conflict resolution, adaptive management is not prioritising interests but seeks to bring them together, ideally before conflict ignites.

Adaptive management models do not work in the abstract, but within a legal framework that delineates what can and cannot be done. This thesis sought to trace adaptive management models in the legal and regulatory framework for nature conservation in England and explore the extent to which the latter is resilient enough to accommodate adaptive decision-making. The purpose was not to track down well defined, structured adaptive management plans but to identify certain features in the law that collectively reflect an adaptive mentality. The analysis showed that, overall, the English nature conservation framework is not a rigid, cumbersome regime and although adaptive management is not prescribed in law as such - although occasionally some of its main features are - both models are nevertheless allowed to operate.

The analysis showed that the framework's flexibility is the combined result of specific provisions but also general characteristics of the English law, regulation and legal tradition that set the tone of its ultimate implementation. Central to this, is the considerable discretion the law traditionally affords to the administration. On very rare occasions does the law prescribe a certain course of action. Law sets a framework for action and leaves its implementation to the competent authorities. The wide administrative discretion combined with increased judicial deference enhances freedom and decision-making power in the implementation phase of legislation. The administration enjoys a margin of appreciation from granting permits and consents to prosecute SSSI related offences.

As a result, for the most part, conservation management can be as flexible as the administration wants it to be. The latter can promote an adaptive approach to management by monitoring SSSI status and modify the OLDs; or it can choose to sit tight and adhere to a static type of conservation. It can prosecute or advise; it can step away from conflicts or seek to resolve them through negotiation and consensus building. To this end, the administration has at its disposal a rich regulatory toolbox of instruments that it can choose to use in varied combinations and ideally converge to reach desirable outcomes. Central to this, is the power to enter into more flexible

(comparing to conventional legislation) contractual agreements that in principle allow management decisions to be tailored to the needs of local biodiversity, the adjustment of decisions and the use of collaborative management log-rolling techniques for balancing interests and preventing conflict.

The thesis further showed that the administration's policy is to opt for negotiation and consensus building instead of coercion. Looking at the guidance documents from both DEFRA and Natural England laying down administrative practice confirms this. Natural England officers act as both regulators and advisors, trying to reach acceptable solutions, recognising that positive management can only be achieved through genuine cooperation with private land managers. However, that flexible tools and procedures are preferred does not mean the system does not have any safeguards to secure a baseline of protection but also positive management. Any negotiation will always take place against the fallback of enforceable legislation/regulation (for designated areas) or the equally deterrent cancellation of agricultural subsidies.

In relation to development, instruments such as biodiversity offsetting are gradually being introduced to shift the balance slightly towards the interests of biodiversity - in the absence of stricter controls that would usually allow development to proceed - or towards the interest of human societies - when permission would otherwise been refused.

It was further stressed that there is scope to increase the flexibility of the legal framework so as to facilitate - not merely allow - adaptive decision making:

One remark made was that the agri-environment schemes as they currently stand - based on pre-set options - limit the scope for tailor-made decision making and thus restrict adaptability, both to local biodiversity special needs and local social conditions especially.[1611] Additionally, being

[1611] That the current form of AES schemes restrains the full potential of both models of adaptive management, scientific and collaborative, was established and concluded in chapters

ownership rather than ecosystem oriented they are not very well suited to underpin large scale ecosystem management, which is considered essential for biodiversity conservation. Introducing the opportunity for individually negotiated, multiparty management agreements would help nature conservation to move away from ownership-based decision-making and facilitate multipartite trade-offs.

A second remark was that statutory requirements for continuous monitoring should be introduced - at least with regard to designated sites - as this would allow valuable quantitative and qualitative information on site biodiversity to be generated, as well as increase the ability of the law to address problems that have arisen or are likely to arise from competing interests on the land.[1612] Such information could point to the need for revising not only day to day management but also laws, regulations and administrative practice.

Furthermore, it was suggested that it would be appropriate to introduce statutory requirements for public participation during the Habitats Directive art6(4) appropriate assessment - the current framework allows the competent authority to make wider inquires but does not mandate it. This would allow a wider range of information to reach the decision-making authority, which in turn would not only contribute to better informed decisions but also to the gradual establishment of individual databases for European designations to support future decision-making. Also, the potential for having the assessment undertaken by an expert body instead of (usually) the planning authorities, which lack any expertise on scientific matters, should be explored.

A fourth remark was the potential introduction of a statutory biodiversity offsetting requirement, at least for development affecting domestic designations. This would fit very well within the current National Planning Policy Framework and could contribute towards balancing the

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four (s.4.3.3.2.2 and s.4.3.4) and six (s. 6.2.1.3.2) respectively and was later confirmed in the case study s.9.3.3.

[1612] *See* s.4.3.3.1. and s.4.3.4.

interest of biodiversity and wildlife in situations where planning permission would otherwise be granted without any compensation for biodiversity loss.

Finally, introducing statutory requirements for management plans similar to the ones required for National Parks, at least for designated areas, will bind the administrative authorities to design them.[1613] This, apart from the practical implication of requesting adequate state funding for both its design and implementation would offer the opportunity for well-designed experimental and/or collaborative adaptive management plans. The competent authorities would have (or seek to have) at their disposal, from the outset, all necessary scientific data and information of social conditions and potential conflict and allow stakeholder consultations and collaboration throughout the process. The WCA 1981 management scheme - not as it is usually presented in the literature and policy documents as a deterrent for reaching agreements but as a collaborative process - could potentially provide such an opportunity.

Further research would be needed to assess the potential of these recommendations and whether they could be easily introduced in the current framework. Having said that, I would like to draw attention to the fact that none of these suggestions runs counter to the current legislation. On the contrary, it is at the discretion of the administration to effectuate all of them, with or without amendments to the legal framework or redesign of AES agreements. Making them mandatory would however secure their implementation.

The case study at the Humberhead Levels NIA confirmed what the first part of the thesis suggested: that the current framework is flexible enough to accommodate adaptive decision making. The management that took place in the HHL is a combination of both models of adaptive management: a science driven, collaborative adaptive management model. It was nevertheless more scientific in its design and more collaborative in its implementation, especially in relation to large scale projects. Hence, collaborative management was used

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[1613] *See* s.6.3.2.

in order to effectively implement science-driven objectives. However, the two way information flow across all tiers of governance ensured that social considerations were addressed during the design stage.

The HHL NIA case study confirmed some of the problems identified in Parts I and II of the thesis. One of these was the mismatch between ecosystem and public expenditure time scales. The timing of the project's initiation with the ending of Environmental Stewardship schemes meant that the Partnership had no access to AES money to fund activities to further NIA objectives. On the other hand, interviewees raised concerns over the viability of the scheme and the continuation following the end of the three years of funding. With no further funding to support management, all the good work done essentially goes to waste.

The case study also confirmed the fact that AESs as they stand are not flexible enough to support such large scale experimental management initiatives, as sometimes they were unable to be tailored to serve the NIA's objectives.

This also demonstrated the importance of having well-designed management plans, supporting the argument in favour of making them a statutory requirement. The NIA's funding was subject to a well-designed management plan, with monitoring requirements in place. The EA's refusal to grant the water abstraction license clearly demonstrates how vital it is that all issues and potential issues are considered from the outset, to eliminate future delays or project cancellations.

A further observation is that in large scale initiatives like this wide collaboration is not possible. On the one hand, farmers are unlikely to attend stakeholder groups and on the other, data protection issues necessitate formalities that landowners are not fond of. Furthermore, experience has shown that large groups are less able to work effectively and within specific time constraints. Hence, the model chosen was key stakeholder partnership in goal setting and wide collaboration in implementation.

Finally, the case study showed that central to management implementation is trust and good relationship with local communities but also

good communication across administrative authorities staff to ensure smooth application of agreed actions. Much of the day to day management takes place on an informal but effective basis and any further formalities are likely to significantly limit flexibility in decision making.

Having said that, we return to the role of law: what is the role of law in of all this? Is there a place for it, or are we gradually returning to voluntarism? The answer to this is definitely 'yes'. Past experience with voluntarism confirms it. Besides, the fact that environmental legislation in general relies less and less on traditional forms of legal intervention does not mean there is no place for it, or even more, for law in general. The complexity of environmental problems led lawyers to develop new and innovative legal measures to build up a rich toolbox to address them; the more, the merrier (in qualitative terms), considering that the fight against environmental degradation needs to be waged on many fronts. But there is still room for the 'administrative state'. There is much grey in nature conservation but there is also some black and white. Law has managed to strike a certain balance between being adaptive but also providing for a structural mechanism outlining limits that cannot be crossed. These are the limits within which adaptive decision making in any form can safely happen without undermining the coherence of the system and with this, the integrity of the natural environment.

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