REDD+ institutional design and implementation within local socioeconomic settings: evidence from Kenya

Joanes Odiwuor Atela

Submitted in accordance with the requirements for the degree of

Doctor of Philosophy

The University of Leeds

School of Earth and Environment

March 2015

The candidate confirms that the work submitted is his own, except where work which has formed part of jointly authored publications has been included. The contribution of the candidate and the other authors to this work has been explicitly indicated below. The candidate confirms that appropriate credit has been given within the thesis where reference has been made to the work of others

PhD Publications

Parts of this thesis have been published in the following:

International journals

Atela JO., Quinn CH. & Minang PA. (2014). Are REDD+ projects pro-poor in their spatial targeting? Evidence from Kenya. Applied Geography 52: 14–24.

Atela JO., Quinn CH., Minang, PA. & Duguma, LA (2015). Implementing REDD+ at the local level: assessing the key enablers for credible mitigation and sustainable livelihood outcomes. Journal of Environmental Management 157, 238–249.

Atela, JO., Quinn, CH., Minang, PA. & Duguma, LA (2015). Implementing REDD+ in view of Integrated Conservation and Development Projects: Leveraging empirical lessons. Land Use Policy, 48, 329-340.

Atela JO, Quinn CH and Arhin A. (under review): Where is Africa in the REDD+ debate? Actor typology and representation of Africa in the global REDD+ architecture. International Environmental Agreements, Politics, Law and Economics, INEA-D-15-00013.

Atela JO, Quinn CH and Minang PA. (under review): Implementing REDD+ at the national level: stakeholder engagement and policy coherences between REDD+ rules and Kenya's sectoral policies. Accepted in Forest Policy and Economics subject to revisions, FORPOL2049.

Atela JO., Duguma LA. Quinn CH. and Minang PA. (In preparation). Designing and implementing REDD+ in the context of sustainable development: a multilevel analysis of sources of institutional conflicts. Environmental Science and Policy.

Book chapters

Atela JO. (2014). Implementing REDD+; In carbon conflicts and forest landscapes in Africa. Ian Scoones and Melissa Leach (Eds), Routledge, pg 108-123 [Online link].

Atela, JO. (2014). Carbon in Africa's agricultural landscapes: A Kenyan case; In carbon conflicts and forest landscapes in Africa. Melissa Leach and Ian Scoones (Eds), Routledge, pg 79-93 [Online link].

Contributions to other book chapters

Arhin A. and **Atela JO.** (2014). Carbon Policies in Africa. In Carbon conflicts and forest landscapes in Africa. Ian Scoones and Melissa Leach (Eds), Routledge, pg 43-57 [Online link].*

Wambugu S., Chomba S. and **Atela J.** (2014). Institutional arrangements for climate smart landscapes. In climate-smart landscapes: multifunctionality in practice, Minang, P van Noordwijk, M., Freeman, O. E., Mbow, C., de Leeuw, J., & Catacutan, D. (Eds.) Nairobi, Kenya: World Agroforestry Centre (ICRAF), pg 257-273, [Online link].*

Working papers

Atela JO, Quinn CH., Minang, PA. & Duguma, L., (2014). Assessing the key enablers for REDD+ to achieve credible mitigation and sustainable livelihood outcomes at the local level: evidence from Kenya. *Sustainability Research Institute Working Paper No 72*, [Online link].

Atela JO and Quinn CH. (2014). Exploring the agency of Africa in designing REDD+ and the associated implications for national level institutions. *Centre for Climate Change Economics and Policy Working Paper No 198,* [Online link].

Atela JO., Quinn CH., Minang, P. & Duguma L. (2014). Nesting REDD+ into Integrated Conservation and Development Projects: what empirical lessons can

be drawn? *Centre for Climate Change Economics and Policy Working Paper No. 182*, [Online link].

Atela, JO. (2013). Governing REDD+: global framings versus practical evidence from the Kasigau Corridor REDD+ Project, Kenya, *STEPS Working Paper 55*,Brighton: STEPS Centre, [Online link].

Atela, JO. (2012). The Politics of Agricultural Carbon Finance: The Case of the Kenya Agricultural Carbon Project, *STEPS Working Paper 49*, Brighton: STEPS Centre, [Online link].

Media comment

Major boost for climate change resilience in Africa (2014). Comments provided to ScieDev.Net concerning the launch of adaptation fund for Africa during UNFCCC, COP 19 in Warsaw, [Online link].

Declaration of authorship

In writing the jointly co-authored journal articles and working papers, I received comments and editorial guidance from my supervisors. All the co-authors also provided comments. However, as the lead author, I designed the research and wrote the papers.

In writing solely authored working papers (iv and v) and book Chapters (i and ii), I received guidance and comments from my supervisors and other collaborating mentors from the STEPs Centre in Brighton. However, I designed the research and wrote the papers.

In making contributions a second author in to the book Chapters (*), I wrote the section on ‘Africa and emerging REDD+ mechanism’ in the first Chapter. In the second one, I wrote the section on case study analysis against climate smart institutional benchmarks. In both Chapters, I provided inputs and comments on all the sections.

I conceptualized and wrote all the online blogs and the media comment.

Acknowledgements

This PhD thesis is part of a journey that begun over 30 years ago, a time when I lived in a small village called *'Wahanda'* in western Kenya. I was and still is part of a household that entirely depended on forest ecosystem services for livelihoods. The livelihood experiences in the village stirred my passion to pursue research and career in forestry ecosystem services and associated opportunities for the poor. In this thesis, I received support in various ways from many people and institutions in different places.

I would like to thank the University of Leeds for providing the international scholarship through which the PhD degree was pursued. The constituent organisations within the University including the Africa College, Sustainability Research Institute also provided bursaries that supported my travels to different countries, institutions for conferences, internships and data collection.

It may not have been possible to complete this thesis without the endless support and patience from my supervisors at Leeds University, Professor Claire Quinn and Professor Piers Forster. Their guidance and intellectual support through each phase of the PhD was enormous. I was inspired by the logistical support and mentorship they offered in my pursuit of internships and fellowship opportunities with different international organisations during the PhD period. Such opportunities were useful in building networks necessary for disseminating the PhD outputs and also for post-PhD career opportunities.

The scoping study for this thesis received financial and intellectual support from the Future Agricultures Consortium through their Early Career Fellowship Programme and the Political Ecologies of Carbon in Africa Project (PECAP) both at the Institute of Development Studies, University of Sussex. Specifically, Professor Ian Scoones, Professor Melissa Leach and Dr Lars Otto Naess, all from the IDS, offered valuable mentorship during the fellowship. The NEPAD-

Kenya Secretariat provided institutional support for the scoping study. Many thanks to the NEPAD Kenya CEO Mrs. Lillian Omollo Mbogo who supported this work as a relevant initiative to the Secretariat's goals.

The World Agroforestry Centre (ICRAF), Science Domain 5 'Environmental services' and the ASB Partnership for the Tropical Forest Margin provided the necessary institutional support and funding for primary fieldwork in Kenya. My ICRAF supervisors, Dr Peter Minang and Dr Lalisa Duguma provided excellent guidance and enabling intellectual and institutional support for successful pursuit of fieldwork and write-ups. .

The United Nations University, Institute for Environment and Human Security in Bonn provided the internship opportunity through which interviews and discussions with the UNFCCC experts were executed for the global level analysis of REDD+ design. I appreciate Mrs Hussein Vilma and Professor Joern Birkmann for the logistical support they offered during the internship. Without this support, it would have been difficult to access the UNFCCC experts and facilities.

Special appreciations go to my field assistants Doreen Ngeti and Alice Mwagangi who patiently and efficiently assisted with the household questionnaires. I also thank the management of the Kasigau Corridor REDD+ project and the Kenya Agricultural Carbon Project for permitting access to their projects' sites for data collection. The responsiveness and kindness of local communities working with these projects are appreciated as well.

Finally, I thank my parents and friends for their moral support and prayers during the three and half year work on this PhD. Ultimately; nothing would have been possible without the grace and favour from the Almighty God. I am sincerely humbled and thankful to God for the amazing grace during the PhD work.

Abstract

Designing and implementing the Reduced Emissions from Avoided Deforestation and Forest Degradation (REDD+) depend on mutually interlinked actors, policies and socioeconomic factors across global, national and local levels. Unpacking the interaction between REDD+ design and implementation processes could holistically identify sources of institutional impediments to the programme's effectiveness in the context of sustainable development. This thesis examines the process of designing REDD+ rules at the global level and the implementation of these rules at the national and local levels in Kenya. The study develops and applies an integrated institutions and development analytical framework (IDAF) within which iterative document analysis, quantitative vulnerability indexing, project inventories and interviews are applied to gather empirical evidence.

Results reveal that multilevel institutional impediments face REDD+ design and implementation. At the global level, resource endowment determines actors' ability to design and implement methodological, financial and safeguard design rules for REDD+. However, due to resource limitation and reliance on REDD+ funds, the input of African States into the technical and institutional REDD+ design is weak. This creates gaps in technical capacity and funding required for implementing the global rules at the national level. In Kenya, the national implementation relies on expertise and funds from multilateral intermediaries but this support plays into national institutional gaps e.g. path dependency and sectoral competition for funds to create implementation deficits. Efforts to avoid 'institutional complexities' in delivering carbon funds confine REDD+ activities within the State-based forestry sector but exclude key land use sectors such as lands and agriculture. This sectoral exclusion subdues cross-sectoral expertise required for REDD+ implementation but most importantly, fails to

attend to underlying drivers of deforestation such as resettlement and agricultural mechanisation.

Even though delivery of carbon and associated funds are emphasised at the global/national levels, local level implementation of the Kasigau project relies more on delivery of pro-poor livelihoods that keep the poor out of forests. Benefit sharing mechanism with regards to livelihoods is a key source of interplay between REDD+ design and on-ground implementation but this interplay is a source of certain institutional conflicts: first, the interplay complicates multilevel institutional arrangements for REDD+. For supporting local livelihood needs, the local community favourably perceives the private actor implementing the Kasigau project but negatively perceives State regimes that have historically monopolised local resource decisions and benefits. This raises concerns as to whether the State, as the legitimate representative of local communities' interests in REDD+, can ably do so as expected by the UNFCCC. Second, the interplay elicits carbon-livelihood tension. Projects avoid investing/implementation within poor communities whose livelihood status could complicate delivery of carbon funds. Projects target relatively richer areas endowed with humid forest resources at 0.728; $p<0.01$, land title deeds at 0.552; $p<0.01$ and better access to water at 0.475; $p<0.01$. This raises concerns about emission leakage when deforestation shifts to forests hosted in poorer communities. Carbon-livelihood tension also renders equitable and pro-poor strategies in REDD+ ineffective. Strict carbon standards limit trade-offs between pro-poor livelihoods and forest protection especially when fluctuating carbon prices constrain funds needed for project operations and local livelihoods.

This study presents one of the first multilevel scientific analyses of REDD+ and contributes empirical evidence to literature on REDD+ governance. It reveals that the main sources of REDD+ implementation deficits emanate from the global and national institutional processes. As such, ensuring equity and rights

in REDD+ implementation is necessary but not sufficient for effective REDD+ implementation unless national level institutions are reformed and global carbon conditions and pricing harmonised with local livelihood needs.

Table of Contents

Chapter 3

Chapter 4

Chapter 10

List of Tables

List of Figures

List of Abbreviations

A/R:	Afforestation and Reforestation
CCBA:	Climate, Community and Biodiversity Alliance
CDM:	Clean Development Mechanism
CERs:	Certified Emissions Reduction
CFA:	Community Forest Association
COP:	Conference of Parties
DNA:	Designated National Authority
ES:	Environmental service
FCPF:	Forest Carbon Partnership Facility
IDAF:	Integrated Institutions and Development Framework
ICDP:	Integrated conservation and development project
ICRAF:	World Agroforestry Centre
IFAD:	International Fund for Agricultural Development
IPCC:	Intergovernmental Panel on Climate Change
KFS:	Kenya Forest Service
LULUCF:	Land Use, Land Use Change and Forestry
NAMA:	National Appropriate Mitigation Action
NEMA: (Kenya's)	National Environmental Management Authority
NTFP:	Non-timber forest product
PDD:	Project Design Document
PES:	Payments for Ecosystem Services
PFM:	Participatory Forest Management
REDD+:	Reducing Emissions from Deforestation and Degradation plus the role of conservation, sustainable forest management and carbon enhancement
R-PIN:	Readiness Idea Note
R-P:	Readiness Proposal

RRA:	Rapid Rural Appraisal
SBSTA:	Subsidiary Body for Scientific and Technical Advice
UNDP:	United Nations Development Programme
UNFCCC:	United Nations Framework Convention on Climate Change
VCM:	Voluntary Carbon Market
VCS:	Voluntary Carbon Standards

Chapter 1

Introduction

'After briefly reviewing how the often-recommended solutions have worked in the field, I suggest that institutional theorists move from touting simple, optimal solutions to analysing adaptive, multilevel governance as related to complex, evolving resource systems'

[Ostrom 2008:1]

1.1. Introduction

The severity, complexity and cross-boundary nature of climate change causes and impacts has informed a variety of global environmental regimes. These regimes bring together multiple State and non-State actors to collectively formulate and implement climate change solutions in the context of sustainable development. The United Nations programme on Reducing Emissions from Deforestation and forest Degradation (REDD+) is a global regime designed to mitigate climate change (UNFCCC, 2007). REDD+ includes schemes to provide payments for forest carbon to incentivise forest protection and avoid greenhouse gas (GHGs) emissions, mostly in developing countries (Stern, 2006). The incetives are also expected to enhance sustainable forest management, biodiversity with benefits to livelihoods and development (Bond, 2010, Angelsen 2008c). Designing the rules governing the implementation of REDD+ is referred to as REDD+ institutional design. The institutional design brings together multiple actors to negotiate and contribute resources and expertise in designing various REDD+ components within the United Nations Framework Convention on Climate Change (UNFCCC). The resulting rules are implemented within national policies and local settings of developing countries where forests are hosted. The overall aim of this thesis is to analyse the process

of designing REDD+ rules at the global level and the implementation of these rules in an African policy and socioeconomic setting. In doing so, this research will identify sources of institutional conflicts in designing and implementing REDD+ in the context of sustainable development. This Chapter first outlines the study's background and the research needs. It then presents the study's main aim, objectives and contributions to literature and policy.

1.2. General background of climate change and forests

Global climate change presents the greatest threat to humanity in current times. Climate change results from anthropogenic emission of greenhouse gasses (GHGs) mainly carbon dioxide (CO_2) into the atmosphere. The GHGs trap radiated heat from the earth's surface and retains it within the atmosphere resulting in persistent increase in atmospheric temperature (IPCC, 2000). Since 1980s, the average global surface temperature has risen by 0.74°C resulting in a range of social and ecological impacts on human welfare (IPCC, 2007a).

The impacts of climate change are vast, interlinked and widely documented. They range from imbalances in global hydrological cycles (IPCC, 2013), regional precipitation declines (Malhi and Wright, 2004), threat to food security (IPCC, 2013, Challinor et al., 2014) and overall deterioration of human wellbeing at the local level (UNDP, 2007). These impacts are however disproportionately distributed across regions. More severe impacts are felt in developing countries which contribute relatively low GHGs emissions compared to developed countries (IPCC, 2013, UNDP, 2007). For instance, Africa contributes less than 3% of the global GHGs emissions (UNDP, 2007), yet suffers the most impacts compared to other regions of the world (Hulme et al., 2001, Lobell et al., 2011, IPCC, 2007a, IPCC, 2013, IPCC, 2014).

Africa is particularly vulnerable to climate change due to its economic dependence on agricultural activities that are directly linked to climatic

variables such as rainfall, yet the continent's low income status impedes its ability to tackle associated impacts of climate change (Morton, 2007). Due to climate change, rainfall variability in Africa has become a major concern since the mid-1970s (Malhi and Wright, 2004). Varying rainfall over time and space already causes severe declines in yields of rain-fed crops resulting in hunger among smallholder farmers who are the main food producers and the majority in Africa (World Bank, 2008). In the absence of appropriate remedies, crop yields in some African countries could decline by as much as 50% by 2020 (IPCC, 2007c). Expectedly, such yield declines would further constrain food access due to increases in prices of major food crops such as wheat, rice and maize (IFPRI, 2010). Efforts to cope with problems of food insecurity drives many smallholders-who are the main food producers- to enchroach forests for alternative farming niches or charcoal procudction (Lawlor, 2014, Lambin and Meyfroidt, 2011).

Efforts to address climate change causes and impacts have evolved since the 1992 Conference on Environment and Development (UNCED, 1992). The UNECD meeting achieved a key milestone in the global fight against climate change by bringing together over 190 States to collectively commit to an international climate convention, the UNFCCC (UNFCCC, 1992). The UNFCCC was established as a platform for States and non-State actors to negotiate ways of solving climate change threats in the context of sustainable development (Matthew and Hammill, 2009, UNFCCC, 1992). Sustainable development is defined by the World Commission on Environment and Development (WCED, 1987:43) as: 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs'. Article 3.4 of the UNFCCC declares that climate change policies should aim to achieve sustainable development outcomes such as conservation, socioeconomic development and poverty alleviation in developing countries (UNFCCC, 1992).

Through the UNFCCC, the international community has established mitigation and adaptation as means to addressing climate change (UNFCCC, 1998). Mitigation involves anthropogenic interventions to reduce the sources or enhance the sinks of GHGs (IPCC, 2001b). Adaptation on the other hand refers to the adjustment in natural or human systems in response to climatic impacts in a manner that moderates harm or exploits beneficial opportunities. Both mitigation and adaptation are expected to achieve sustainable development by spatially and temporally harmonising socioeconomic development with environmental conservation in a manner that safeguards the wellbeing of current and future generations (UNFCCC, 1992). The UNFCCC talks have specifically achieved commitments on mitigation through negotiated policy instruments targeting payment/markets for ecosystem services (PES). PES allows GHGs credits-CO_2 equivalent to be traded between States and non-State Parties, thus enabling Parties to offset and maintain their emissions within allowable levels (Thomas and Twyman, 2005).

The role of forests in global climate change mitigation through carbon markets is now widely recognised (IPCC, 2007b, Stern, 2006). Through their ecosystem services, forests regulate the global carbon cycle (Brown and Lugo, 1982). Forests absorb CO_2 from the atmosphere and store it in their biomass thus preventing its release into the atmosphere (Brown and Lugo, 1982). Forests store close to half of the terrestrial carbon, but if destroyed e.g burnt, the stored carbon would be released into the atmosphere causing further global warming (IPCC, 2000).

Forests were therefore included in the UNFCCC's Kyoto Protocol as part of the Clean Development Mechanism (CDM). The Kyoto Protocol is the first international agreement on climate mitigation (UNFCCC, 1998). It committed industrialised nations to utilise carbon markets in meeting their emission reduction targets of 5.2% below 1990 levels during the 2008-2012 commitment period. In the search for a post-Kyoto climate agreement, REDD+ emerged.

REDD+ allows developing countries to fully commit their forests to international carbon markets as a means to mitigating climate change.

1.3. REDD+

REDD+ is a UNFCCC programme designed to mitigate climate change and achieve sustainable development through forestry activities (UNFCCC, 2010). REDD+ was formally recognised as part of the UNFCCC climate regimes in 2007 during 13th Conference of Parties (COP) to the UNFCCC. The main justification for REDD+ is drawn from the scientific evidence that deforestation causes 10-20% of global GHG emissions (IPCC, 2007b) even though this figure is reducing according to the latest IPCC report (IPCC, 2013). Avoiding this deforestation could cost-effectively (Angelsen, 2008b, Stern, 2006) offset about 10-30% of annual GHGs emissions (Canadell and Raupach, 2008, IPCC, 2007b, Ciais et al., 2014). Geographically, deforestation mainly occurs in developing countries where most tropical forests support livelihoods and development (IPCC, 2000, IPCC, 2007b, Lawson, 2014). As such, the basic principle about REDD+ is that developing countries that are able to protect their forests and avoid emissions, should be financially compensated for doing so (UN-REDD, 2010). Since its formal recognition as part of the international climate agenda, REDD+ has attracted interests from diverse actors with mixed implications for sustainable development, especially for developing countries where it is spatially and institutionally targeted. In the mix of multiple actors and hopes, key research questions have emerged.

1.4. Research need

REDD+ is designed at international climate negotiations but implemented at national and local levels in developing countries. The design process involves multiple actors drawn from global level organisations, such as UN agencies and intergovernmental and nongovernmental agencies, national level State agencies

as well as local community alliances, all playing varying roles in informing locally implementable REDD+ rules (Corbera and Schroeder, 2011). For instance, States provide expertise, resources, legal framework and enforcement mechanisms for REDD+ within national jurisdictions (Phelps et al., 2010b). Non-State actors such as the private sector, multilateral and bilateral actors are involved in mobilising resources for REDD+ (Bernard et al., 2014, Reinecke et al., 2014, Peskett et al., 2011, Rosendal and Andresen, 2011, Thompson et al., 2011). The local communities on the other hand, mainly expect livelihood benefits and recognition of their forests rights (Ghazoul et al., 2010, Griffiths and Martone, 2009, Pokorny et al., 2013, Schroeder, 2010).

The multi-actor aspect of REDD+ remains the main source of institutional complexity for the programme's design and implementation (Corbera, 2012, Angelsen et al., 2012, Brockhaus and Angelsen, 2012, Visseren-Hamakers et al., 2012, Corbera and Schroeder, 2011). On one hand, actors' roles are expected to be complementary through expertise and resources (Angelsen, 2008b, Corbera and Schroeder, 2011). On the other hand, studies confirm that actors have varying interests in REDD+ ranging from profit generation, economic development and livelihood benefits (Visseren-Hamakers et al., 2012). The actor interactions in REDD+ design process potentially create either institutional coherences or conflicts that affect the programme's implementation at the national and local levels (Visseren-Hamakers et al., 2012). As such, there is need to unpack such complex interactions to determine how decisions are made and to understand the compatibility of resulting REDD+ design rules with existing circumstances of targeted developing countries (Meridian Institute, 2009, Visseren-Hamakers et al., 2012).

Compatibility of REDD+ with a developing country circumstances can be viewed in the context of national policies as well as sub-national and local socioeconomic circumstances (Angelsen et al., 2009). Existing national policies can impede or promote the implementation of REDD+. Scientific evidence

shows that national policies, especially those outside forestry sector, are key drivers of deforestation in many developing countries (Brown et al., 2008). As such, there is growing call for research that informs the necessary institutional reforms needed to address underlying drivers of deforestation for REDD+ to be effective (Alemagi et al., 2014, Brockhaus et al., 2013, Minang et al., 2014b).

Scientific evidence continues to emphasise that globally designed REDD+ rules carried within sub-national projects will have to be filtered through sub-national and local socioeconomic settings as part of implementation (Wertz-Kanounnikoff and Kongphan-apirak, 2009, Lin et al., 2014). Sub-national and local circumstances are diverse. They include various types of forests and their distribution, ownership, use and management (Bluffstone et al., 2013), land tenure systems (Chhatre et al., 2012), poverty rates, water access (Jindal et al., 2008) as well as existing conservation interventions such as Integrated Conservation and Development Projects (ICDPs) (Blom et al., 2010). It is an established fact that poor socioeconomic development impeded the implementation of CDM in most poor countries and communities (Pearson et al., 2006, Saunders et al., 2002, Silayan, 2005). Even in REDD+, studies already caution about potential exclusion of poor communities especially in dryland areas (Bond, 2010) due to certain globally linked rules that may not resonate with socioeconomic circumstances of certain communities (Thompson et al., 2011, Vatn and Vedeld, 2013). As such, there is need to verify the compatibility between global REDD+ rules and existing socioeconomic circumstances so as to avoid mistakes made in the CDM (Ebeling and Yasué, 2008).

Global decisions on REDD+ now include a range of safeguard measures (UNFCCC, 2010: appendix 1/CP. 16) aimed at ensuring that REDD+ design and implementation are in line with sustainable development. These safeguards include social measures for ensuring equity and rights of local communities to participate and benefit from REDD+. In doing so, REDD+ activities are expected to alleviate poverty and reduce resource inequalities. The safeguards

also include environmental measures including stabilisation of natural resource base through forest and biodiversity protection as well as sustainable forest management. Key international agencies such as the World Bank that are currently involved in REDD+ view these safeguards as a potential opportunity for REDD+ to spur pro-poor development among communities who were otherwise excluded from the CDM (UN-REDD, 2010, World Bank, 2011). Some scholars however acknowledge that implementing the safeguards in practice could be influenced by the local circumstances mentioned above (Chhatre et al., 2012, McDermott et al., 2012). At the same time, some studies acknowledge that the local circumstances could foster support and offer lessons for achieving the safeguards (Blom et al., 2010, Sills et al., 2009). As such, there is additional need for scientific evidence on the interactions between ongoing REDD+ demonstration projects with local settings to identify enablers and impediments of safeguards (Angelsen et al., 2012, Visseren-Hamakers I, 2012, UNFCCC, 2013, UNFCCC, 2011).

In summary, this section shows that designing and implementing REDD+ in the context of sustainable development is determined by mutually interlinked actors, policies and socioeconomic factors across global, national, sub-national and local levels. Therefore, there has been growing call for multilevel analysis of REDD+ to provide scientific insights and distil informative lessons needed for the programme's effective design and implementation (Visseren-Hamakers et al., 2012, Corbera, 2012, Korhonen-Kurki et al., 2013). To contribute to addressing this research need, this thesis pursues a multilevel analysis of REDD+.

1.5. Study aim and objectives

The overall aim of this thesis is to analyse the process of designing REDD+ rules at the global level and the implementation of these rules in an African policy and socioeconomic setting. In doing so, this research will identify

sources of institutional conflicts in designing and implementing REDD+ in the context of sustainable development.

The study takes Kenya as a case country for understanding how global rules are implemented. The study achieves its aim through the following specific objectives:

1. To explore the process of designing REDD+ at the global level with specific focus on the agency of African States in the process:
    i. To explore actors and their roles in designing REDD+ rules at the global level.
    ii. To explore the representation of Africa (African States) in the global REDD+ design process.
2. To analyse how global REDD+ rules are implemented at the national level:
    i. To analyse the participation of sectors and stakeholders related to deforestation in implementing global REDD+ rules at the national level.
    ii. To analyse the interplay between global REDD+ rules and national sectoral policies on forests, land and agriculture.
3. To analyse the interactions between globally linked REDD+ projects with sub-national socioeconomic factors:
    i. To develop a sub-national vulnerability index map for Kenya.
    ii. To evaluate the design of REDD+ projects and their spatial locations across the vulnerability map.
    iii. To assess the linkages between REDD+ projects design and sub-national socioeconomic development.
    iv. To analyse how the linkages between REDD+ projects and socioeconomic development relate to global and national processes.
4. To analyse the interaction between globally linked REDD+ projects with local livelihood assets:

i. To evaluate the design and community engagement modalities of a globally linked REDD+ project.
ii. To identify the livelihood assets that are influential to the project's activities (forest protection).
iii. To analyse project impacts on livelihood assets and forest conservation.
iv. To assess ways in which the local community can contribute to REDD+ design and implementation.
v. To analyse the role of the State in the project's implementation.

5. To identify and analyse lessons that a globally linked REDD+ project can draw from pre-REDD integrated conservation and development projects (ICDPs):
    i. To assess design differences and overlaps between the REDD+ and ICDPs.
    ii. To identify positive lessons from the ICDPs and whether they are adopted by the REDD+ project.
    iii. To analyse how the REDD+ project corrects negative experiences and the associated implications.
6. To identify sources of institutional conflicts in designing and implementing REDD+ in the context of sustainable development:
    i. To review empirical findings on objectives 1-5.
    ii. To discuss the empirical findings and identify areas of conflict and synergies in designing and implementing REDD+.
    iii. To provide policy recommendations needed for effective design and implementation of REDD+ in the context of sustainable development.

1.6. Kenya

Kenya was chosen as a case country for understanding how global rules are implemented at the national level (see subsection 4.2.2 for the justification). Kenya is located in East of Africa at 0.4252° S, 36.7517° E. Eighty percent

(80%) of Kenya's terrestrial land is classified as semi-arid to arid (ASALs) while the other parts are humid and semi-humid. Kenya's economy and livelihoods depend more on agriculture and tourism, both of which significantly depend on forest provisioning services (Republic of Kenya, 2010a). The country experiences climatic vulnerability especially from high rainfall variability. This manifests through frequent droughts and hunger that have evolved from 20 year cycles two decades ago to a three year cycle a decade ago and now almost yearly (Republic of Kenya, 2010a).

Kenya hosts a diversity of forests including indigenous closed canopy, plantation forests, mangrove and woodlands. The current forest cover is 6% of the country's land area, approximately half the coverage five decades ago (Republic of Kenya, 2013a). According to FAO (2010b), Kenya loses about 12,000 hectares of closed canopy forests annually. Kenya has however prepared a very ambitious climate change action plan through which the country hopes to address climate vulnerabilities and reverse forest losses (Republic of Kenya, 2013b).

Kenya is actively involved in the the international climate negotiations and is a signatory to the UNFCCC (in 1994) and the Kyoto Protocol (in 2005). The country has prepared climate plans in line with these international commitments. The plan targets REDD+ as a key intervention for achieving emission reduction commitments, protecting forests and supporting climate compatible development. Specifically, REDD+ would achieve this through rehabilitation of degraded lands and protecting existing forests, especially those in dryland areas. Rehabilitating and protecting dryland forests are targeted as cost-effective strategies because of the available land, relatively low populations, yet increasing forest exploitation in these areas. Kenya alongside 47 other developing countries (16 from Africa) are now participants to the REDD+ readiness process within the World Bank's Forest Carbon Partnership Facility (FCPC) and the UN-REDD. The country host some of the first

generation carbon projects working in diverse agroecologies(Cerbu et al., 2011, Diaz et al., 2011). e.g. dryland forests that dominate most parts of sub-Sahra Africa. As such, Kenya's REDD+ institutions and actions provide a suitable case for understanding how global REDD+ is implemented within national and local settings (see detailed justification in section 4.2.2).

1.7. Empirical and applied contributions of the study

This study adopts a multilevel, mixed method and interdisciplinary analysis of REDD+ and makes multiple empirical and applied contributions to literature and policy. The key contributions include:

This study contributes new scientific evidence from a multilevel analysis of a global environmental regime. This is an important contribution to literature on REDD+ governance. Research on REDD+ has mainly focused on specific components of REDD+ e.g. global governance, national safeguards or local livelihood impacts (Visseren-Hamakers et al., 2012). However, there is little empirical analysis linking global REDD+ design process to implementation at the national and local levels in a coherent manner. It has been acknowledged that multilevel analysis can be complex but is best placed to unlock institutional bottlenecks and opportunities for achieving sustainable development through REDD+ and emerging global environmental regimes targeting national and local actions (Visseren-Hamakers et al., 2012). In pursuing a multilevel analysis, this study makes a methodological contribution by developing and demonstrating the application of an integrated institutions and development framework (IDAF). The IDAF focuses on the process of designing environmental rules at the global level and their implementation in practice. It can be adapted for analysing different global environmental regimes targeting national and local level implementation, especially in developing countries.

This study contributes to literature on institutional interplay. Specifically, the study analyses the interplay in the process of designing global REDD+ rules

and the implementation of resulting rules at the national level. Through this, the study demonstrates evidence that institutional interplay is not just about the established rules, as assumed in most studies, but is also embedded in the process of making the rules themselves. This brings a new insight to the theory of institutional interplay. The theory emphasises that if interacting institutions have similar objectives then the outcome of the interactions would be positive. However, this study demonstrates that even though interacting institutions could have similar objectives, a negative interplay may result from the process of designing these institutions. As such, studies should shift analytical focus to the institutional processes as a crucial source of interplay. Evidence on global and national institutional processes especially areas of negative interplay between REDD+ design rules and national sectoral policies is informative to policy reforms needed for addressing underlying drivers of deforestation in Kenya and elsewhere.

In analysing how REDD+ projects interact with sub-national development factors, the study empirically links quantitative vulnerability analysis to a climate policy. This is a crucial contribution to literature on climate compatible development (Stringer et al. 2014, Mitchell and Maxwell, 2010). The analysis provides useful insights for the ongoing formulation of climate compatible development policies in Kenya and other African countries as well.

Finally by assessing the implementation of a globally linked REDD+ project at the local level, this study contributes empirical evidence to literature on REDD+ implementation at the local level. A novel contribution of this analysis is the evidence on how people, local assets and interventions can contribute to implementing REDD+. This is particularly new because while most empirical studies evaluating the implementation of REDD+ projects (Boyd et al. 2007, Mustalahti et al., 2012) have commonly investigated the impacts of REDD+ project(s) on the local people's livelihoods, these studies do not explicitly reveal how the local settings could support REDD+ itself. By revealing which local

assets are crucial for REDD+ implementation, this study unpacks opportunities and potential strategies that Kenya national climate plan and sub-national projects could adopt to ensure effective REDD+ implementation.

1.8. Definition of key terms

In global environmental governance literature, various terms e.g. 'institutions' 'actors' among others have been used and interpreted differently in various contexts. It is therefore important to provide working definitions for such terms as applied in this thesis.

Institutions: This thesis adopts a combination of definitions drawn from both political ecology and political economy perspectives to define institutions as formal and informal rules as well as interactions among actors involved in making and implementing these rules within particular socioeconomic contexts (see subsection 2.4.1).

Policy implementation deficit: This thesis adopts the definition by Jordan (1999) to define implementation deficit as failure by a policy to meet the original goals either because the policy itself is not translated into action or the policy is translated into action but fails to sufficiently solve the targeted problem(s).

Sustainable development: The thesis adopts the definition by the World Commission on Environment and Development (WECD) that defines sustainable development as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (WCED, 1987:43) (see subsection 2.2.1).

Actors: This thesis adopts the definition provided in the earth system governance framework and the policy process analytical framework to define actors as individuals, organisations and groups involved in decision making on

a particular policy regime (Biermann et al., 2010, Keeley and Scoones, 2003) (see subsection 2.4.3).

Agency: This thesis adopts the definition of agency provided in the earth system governance framework (Dellas, 2011) to define agency as the ability of actors to participate in policy making process and prescribe rules that define ways and means of interactions between humans and their natural environment (see subsection 2.4.4).

Livelihoods: This thesis draws from the sustainable livelihood framework to define livelihoods as capabilities, assets (stores, resources, claims and access) and activities required for a means of living (Chambers and Conway, 1992; DFID, 1999) (see subsection 2.5.1).

1.9. Thesis outline

The thesis is structured into ten Chapters. Each Chapter is organised into sections and subsections. Chapter 2 that comes after this introduction broadly discusses forests, their functions, threats and management efforts, their ecosystem services and role in regulating climate change in the context of sustainable development. The Chapter shows that forests ecosystem services such as carbon capture and storage provided the basis upon which REDD+ emerged as a cost-effective and pro-poor climate change mitigation policy targeted at developing countries.

Chapter 3 analyses the pertinent conceptual and methodological literature relevant to the aim of the study. Technical arguments about REDD+ are first presented followed by institutional and implementation debates respectively. In the debates, the Chapter reveals that harmonising actor interests and policies in REDD+ remains a key source of concern in designing and implementing REDD+ thus the need for multilevel analysis of the programme's processes.

Chapter 4 describes the study design, area and methods. The Chapter justifies the suitability of Kenya as a case country and outlines the process of selecting the case projects and field sites within Kenya. The Chapter then discusses the development of an integrated institutions and development framework (IDAF) as a suitable methodological framework to guide data collection and analysis. The Chapter argues for mixed method approach encompassing both participatory methods for collecting primary data and quantitative secondary data as crucial for complementing evidence drawn from various levels of REDD+ governance and as framed by the IDAF.

Chapter 5 presents and discusses results on designing REDD+ at the global level with specific focus on the agency of Africa in the design process (objective 1). The Chapter then analyses how the global REDD+ rules are implemented at the national level and the resulting interplay with the national policies (objective 2). The Chapter reveals that underrepresentation of African States in the global design process creates implementation deficits at the national level. Key implementation deficits relate to poor national capacity to understand and assess the technical rules on REDD+ and negative interplay between the global REDD+ rules and sectoral policies among others.

Chapter 6 analyses the interactions between sub-national REDD+ projects with varying sub-national socioeconomic settings and identifies ways in which projects' design and choices are linked to the global and national processes (objective 3). The Chapter reveals that strict global carbon standards steer a majority of projects in Kenya to invest mainly in developed areas to the exclusion of poor ones. Relatively developed areas are deemed favourable for delivering carbon funds and more profits for investors. The Chapter further argues that forests in poor areas may become more exposed to exploitation in a manner that could reverse the gains made by protecting forests in relatively richer areas.

Chapter 7 analyses the implementation of a globally linked REDD+ project 'the Kasigau Corridor project' at the local level. The Chapter evaluates how the project's activities interact with existing households and community livelihood assets. It then identifies ways in which these assets can promote or impede the project's work, specifically focusing on how the project design is fitted into the local context (objective 4). The Chapter shows that while the project is globally standardised to deliver carbon, the local livelihood setting pushes the project to consider livelihood issues beyond carbon. The Chapter reveals that supporting pro-poor assets and equitable benefit sharing are crucial strategies for project implementation but these strategies can only work out under enabling national and global institutional arrangements.

Chapter 8 analyses the implementation lessons that REDD+ can draw from ICDPs operating in the same local settings. The Chapter further analyses whether REDD+ is any different from these ICDPs in effective and equitable governance of forests and its services at the local level (objective 5). The Chapter shows that while ICDPs provide diverse lessons, these lessons are more useful for REDD+ if they are adopted through a clear process that is cognisant of relevant stakeholders such as the State. Otherwise learning lessons only through local communities disconnects the project from key institutions and stakeholders in a manner harmful to the project's sustainability.

Chapter 9 synthesises and discusses empirical findings presented in Chapter5-8 and link these to the overall aim of the thesis and in the context of the IDAF. The Chapter offers an overall discussion of the findings and identifies key institutional conflicts and synergies in designing and implementing REDD+ in the context of sustainable development (objective 6). The Chapter reveals that key institutional conflicts in REDD+ design and implementation mainly revolve around crosscutting issues related to actor representation in REDD+ decisions, institutional interactions between REDD+ rules and national policies and most

importantly the global carbon requirements versus local livelihood expectations.

Chapter 10 finally offers general conclusions; reflections and highlights future research needs. The Chapter specifically emphasises that the local settings present diverse lessons and opportunities for REDD+ design but the main institutional gaps emanate from the global and national processes where multiple actor interests need to be harmonised.

1.10. Conclusion

This Chapter has stated the need for a multilevel scientific analysis of REDD+, a global climate change policy designed for implementation in developing countries. The Chapter has presented the overall aim of the study and an outline of the specific interlinked objectives for achieving this aim. The key empirical, methodological and applied contributions the study makes have also been explained. The next Chapter provides broad overview of forest carbon markets within which REDD+ emerged before tackling the scientific debates in the subsequent Chapter.

Chapter 2

Forestry carbon markets and the emergence of REDD+

2.1. Introduction

This Chapter sets the scene by unveiling the broader spectrum of forestry concepts and carbon markets that have informed REDD+ as a multilevel climate policy. The Chapter has five sections. The second section broadly discusses the value of forests in supporting livelihoods and ecosystem services across local, regional and global levels. This section shows that these multiple forest functions face threats from anthropogenic development and livelihood activities. These threats complicate forest conservation efforts in developing countries and exacerbate greenhouse gas (GHGs) emissions. The third section discusses the inclusion of forests as part of the climate change agenda, specifically targeting payment for ecosystem services (PES) as a way of engaging multiple actors, including the private sector, in collectively managing forests and responding to climate change. The section explains the emergence of compliance forestry carbon markets under the Kyoto Protocol and the voluntary carbon markets with varying actors and standards. Within this nexus of carbon markets, the fourth section discusses the emergence and justification of REDD+ as a cost-effective programme that allows developing countries to fully commit their forests to international carbon markets as a means to mitigating climate change in the context of sustainable development. The fifth section offers concluding remarks and links the present Chapter to the next one.

2.2. Forests

This section discusses forests in terms of their ecosystem functions, threats and conservation efforts. The section shows that forests provide mutually dependent

ecosystem functions across local, regional and global levels. Specifically, there is close mutual dependence between forests' provisioning services for livelihoods/development and global needs for regulating services. However, conservation and development agendas for forests are not always compatible, particularly as use of forests for livelihoods/development can extract forest stocks and reduce their capacity to deliver other ecosystem services (Martin et al., 2010). Efforts to conserve forests have attempted to manage the trade-offs between conservation and development through Integrated Conservation and Development Projects but with minimal success (Minang and vanNoordwijk, 2013). This section then goes on to consider the emergence of Payment for Ecosystem Services (PES), as a means for reconciling development and conservation in the context of sustainable development.

2.2.1. Forest ecosystem services

Forests are a crucial part of the global biosphere covering nearly one third of the earth's surface (FAO, 2010a). They provide multiple ecosystem services across local to global levels. Ecosystem services are goods and services generated from natural biogeochemical processes taking place within forests (IUFRO, 2009). Biogeochemical processes involve nutrient cycling through natural interactions between trees, soils and the atmosphere (IPCC, 2000). For instance, through the process of photosynthesis forests capture CO_2 from the atmosphere into biomass that in turn replenishes soil nutrients needed for forest growth (IPCC, 2000). Such cycles support provisioning, regulating and cultural service (Figure 2.1).

Forest provisioning services are direct products that people extract for livelihoods and development. Provisioning products such as firewood, fruits honey, timber, chewing sticks, water and rainfall are useful for local livelihoods and national development (Locatelli et al., 2011, Eastaugh, 2010). Roughly about 400-500 million people, mostly in developing countries depend on these

products for livelihoods (Locatelli et al., 2011). Specific examples from Africa e.g. Ghana, Burkina Faso and Mali (Nkem et al., 2008), Zambia (Kalaba et al., 2013a, Kalaba et al., 2013b) Kenya (Thenya and Kiama, 2008), and South Africa (Eastaugh, 2010, Shacklton et al., 2007) indicate that the people do not only draw livelihoods from forests but use them for coping as well, especially during climatically induced agricultural failures. About 6% of Africa's GDP depends on forest provisioning products e.g. honey exports from Zambia, Rwanda, Ethiopia; timber exports e.g. acacia from Senegal and Eretria among others (Eastaugh, 2010).

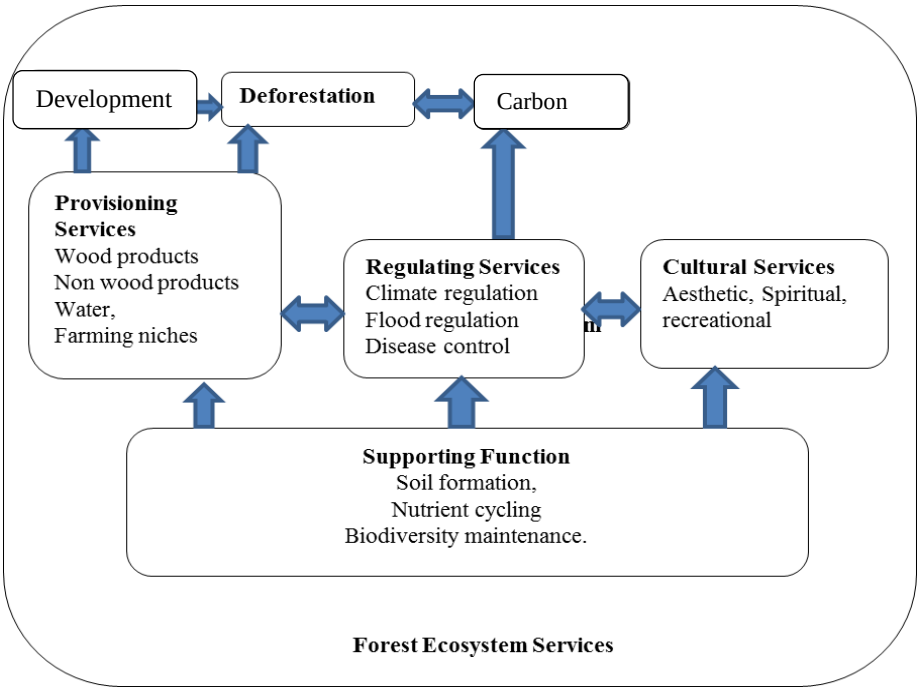

Figure 2.1: Forest ecosystem services and their linkages.

Source: Modified from IUFRO (2009)

Forest regulating services constitute indirect services such as carbon capture and storage that support the global biosphere e.g. climate regulation. Forests reserve half of the world's terrestrial carbon; 283 Gt in biomass, 38 Gt in dead wood and 317 Gt in soil, (IPCC, 2007b). They capture carbon and reduce its atmospheric concentration. Cultural services from forests are equally essential

in developing countries and encompass products such as special tree leaves and barks with medicinal values or services such as spiritual shrines or recreational areas. Some cultural sites and products within forests are gaining economic value in most developing countries as touristic sites and artistic commodities. However, many of these cultural services still have no monetary value. A key point in the forests ecosystem services is that they are mutually interlinked (IPCC, 2000). Extraction of forest provisioning services such as firewood and timber reduces forests stocks and the capacity to deliver regulatory services such as carbon capture for climate regulation (Eastaugh, 2010, IUFRO, 2009). As such, exploiting forests' provisioning services has been singled out as key threat to forests.

2.2.2. Forest threats

Globally, approximately 13 million hectares of closed canopy forests are being lost annually due to livelihood activities and large scale commercial activities drawn from forests provisioning services (FAO, 2010a). The UN-REDD (2008) links almost half of deforestation in tropical areas to livelihood activities such as charcoal burning and small scale agriculture, especially in Africa. Severe livelihood driven forest losses occur when the provisioning services are overexploited for coping with climatically induced agricultural failures due to lack of other livelihood options and poverty (e.g. Kalaba et al., 2013a, Nkem et al., 2012, IUFRO, 2009).

Commercially driven forest losses mainly result from a nexus of illegal logging for the timber industry and agricultural exports (Lawson, 2014, Eastaugh, 2010). Illegal logging, especially in tropical areas, mainly occurs through corrupt government departments controlling most forests in developing countries (Brown and Bird, 2008). Illegal logging for timber degrades tropical forests as indigenous forests are converted to fast growing plantation forests to meet the timber demand (Lawson, 2014). In some instances, e.g. Kenya (Ndungu Land Commission, 2004), cleared areas are not replanted but are either

allocated to human settlement or sold to private actors for commercial agriculture and other investments (Klopp, 2000). Illegal logging and irregular allocation of tropical forest areas were responsible for half of the tropical deforestation between 2000 and 2012 (Lawson, 2014). Recent debates further indicate potential for severe forest losses that are likely to result from emerging land grabs for commercial agriculture targeted at export markets for food and biofuel (Vermeulen and Cotula, 2010, Lambin and Meyfroidt, 2011). In sum, deforestation and forest degradation in developing countries results from a complexity of interlinked livelihoods and development factors spanning across multiple sectors (e.g land agriculture and forests), actors (commercial government and local communities) and levels (local, national and global). Efforts to conserve forests have mainly attempted to reconcile conservation and development aims.

2.2.3. Forest conservation efforts

Efforts to conserve forests range from global declarations and agreements to practical activities, all emphasising sustainable forest management. Sustainable forest management principles were adopted in the 1992 Conference on Environment and Development (UNCED, 1992). In the 2012 Earth Summit, forests were identified as a key resource requiring global conservation efforts to support future needs (UN, 2012). The United Nations Millennium Development Goals also include forest conservation as part of achieving environmental sustainability (UN, 2000). Drawing on these declarations, forest concerns are now addressed through a range of international policy instruments such as the Convention on Biological Diversity (CBD), International Trade on Timber (ITTO) and the United Nations Framework Convention on Climate Change (UNFCCC) (UNCED, 1992).

These global agreements have partly been translated into practical efforts through integrated conservation and development projects (ICDPs). ICDPs are

project-based initiatives targeted to conserve forests and biodiversity while supporting socioeconomic development activities in local settings of developing countries (Minang and van Noordwijk, 2013, Roe, 2008, Blom et al., 2010). These ICDPs have been executed within various conservation paradigms including the protected area approach (Brandon and Wells, 2009), community afforestation (Boyd et al., 2007), participatory forest management and alternative livelihoods (Wells, 2003, Minang and van Noordwijk, 2013).

The success of ICDPs in addressing deforestation is contested by many scholars. ICDPs have been criticised for failing to address underlying drivers of deforestation due to path dependency in the design and implementation of the projects (Blom et al., 2010, Brandon and Wells, 2009). In this, others believe that the ICDPs have failed to clearly define the link between poverty and conservation (McShane and Newby, 2004). There are those who further claim that ICDPs activities were short term and unsuitable to achieve any meaningful forest conservation, coupled with poor monitoring and reporting (Blom et al., 2010, Roe, 2008). Some scholars have gone ahead to claim that if ICDPs succeeded, then the current land-based emission problems would not exist (Minang and van Noordwijk, 2013). In the context of ICDP failures, new conservation strategies such as Payment for Ecosystem Services (PES) have emerged.

PES has gained legitimacy as a tool for actively engaging multiple actors including non-State ones, such as the private sector, in forest conservation (Wunder and Albán, 2008). PES is defined in Wunder (2005:2) as ‘a voluntary transaction where a well-defined ecosystem service is bought by a buyer from an ecosystem service provider if and only if the ecosystem service is secured’. PES is used for a variety of forest ecosystem services including biodiversity (e.g. fees set on wildlife tourism), landscaping, catchment management, and carbon sequestration for climate regulation (Wunder, 2005, Swingland, 2002). Some scholars argue that PES provides economic incentives for landowners to

protect forests as part of economic investment, ensuring equity if compared to State managed ICDPs (Pagiola et al., 2002, Farley and Costanza, 2010, Jack et al., 2008). Other scholars contest PES on sustainability grounds arguing that PES markets are created and legitimised through time-bound international agreements which are mainly legitimate over specific time period (Corbera et al., 2007). Additionally, internationally legitimised PES markets are unlikely to achieve legitimate and equitable outcomes especially with regards to local communities who are often excluded from higher level decisions (Pagiola et al., 2005, Corbera et al., 2007). Despite the pros and cons, PES has gained considerable attention in the efforts to tackle climate change through carbon markets to which forests have been included as part of climate change agenda.

2.3. Forests in climate change

This section analyses forests as part of international climate change agenda within the UNFCCC. It bases its critique on Figure 2.2 and demonstrates the emergence of REDD+ as a forestry carbon market mechanism for mitigating climate change in the context of sustainable development.

2.3.1. Climate change and sustainable development

Climate change actions are aimed at achieving sustainable development (UN, 1992). The World Commission on Environment and Development (WCED, 1987:43) defines sustainable development as: 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs'. Sustainable development emerged as a solution to climate change given that development itself causes climate change. Climate change is specifically linked to imbalances in resource use in which industrialised nations hosting only 20% of the world's population, produce 57% of the total world's Gross Domestic Product and are responsible for emitting 46% of global GHG (IPCC, 1990). Yet the impacts of climate change including hunger, pest and diseases, floods are felt more in the developing countries. For

instance, Africa contributes less than 3% of the global GHG emissions (UNDP, 2007), yet is world's most climatically affected region (Hulme et al., 2001, Lobell et al., 2011, IPCC, 2007a, IPCC, 2013).

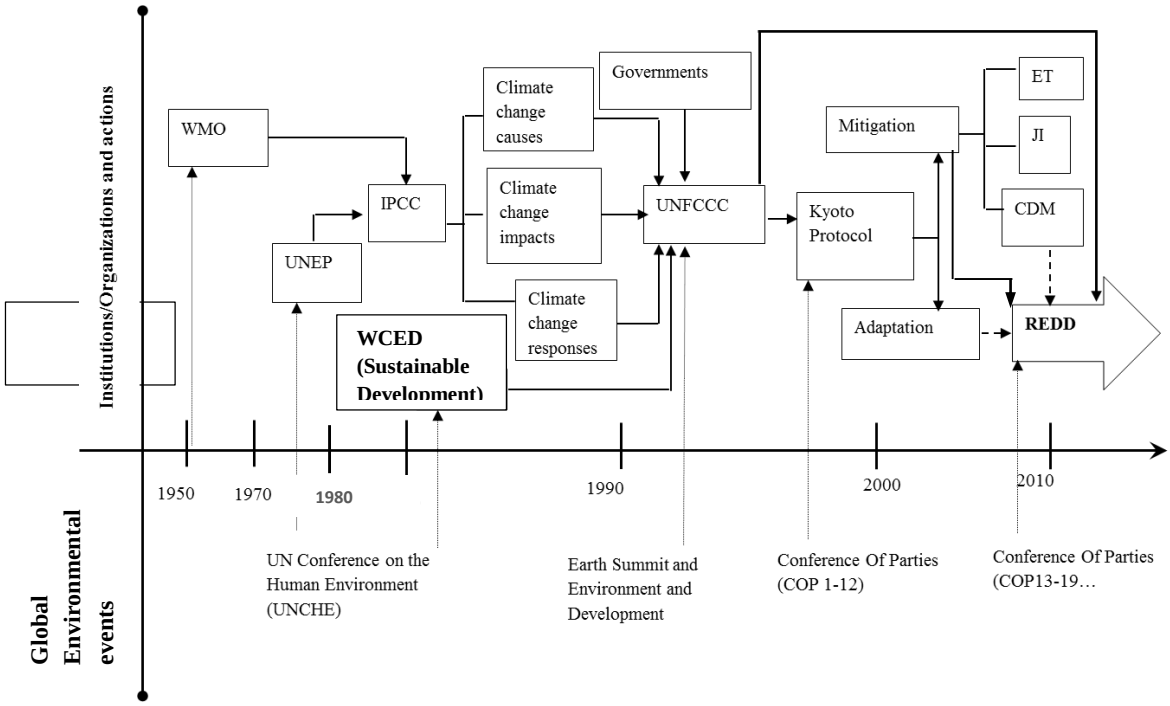

Figure 2.2: Chronological framework for climate change actions, institutions within which REDD+ emerged as part of broader collective efforts to achieve sustainable development.

Sustainable development therefore encourages collective effort to spatially and temporally harmonise development with environment and human wellbeing in a manner cognisant of future needs and ecological limits to economic growth (WECD, 1987). In other words, actions to achieve sustainable development must ensure environmental and social outcomes with equitable positive effects on current and future generations (WCED, 1987). In the context of sustainable development, international climate negotiations have established mitigation and adaptation as main responses to climate change under the UNFCCC (UNFCCC, 1992) and in these, forests are included as discussed next.

2.3.2. Mitigation and adaptation

Efforts to tackle climate change have been framed around mitigation and adaptation. Mitigation involves anthropogenic intervention to reduce the sources or enhance the sinks of greenhouse gasses (GHGs) that are responsible for climate change while adaptation refers to adjustment in natural or human systems in moderating climate change harm and exploiting beneficial opportunities (IPCC, 2001b). Mitigation is ideally a global scale agenda aimed at reducing global atmospheric GHG concentrations. It differs from adaptation which mainly aims to regulate climate risks within specific local or national contexts (Thomas and Twyman, 2005).

In the context of forests, the two measures overlap considerably especially because forest provisioning services for adaptation are dependent upon regulating services that control the carbon cycle for climate change mitigation (Duguma et al., 2014a, Locatelli et al., 2011). For instance, most rain-fed farmers extract forest goods and services e.g. charcoal, and crop cultivation in moist forests areas as ways of adapting to climatically induced crop failures and in doing so, cause forest losses, subsequent release of carbon into the atmosphere and reduction of forests capacity to absorb carbon (IPCC, 2000, Lambin and Meyfroidt, 2011). In a somewhat circular manner, the deforestation and associated climatic changes drive precipitation losses and cause more pressure on forests for adaptation (IPCC, 2007c, Malhi and Wright, 2004). Given this link, studies have argued that mitigation actions targeting forests in developing countries should also address adaptation needs to be effective (Eastaugh, 2010, Duguma et al., 2014b).

International climate talks have however focussed on getting States to commit to mitigation through negotiated PES instruments that allow GHG credits-CO_2 equivalent to be traded between States and non-State Parties. As discussed in

the next subsection, the Kyoto Protocol is one of the first international climate agreements within which forestry carbon markets formally emerged as part of mitigation.

2.3.3. The Kyoto Protocol: establishing forestry carbon markets

The Kyoto Protocol is the first legally binding international climate agreement, adopted in 1997 at the 3rd COP in Kyoto, Japan. It commits industrialised nations to meet emissions reduction targets of 5.2% below 1990 levels during the 2008-2012 commitment period. Thse commited nations can either pursue resource efficient technological innovations or PES in meeting their targets. The main mechanisms allowable under the protocol nclude: Joint Implementation (JI), Emissions Trading (ET) and Clean Development Mechanism (CDM). The three options are all designed to achieve sustainable development outcomes through various activities. The JI involves joint mitigation activities initiated by two or more industrialised countries. JI activities may, for example, involve initiating efficient energy sources such as wind power in place of coal based energy plants (UNFCCC, 1998). In ET schemes, a central authority in an annex I country (e.g. a governmental body), sets emissions limits and offers emission permits for firms to purchase resulting in overall emission reduction. While ET and JI largely target energy activities in industrialised and middle income countries, the Clean Development Mechanism is targeted at developing countries and includes forestry activities.

2.3.4. Forestry carbon in the Clean Development Mechanism

The CDM allows industrialised nations to finance afforestation and reforestation (A/R) activities to meet part of their Kyoto commitments. Developing CDM A/R projects involves nine stages starting from initial project idea to the emission certification stage (Pearson et al., 2006). The CDM A/R

initiatives, however, registered minimal success both in terms of portfolio and regional distribution.

Currently, CDM A/R constitutes less than one percent of the total CDM activity portfolio while the majority (close to 80%) of projects occur in the energy sector (Christman, 2014). The portfolio imbalance is partly attributable to early climate science (IPCC, 1990) that emphasised fossil fuels as the main cause of climate change (Gullison et al., 2007). However, some scholars argue that the scope of CDM A/R excluded other possible forestry activities such as avoiding deforestation and agriculture which dominate the land use sector in developing countries (Zomer, 2009, Saunders et al., 2002). REDD was specifically excluded from the CDM on grounds that it is subject to uncertainty and leakage that could compromise the credibility of carbon credits and affect CDM market efficiency (Saunders et al., 2002).

Debates on regional imbalances in the CDM are concerned that more than one third (80%) of the CDM activities are hosted in middle income countries such as China while certain low income regions such as Africa host less than one percent of such activities, none of which are A/R (Christman, 2014, Pearson et al., 2006, Silayan, 2005). The studies mainly attribute regional imbalances to poor institutional and socioeconomic capacity which limits the ability of low income developing countries to develop, implement and enforce the required CDM compliant standards.

In the context of strict CDM requirements, voluntary forestry carbon markets emerged as an alternative platform. These markets include a diversity of actors and activities that are not bound by the Kyoto commitments (Bond et al., 2009). They operate within multiple and flexible market standards such as Plan-Vivo, World Bank's Bio-Carbon Funds, Voluntary Carbon Standards (VCS) among others (Peters-Stanley and Gonzalez, 2014). In these diverse options, various actors can execute a wider range of forestry activities e.g. avoided deforestation

or agroforestry, that were excluded in the CDM (Paiva et al., 2014). The voluntary market is now the main source of carbon credits for a variety of buyers and it currently take up close to one third of the total forestry carbon portfolio worldwide (Peters-Stanley and Gonzalez, 2014). It is within this thriving voluntary framework that REDD+ formally emerged.

2.4. Emergence of REDD+: rationale

REDD+ was proposed as a formal voluntary initiative in 2005 at the 11th Conference of Parties (COP) of the UNFCCC in Montreal Canada by the Governments of Papua New Guinea and Costa Rica (Ghazoul et al., 2010). The proposal was followed by a work programme on REDD+, 'the Bali Action Plan' which was adopted for negotiations at the 13th COP in Bali (decision 2/CP 13). The basic argument about REDD+ is that countries that are able to protect their forests and avoid emissions should be financially compensated for doing so (UN-REDD, 2010). In this basic principle, REDD+ has become a multi-actor programme framed around particular scientific, geographic and economic rationales.

Scientifically, REDD+ is justified on account that it could curb deforestation and halt associated emissions (Canadell and Raupach, 2008, IPCC, 2007b). Geographically, the said deforestation mainly takes place in developing countries where most tropical forests support livelihoods and economies (IPCC, 2000, IPCC, 2007b). Economically, arguments for REDD+ centre on its cost-effectiveness if compared to other options such as industrial energy cuts (Angelsen, 2008b, Stern, 2006). The economic rationale further builds on the expectation that REDD+ funds could spur sustainable development in developing countries (UN-REDD, 2010). Specifically, REDD+ could support pro-poor livelihoods and development that reduces inequalities and enhance conservation in poor areas which have been reportedly frontiers of deforestation and forest degradation (UNCED, 1992). The sustainable development report

concerns that poverty and resource degradation coexist and that poor areas are frontiers of forest resource degradation and inequalities (WECD, 1987). Pro-poor REDD+ therefore is linked to the fact that poorer people in the society depend more forests for livelihoods thus they require more attention in efforts to address deforestation and forest degradation (Bond, 2010, Enright, 2012). As such, pro-poor approaches to implementing REDD+ has occupied place in REDD+ implementation debates with varying perception about what constitute 'pro-poor' in practice and why it is crucial for REDD+ (see section 3.5.6).

Drawing on this set claims, the Conference of Parties to the UNFCCC has made a series of decisions on the REDD+ design components. For instance, decision 2/CP. 13 and decision 4/CP 14 mainly focused on collecting scientific and policy views on methods, finance and safeguards. The options were mainly adopted in decision 1/CP. 16 while decision 2/CP 17 mainly adopted the technical and financial options. In the COP 19 (decisions 19,10,11,12,13 and 14/ CP. 19), the design components were re-affirmed into a single REDD+ institutional framework 'the Warsaw Framework for REDD+' that is expected to gain final agreement in COP 21 scheduled for Paris in 2015. The Warsaw Framework principally involves results based funding of REDD+ activities and national monitoring, verification and reporting (MVR). The framework recognises various modes of implementing REDD+ subject to coordination from the national government.

2.5 Conclusion

This Chapter has discussed forests from a broader perspective including their role in climate change mitigation in the context of sustainable development. The Chapter also shows that REDD+ has emerged as a cost-effective and pro-poor climate change mitigation policy targeted at developing countries that were otherwise excluded from the CDM. The Chapter however shows that REDD+ is still being designed within the UNFCCC. A range of scientific debates have emerged to inform the design process as analysed in the next Chapter.

Chapter 3

Scientific debates on REDD+ institutional design and implementation

3.1. Introduction

This Chapter analyses scientific concepts and theories relevant to the REDD+ institutions and their implementation. The Chapter is divided into seven sections. The second section makes a case for why REDD+ is crucial for science and policy based on its key institutional differences from past forest management interventions such as ICDPs and the CDM. The third section analyses the technical debates around expected REDD+ performance standards such as additionality, reference levels, and emission reversals. The section shows that these technical measures form the basis for what is eligible for REDD+ and shapes institutional debates. In the fourth section, institutional debates are analysed by first defining institutions not only as rules and regulations but also the process and actors involved in designing these rules. The section then focuses on actor agency as a suitable institutional concept for analysing actor interactions and contributions to the REDD+ design process at the global level. The section defines agency, analyses ways of exercising it and outlines how it can be measured. The fifth section then analyses the implementation debates by first outlining the broader theories of institutional implementation. The section then narrows down to analyse debates on expected REDD+ implementation outcomes in the context of sustainable development. Throughout the analysis, research gaps are highlighted and linked to specific Chapters. To frame the analysis, the sixth section discusses suitable frameworks for linking REDD+ institutions and their implementation in the context of sustainable development.

3.2. What makes REDD+ important for science and policy?

REDD+ brings multiple promises and hopes in forest governance and sustainable development. These hopes are partly based on the unique institutional features that make REDD+ different from its predecessor forestry programmes such as the CDM and ICDPs (Table 3.1).

Table 3.1: Ways in which REDD+ differ from the CDM and ICDPs: These differences are based on standardised features drawn from policy documents.

Feature	REDD+	CDM	ICDPs
Institutional framework	Internationally negotiated under the UNFCCC. Could be legally established following the Warsaw framework (decision 9/COP 19).	Legally documented as part of Kyoto Protocol with ratification by member states. Mainly requires action by developed countries.	Country-specific, defined within particular national sector
Market mechanism/sector	Voluntary market	Compliance market	Donor based, may involve voluntary PES in some instances
Forest management approach	Focus more on protecting existing forests (avoided deforestation)	Reforestation and afforestation involving newly planted and naturally regenerated forests	Socioeconomic development to incentivise forest conservation
Project cycle	3 steps including readiness proposals, readiness preparation and production of results based carbon credits.	Involves nine steps: project design (PD), national approval, validation of PD, registration, monitoring, verification, Certification.	Often depends on donor and government approval
Main actors	Multilateral funds, bilateral funds, development agencies, international development banks, national development banks, private sector, UN agencies (UNEP, UNDP, FAO, UN-REDD), carbon consultancies, national governments.	Project developers, CDM Policy Board, private sector, buyers, brokers and retailers, CMP, DOEs, DNA, consultants, Annex I governments running emission trading schemes.	Donors, states and forestry or agriculture sectors
Social benefits	Safeguards established in annex 1/CP 16. Social standards such as CCBS used alongside the emission reduction standards.	Sustainable development benefits, poverty reductions documented as part of safeguards.	Socioeconomic development initiative designed as part of incentives for forest conservation
MVR	Project based reporting nested in the National monitoring and reporting systems. Emphasis on performance in terms of additionality, leakage avoidance measured on the basis of reference levels	Project based reporting and verification. Emphasis on additionality with little focus on permanence and leakage	No performance based monitoring. No established verification standards. Activities monitored based on internal project procedures.

In this menu of differences, three key aspects make REDD+ a unique programme needing critical scientific and policy examination: involvement of multiple actors, spatial targeting at poor countries and new approaches to forest governance.

In terms of actors, REDD+ has emerged as a global forest governance programme bringing together a diversity of actors from global to local level all contributing to the programme's design and implementation (Corbera and Schroeder, 2011). This diversity of actors especially the formal recognition of indigenous people and local communities in decisions contrasts with both the CDM and ICDPs which were mainly under State and private sector control. Bringing all these actors together to negotiate and account for all their interests and responsibilities could result in unique institutional interplays including coherence, synergies and conflicts. Scientifically unpacking this interplay in the context of sustainable development is crucial (see section 3.4).

Spatially targeting REDD+ at developing countries and supporting these countries to participate, makes REDD+ a pro-poor international forest governing instrument. This is mainly because such spatial targeting was not emphasised in the CDM. Indeed key REDD+ funders now claim that REDD+ will increase participation of poor areas in carbon markets (UN-REDD, 2010, World Bank, 2011) compared to the CDM (see section 2.4.8). As such, scientific analysis that attempts to unlock whether REDD+, in its progress so far, is likely to be any different in terms of equitable redistribution of carbon markets and associated benefits, will make an important contribution to literature and policy (see more in section 3.5).

REDD+ targets deforestation of existing forests as its main activity for generating carbon. This contrasts with the CDM which focuses on afforestation and reforestation while not restricting use of existing forests. In a somewhat similar manner, the ICDPs promote sustainable forest use in which most

communities can still access and exploit forests for their livelihoods (Roe, 2008). By contrast, performance requirements in REDD+ such as result-based Monitoring, Verification and Reporting system (MVR) mean that there would be greater restriction on forests access compared to the CDM and ICDPs even though these forests have been key source of livelihoods for most local communities. As such, understanding how the globally set REDD+ rules practically interplay local settings where these forests are hosted is crucial not only to verify the 'implementality' of REDD+ but also to reveal whether REDD+ can create a positive shift in forest governance and livelihoods compared to ICDPs and the CDM (section 3.5). The three features differentiating REDD+ from past climate and development initiatives forms the general basis upon which this thesis draws specific research questions and objectives from a range of existing literature analysed in this Chapter. The next section begins with analysing the technical debates upon which other institutional and implementation debates build.

3.3. Debates on REDD+ technical design

Technical debates in REDD+ have centred on measures for monitoring, verifying and reporting (MVR) REDD+ activities (Angelsen, 2008c). The MVR measures are technically interlinked and aimed at ensuring that REDD+ activities result in actual changes in forests cover and carbon stocks above what would be there in the absence of REDD+ (Obersteiner et al., 2009). This change is mainly calculated from a baseline scenario known as 'reference levels' and carbon stock changes known as 'additionality' (Angelsen, 2008a) and verified through performance measures such as permanence and leakage (Wunder, 2008b).

Reference level denotes the baseline forest cover and carbon stocks upon which REDD+ payments are made for additional avoidance of deforestation and associated emissions (Angelsen, 2008a). Setting reference levels has remained

contentious in REDD+ policy and research especially due to varying socioeconomic circumstances, forest usage and trends in developing countries (Verchot et al., 2009). Studies have focused on whether a national reference level should be set based on historical deforestation (Santilli et al., 2005) or above historical deforestation (Mollicone et al., 2007). A reference level based on historical deforestation would mean lower baselines for countries with high deforestation rates and this translates into potentially higher carbon payments compared to low deforestation countries (Figure 3.1). In this, referencing REDD+ based on historical deforestation is criticised as a means to rewarding deforestation (Olander et al., 2008, Asner, 2009).

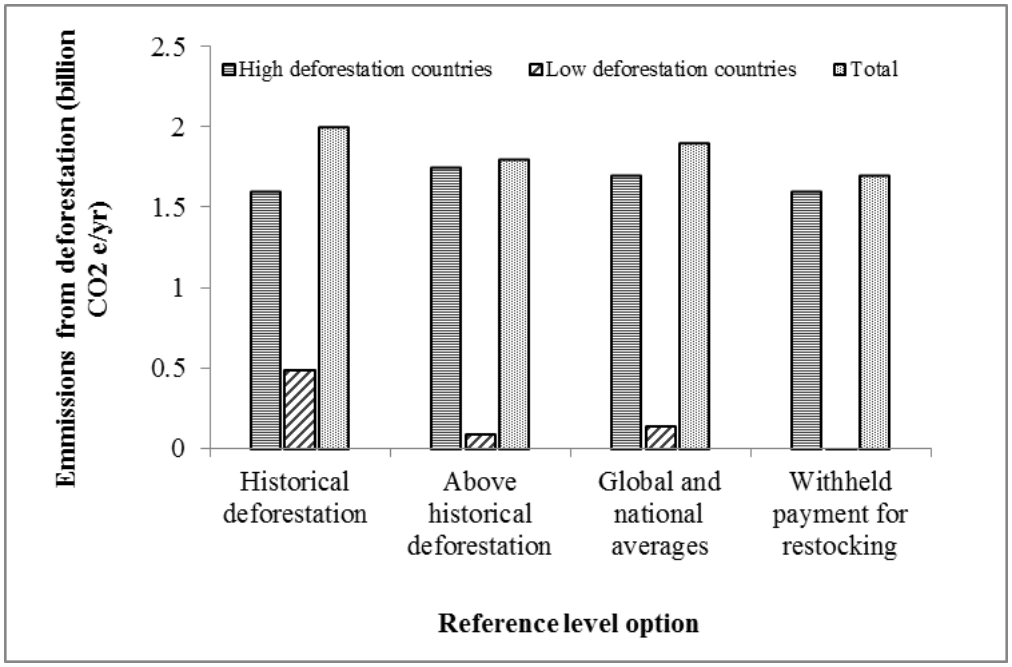

Figure 3.1: Options for forest reference levels under REDD+ and associated accountable emissions.

Source: Olander et al. (2008)

Most scholars however agree that the ideal reference level should be able to provide incentives for curbing historically high deforestation and maintaining historically low deforestation (Angelsen, 2008a, Busch et al., 2009, Olander et al., 2008). To achieve this, studies have suggested options such as global and

national deforestation averages (Strassburg et al., 2009) or withholding part of REDD+ payments for forest stocking (Cattaneo, 2010) but all these posit varying implications on accountable emissions and associated payments (Figure 3.1). Nonetheless, a more conservative referencing approach that builds on national circumstances has been adopted in the UNFCCC negotiations (UNFCCC, 2013). However, some scholars have expressed concerns that high variations in national circumstances and spatial and temporal data limitations may subject such reference levels to significant assumptions and potential misuse by some actors to report higher carbon additionality (Strassburg et al., 2009).

Additionality is the amount of carbon emissions that are reduced by a particular REDD+ initiative over a period of time (Angelsen, 2008a). It provides a measure upon which carbon payments are made. Additionality is ideally derived from the difference between the reference level and the amount of verifiable carbon stocks after a period of time and is expressed in tons of CO_2 per year or per unit area (Karky et al., 2013). Additionality depends on changes in forest cover, density and age (Gibbs, 2000, Karky et al., 2013). Sub-national or national level REDD+ projects that are able to protect larger forest areas for many years are likely to receive more payments (Karky et al., 2013). Given its role in payments, additionality is subject to verification measures such emission leakage and reversals during implementation (Olander et al., 2008).

Leakage occurs in situations where drivers of deforestation are shifted to other areas such that emissions avoided in one geographical area are increased in another place (Wunder, 2008a). For example when a REDD+ project restricts charcoal burning in one area and shifts demand for charcoal and associated emissions to other non-project areas. A number of studies have emphasised national level MVRs as a means of confining leakage within national boundaries (Wunder, 2008b, Angelsen, 2008a, Angelsen et al., 2008, Minang and van Noordwijk, 2013). Some scholars however think that a national MVR

system could affect a country's commitment to REDD+ especially in instances where internal leakage from common sub-national activities such as agriculture significantly affect payments (Olander et al., 2008). It has been suggested that such sub-national leakages could be minimised if REDD+ adopts a landscape approach in which all land uses are incorporated as part of REDD+ schemes (FAO, 2011, Minang et al., 2014a, van Noordwijk et al., 2013, Zomer, 2009). Proponents of the landscape approach argue that activities such as agroforestry, if supported by REDD+, could supply households with forest goods such as firewood and poles in situations where forest access is restricted for REDD+. In any case, most agricultural areas with substantial tree cover, depending on a country's forest definition, could be counted as part of REDD+ especially if remote sensing monitoring tools are applied (Zomer, 2009).

Emission reversal involves the situation where emissions that are already captured are released into the atmosphere due to rampant deforestation events. In this, REDD+ activities are expected to ensure that emissions are permanently reduced. Emission permanence mainly depends on deforestation threats or short forest harvesting periods. If forests under REDD+ are cleared in a shorter duration e.g. less than 30 year period, then emissions would be reversed (Dutschke and Wertz-Kanounnkoff, 2008). It has been argued that the major threat to emission permanence is underlying drivers of deforestation such as governance failures that promote unexpected forest losses (see section 2.2.2). Measures suggested to ensure permanence include incorporating project credit buffers, commercial insurance and sharing liability between Parties (Dutschke and Wertz-Kanounnkoff, 2008) and institutional reforms to counter underlying drivers of deforestation (Brockhaus et al., 2013, Minang et al., 2014b).

Overall, the technical debates indicate that implementing REDD+ is subject to multiple implications for various actors and actions both in terms of credibility in emission reduction and benefit sharing. The implications have attracted diverse institutional debates on actor interactions, their influence on REDD+

process and potential implications (Angelsen 2008b). The technical debates lay the foundation for institutional debates that are discussed in the next section.

3.4. Debates on REDD+ Institutional design

This section builds on the technical debates analysed in the previous section to analyse the institutional debates framing the design of the technical provisions.

3.4.1. Conceptualising institutions in REDD+

'Institutions' is a broad and ambiguous concept interpreted differently in different fields. In the context of sustainable development, institutions can be viewed from the perspective of political ecology or political economy (Howard, 1990, Holling, 2001). Table 3.2 offers a range of specific definitions aligned to these fields. Political ecology literature defines institutions from a broader perspective that includes formal and informal rules and the processes of making the rules. For instance, Leach et al. (1999) equate institutions to a set of informal and formal rules as well as procedures that govern the formulation of rules and assignment of roles, including interactions with resources. In the context of the sustainable livelihoods framework, Scoones (1998; 2009) emphasises that institutions are part of continuous social negotiations.

On the other hand, the political economy perspective emphasises formality of institutions and mainly argues that institutions are formal rules that are legally specified in legislation (*de-jure*) and factually implemented in practice (*de-facto*). Some political economy literature e.g. Glaeser et al. (2004) even criticises a large cadre of institutional research as conceptually flawed, and irrelevantly focused on 'fuzzy policies' which according to Voigt (2013) do not contain meaningful information to steer decisions, performance and enforcement.

Table 3.2: Various definitions of institutions; political ecology[1,] political economy [2]

Definition	Reference
Institutions may thus be formal or informal, often fluid or ambiguous and usually subject to multiple interpretation by different actors. They are part of a continuous social negotiation-rather than fixed 'objects' or 'bounded social systems.	(Scoones, 1998: 12)[1]
Institution refers to the shared concepts used by humans in repetitive situations organized by rules, norms, and strategies	Ostrom (2007:23)[1]
Institutions are humanly created formal and informal mechanisms that shape social and individual expectations, interactions, and behaviour	Agrawal et al. (2008:3)[1]
Legal systems or electoral rules look more like "institutions" when they are actually used over time, in contrast, for example, to the presidencies of Bill Clinton or George Bush, which most people would not regard as "institutions."	Glaeser et al. (2004:7)[2]
One should always aim at measuring the institution as formally specified in legislation (*de jure*) and as factually implemented (*de facto*).	Voigt (2013: 3)[2]

The two perspectives of institutions therefore differ on whether informal and frequently changing rules and regulations should be considered as part of institutions or be ignored as 'insignificant'. Both perspectives however agree that institutions constitute *a set of rules and regulations* that constrain behaviours and *shape decisions* and *flow of resources*. A central institutional aspect captured in the political ecology perspective is that institutions involve a process and continuous negotiations among different actors with varying interests. This suggests that institutions are not just the set of rules but also the process of making these rules e.g. actor interactions, their influence and roles in the process of making the rules.

In the context of REDD+, institutions include both formal and informal rules and the process negotiating these rules. Formal rules are structurally negotiated and formally specified in agreements and protocols at global and national levels. Negotiating these formal rules also involves informal processes including lobbying, informal side events at the UNFCCC, and SBSTA meetings among

others (Schroeder and Lovell, 2012, Schroeder, 2010). At the local level though, most rules and regulations governing forests are largely informal and draw on local narratives, informal family networks and traditions that are sometimes messy but are factual in mediating forest resource access, management and utility (Leach et al., 1997, Leach et al., 1999). Because of the way REDD+ operates, this thesis defines REDD+ institutions as *formal and informal rules and interactions among actors involved in making the rules on REDD+ design*.

Whether formal or informal, institutions are crucial for the success of REDD+. They expose restrictions/barriers and trade-offs that ought to be made between various options thereby revealing strategic intervening points for achieving sustainable development (Scoones, 1998). They also foster transformative actions in resource governance (Aligica, 2006, Berman et al., 2012, Biermann et al., 2012, Gupta et al., 2010, Ostrom et al., 1994a). Lederer (2011) concludes that, failures in REDD+ to achieve its goals will have less to do with technical design but more with institutional arrangements and processes. Similar views are expressed in Lawlor et al (2010:2):

> 'Ecologists and macroeconomists have led the advancement of the REDD+ agenda into mainstream climate policy. Consequently, academic analysis of REDD+ has tended to focus on questions of biodiversity, offset supply and cost-containment for cap-and-trade policies, and methods for measuring carbon stocks and estimating deforestation reference levels. There is growing recognition, however, that the real challenges now facing successful implementation of REDD+ lie with governance: how to get the institutional conditions right so that those closest to forests have the proper incentives to protect them'.

Various analytical concepts have been applied in analysing REDD+ institutions. These range from actor agency (Brockhaus et al., 2013, Schroeder, 2010) to

equity and legitimacy (Lyster, 2013). The concepts are mutually interlinked in many REDD+ governance studies. Given that this study is interested in the REDD+ institutional process, actor agency was applied as an appropriate analytical concept for unpacking actor interactions and their contributions to REDD+ design rules. Agency is a crucial analytical approach in multi-actor environmental regimes such as REDD+ and is also related to other institutional concepts such as equity and legitimacy.

3.4.2. Agency as a suitable institutional concept for analysing REDD+ design

Agency is an institutional concept that spans the spectrum of social sciences, and attempts to understand human behaviours in making joint decisions in their interactions with nature (Elder Jr, 1994, Archer, 2003). Social science theories describe agency as a means through which humans reaffirm their positions in relation to others. To do so, people understand their interests and beliefs which they defend and push for (Kiser, 1999). They also enhance their interests by accepting complementary actions and intentions of others (Archer, 2003, Myers, 1986). By influencing and accepting others' actions, people acquire authority as decision makers but also give authority to others (Kiser, 1999).

In global environmental regimes, the concept of agency has gained attention as a means to understanding how States and non-State actors interact and influence each other in prescribing and implementing rules as part of environment and development policies such as REDD+ (Schroeder and Lovell, 2012). Agency has been defined as the ability of actors to participate in a policy process and prescribe rules governing the implementation of such policies (Biermann et al., 2009, Paavola, 2003). Given the varied capabilities and actor contributions to a policy process, agency has also been defined in terms of power relations. For instance Brockhaus et al., (2013:2) defines agency as 'the capacity and legitimacy to exercise power over other actors'. This resonates with some

theories of power that argue that actors who are more dependent on others are less powerful because those whom they depend on are often able to manipulate circumstances to make these weak ones lose (Lukes, 1974). In other words, actors with stronger agency in a policy process are likely to be more powerful than those with weak agency. This thesis however does not directly pursue power analysis but uses measures of agency to highlight which actors are potentially more powerful in REDD+.

Agency is also linked to legitimacy in that it determines how much policy outcomes are legitimate among interested actors (Bäckstrand, 2006). Legitimacy refers to the way actors perceive and accept particular rules that affect their behaviours (Bäckstrand, 2008) and this depends more on how their concerns and interests are included in the rule making process (Paavola, 2003, Biermann and Gupta, 2011). As such, agency in the process of prescribing REDD+ rules influences the effectiveness of implementing the rules by shaping the level to which the resulting rules account for the policy and socioeconomic interests of developing countries targeted for REDD+. Agency also links to equity. Equity refers to fair distribution of decision making rights and benefits in policy formulation and implementation (Brown and Corbera, 2003). As such, strong actors may sometimes marginalise those with weak agency both in decisions and benefits (see section 3.5.5). Therefore agency provides a strategic analytical concept for unpacking institutions in a multi-actor environmental regime such as REDD+.

Actors exercise agency in designing REDD+ at the global level based on established norms of participation which recognise these actors as legitimate decision makers (Schroeder, 2010). Expertise and mode of governance are the main means of formally exercising agency in global regimes e.g. making submissions to negotiations and commenting on draft decisions (Gupta, 2010, Biermann et al., 2010, Biermann et al., 2009, Dellas et al., 2011, Archer, 2003, Griffiths and Martone, 2009). These means are also used by actors to informally

lobby for their interests in the side events of UNFCCC climate negotiations (Schroeder and Lovell, 2012).

3.4.3. Exercising agency in a multi-actor global environmental regime

Actors use their expertise and mode of governance to bargain for their preferences in designing global environmental regimes. Expertise denotes the ability to generate knowledge and propose innovative solutions to global environmental problems (Archer, 2003, Gupta, 2010). Expertise of actors in global regimes builds on their ability to generate scientific information for solving the environmental problem in question (Betsill and Bulkeley, 2004).

Actors can contribute expertise in various ways but a key aspect in the global process is that actors require resources to acquire and transmit the scientific knowledge to global decision making platforms (Archer, 2003, Gupta, 2010). Resource endowment determines actors' ability to exercise agency through expertise. In this, Gupta and van der Zaag (2009) argue that actors with relatively more resources to generate knowledge may push science and scientific results in specific directions and marginalise other scientific research questions and methodologies relevant to those with limited resources, such as developing countries. As an example, Pattberg (2005) highlights the private sector's ability to fund scientific consultancies and develop their own governance protocols with little engagement of States or the local people. Private standards in REDD+ such as the voluntary carbon standard (VCS) have greater usage in most REDD+ demonstration projects and carbon buyers, the majority of whom are drawn from the private sector itself (Kollmuss et al., 2008, Peters-Stanley and Gonzalez, 2014). Such demonstration projects are now a key source of empirical evidence to the global negotiations thus signifying how resource endowed actors exercise agency through expertise more that poor actors. However, this has implications on legitimacy and equity at the implementation stage (see section 3.4 on implementation debates).

Mode of governance implies an organised and recognised institutional body within which actors' activities and interests are embedded (Dellas et al., 2011, Schroeder, 2010). In the context of REDD+, agency of actors in the global negotiations is recognised only if they are part of a particular mode of governance (Schroeder, 2010). Examples of modes of governance involved in designing REDD+ include but are not limited to States, intergovernmental public bodies, intergovernmental scientific bodies, private sector business and industry, nongovernmental organisations, civil society, and forest people organisations (FCCC/SBSTA/2011/INF). They all pursue solutions relevant to their organisational principles (Vatn and Vedeld, 2013, Corbera and Schroeder, 2011). For instance, intergovernmental scientific bodies provide a mode of governance for scientific actors and their scientific innovations as part of REDD+ methodology or safeguards (FCCC/SBSTA/2011/INF) (Chapter 5).

Mode of governance as a source of agency has however been criticised on account that it confers more authority to States in REDD+ (Lawlor et al., 2010, Phelps et al., 2010b, Thompson et al., 2011) and other global environmental regimes (Okereke et al., 2009). States arguably control most national institutions, citizens and enforcements mechanisms of agreed outcomes (Dellas et al., 2011). For REDD+, the expectation is that States would represent the interests of their citizens in the global process and particularly local communities who depend on forests targeted for REDD+ (McDermott et al., 2012). The paradox however is that despite States being highly legitimate in the global REDD+ design process, studies e.g. Schroeder (2010) and Sikor et al. (2010), report that local communities living within the jurisdictions of these States typically have weak agency in the global process. This could mean that agency in REDD+ through the State as the authoritative mode of governance potentially overlooks the interest of local communities. This argument is advanced in Sikor et al. (2010) who claim that States and the international community sometime marginalise the informal and unique economic and social

identity of local people, perceiving these as irrelevant to the mainstream norms of environmental governance. The other way of viewing the weak agency of local communities could be that the some States themselves could have weak agency in the global process and thus are unable to adequately bargain for the socioeconomic circumstances of their citizens (Desanker 2005).

Whether it is the State or local communities which are marginalised from exercising agency, there are implications both for implementation and even within the REDD+ design process itself. Within the global process, a key implication is the emergence of new actor constellations to exercise agency on behalf of the marginalised actors or sometimes the dominant ones (Gupta, 2008, Dellas et al., 2011, Bouteligier, 2011). Such actors may emerge as arbitrators or 'hybrid actors' mediating both expertise and resources between dominant and marginalised actors (Okereke and Dooley, 2010, Vatn and Vedeld, 2013). Bouteligier (2011) discusses the role of environmental consultancy firms as an example of such new actor constellations. These consultants have been commonly used by (mostly) resource endowed actors such as private businesses and multilateral banks to develop REDD+ strategies and sub-national demonstration projects deemed feasible within marginalised local communities in developing countries (Palmer Fry, 2011). Civil society groups and forest people alliances are also examples of hybrid actors who have emerged as advocates for local communities and indigenous people in the global REDD+ regime (Schroeder, 2010). In a similar manner, intermediary financial actors such as the World Bank also mediate funds and expertise between resource endowed actors in the developed world and resource poor actors in the developing world (Korhonen-Kurki et al., 2014).

The ability of such hybrid actors to factually represent the agency of the marginalised is contested in various studies. For instance Rietig (2011) and Schroeder (2010) argue that emerging forest people advocacy groups may only reinforce the authority of those who fund their participation in global climate

events. Also, consultancy firms may not adequately represent the interests of local communities because they act on the interests of those who pay for their services (Nepal, 2012). Similarly, the opinions of the representatives of local communities and States in the multilateral readiness process could be compromised through the financial support these local representatives and States receive to attend REDD+ readiness meetings (Thompson et al., 2011).

In the context of multiple actors with some being marginalised and others dominating in designing REDD+, Corbera and Schroeder (2011) and Visseren-Hamakers et al. (2012) raise concerns about potential institutional conflicts. Actors' roles are expected to be complementary yet their interests and capabilities in informing REDD+ design vary. Such actor interactions in designing REDD+ have potential to create synergies or conflicts with implications for REDD+ effectiveness. Visseren-Hamakers et al. (2012) therefore recommend the need for unpacking these interactions. Chapter five of this thesis examines actor interactions, roles and representation in global REDD+ design with a focus on the agency of African States in the global process. Analysing agency of States such as those of Africa where REDD+ is targeted for implementation is crucial because these States are the authority expected to represent the policy and socioeconomic preferences of a country in the global REDD+ process and safeguard resulting rules within national jurisdictions. Various scientific ways exist on how to measure agency of a particular State in global environmental regimes.

3.4.4. Assessing actor agency

In globally negotiated regimes such as REDD+, actors use their agency to get their preferences into policy decisions (Dauvergne, 2012). Measuring agency mainly builds on ways of exercising it including actor expertise and bargaining for institutional preferences relevant to an actor's mode of governance (Dellas et al., 2011). Drawing on earth system governance framework (Biermann et al.,

2010, Andonova et al., 2009, Schroeder, 2010, Dellas et al., 2011) agency can be measured by the level to which actors contribute to designing policy options and bargain for their preferences in the context of many options (Bodin and Crona, 2009, Sebenius, 1983). Through knowledge, an actor can design policy options, or give feedback on others' options. If actors are only consulted to give feedback on options designed by others with no particular promise that their feedback will be included in decisions then their agency decreases. However if their knowledge is incorporated into decisions, their agency increases (Keeley and Scoones, 2003, Schroeder, 2010). For example, if local communities are consulted on already designed REDD+ rules without being assured that their views will be reflected, then their agency decreases compared to those who designed the rules.

Various actors may contribute knowledge resulting in a menu of policy options (Keeley and Scoones, 2003). As such, actors must additionally bargain for their preferences especially in joint decision making platforms where choices have to be made among multiple options (Andonova et al., 2009, Schroeder, 2010, Schroeder and Lovell, 2012). Bargaining occurs through representation in policy negotiation platforms, such as COP in the case of climate regimes. Representation is widely discussed in the political science literature and refers to a way in which representatives act on behalf of their constituents and advocate for their preferences in a particular policy Pitkin, 1967, Dahl, 1971, Bauer and Britton, 2006). For instance, States acting on behalf of their citizens and advocating for their policy and socioeconomic circumstances in the negotiations (Dahl, 1971).

Studies show that effective representation of constituents' interests mainly depends on the number of representatives these constituents have in a political system, resource endowment and the expertise of the representatives (Pitkin, 1967, Rosset et al., 2013). More representatives' increases voting and networking capacity to push for constituents' preferences (Bauer and Britton,

2006, Pitkin, 1967) and thus increases agency. For instance, studies show that climate negotiations have increasingly marginalised developing countries due to low delegation sizes representing these countries in the negotiations (Saleemul and Sokona, 2001, Najam et al., 2003, UNfairplay, 2011, Mabey et al., 2013). Resources on the other hand give actors means to voice their preferences and influence other actors to support their preferences, thus increasing their agency compared to others (Giger et al., 2012, Rosset et al., 2013, Midgaard and Underdal, 1977). Representatives with diverse expertise, e.g. legal prowess or social networking, are able to understand the negotiation procedures and sell their ideas to others, thus increasing their agency compared to poorly composed delegations (Makina, 2013).

In recognising their varied capabilities, actors with common interests may come together to form networks such as negotiation coalitions to increase their representation (Wolmer et al., 2006). The possibility that the preferences of an actor network become part of decisions depends on how strong the actors are bonded within a network (Keeley and Scoones, 2003, Wolmer et al., 2006). If a network is loose, its preferences become weak and may not inform decisions (Keeley and Scoones, 2003). For example, negotiation coalitions of developing countries in climate regimes are often weakened by socioeconomic, cultural and political differences among members (Williams, 2005). Chapter five of this study specifically examines actor roles and representation in analysing the agency of actors involved in the global design process.

This section has shown that agency is a crucial institutional concept for analysing how REDD+ is designed at the global level because it indicates whether the necessary conditions of areas and people targeted for designing and implementing resulting rules. The section has shown that actors have varying capabilities to exercise agency and this is mainly structured by their resource endowments. This relative actor agency may have varied implications on implementing resulting rules at national and local levels.

3.5. Debates on REDD+ implementation

The previous section shows that various actors may exercise varying agency in designing REDD+ depending on their resource endowment, expertise and interests. These have implications for implementation REDD+ at the national and local levels. This section analyses broader concepts about institutional implementation and links these to REDD+.

3.5.1. Institutional interplay

Institutional interplay theory enables understanding of how global design processes and rules interplay with national policies. Institutional interplay involves two or more institutions interacting in a manner that affects their effectiveness in various ways (Young, 2002, Gehring and Oberthür, 2009). Interplay can be unidirectional where the institutions influence each other positively or negatively (Young, 2002, Gehring and Oberthür, 2009, Oberthür and Stokke, 2011). In multilevel interactions, interplay can be horizontal involving institutions of the same level or vertical involving different levels. Both vertical and horizontal interplay are relevant in REDD+. Vertical interplay occurs when global REDD+ rules are instituted into national policies while horizontal interplay occurs when nationally implemented REDD+ rules interact with national sectoral policies. Outcomes of interplay can be beneficial or complementary if both institutions support similar objectives (Miles et al., 2002). For example, global REDD+ rules on halting deforestation could positively interplay (benefit from) national land policies that inhibit resettlement in forest areas. However, the effects can be adverse in case of diverging institutional objectives (Urwin and Jordan, 2008). This study applied vertical interplay to analyse how the global design process plays out in implementing REDD+ at the national level and horizontal interplay to analyse how the resulting rules interact with existing sectoral policies (see details in Chapter 4).

3.5.2. Institutional/Policy implementation

Institutional or policy implementation refers to translating the resulting rules and policies into practice through on-ground activities (Sabatier and Mazmanian, 1980). In the context of REDD+, this means translating the negotiated decisions on forest protection into practice and coordinating activities to deliver on sustainable development outcomes (appendix 1/CP. 16). Policy implementation remains a key challenge in environmental governance with most policy decisions characterised by implementation deficits (Leventon and Antypas, 2012). Implementation deficits occur when the original goals of a policy are not met either because the policy itself is not translated into action or the policy is translated into action but fails to sufficiently solve the targeted problem(s) (Jordan, 1999). Implementation deficits may originate from the process of designing the policy itself, the way in which the policy is executed or both (Sabatier and Mazmanian, 1980). Such deficits may be evaluated in terms of achievement of expected outcomes (Jordan, 1999).

In a multilevel environmental policy such as REDD+, actors interact at every governance level to produce policy outputs whose outcomes are expected to be achieved at lower levels of governance (Leventon and Antypas, 2012; Ostrom 1994b). REDD+ implementation at the national level in most developing countries currently involves instituting global rules as part of national policies, while at the local level implementation involves execution of sub-national projects designed from the global process because national policies are not yet concluded (Cerbu et al., 2011, Peters-Stanley and Gonzalez, 2014). A key point in multilevel policy implementation is that each level creates sources for implementation deficit that affect outcomes at the next level. Given that REDD+ implementation is expected to achieve sustainable development outcomes, this implementation framework is important for examining sources of implementation deficits in REDD+. The next subsection analyses the sustainable development outcomes expected from implementing REDD+.

3.5.3. Expected outcomes of REDD+ implementation

REDD+ emerged as part of sustainable development action. Article 3.4 of the UNFCCC declares that climate change policies should account for sustainable development needs of developing countries. This declaration is adopted in REDD+ through its safeguard theories (Appendix 1/CP. 16, g) which declares that REDD+ should 'be implemented in the context of sustainable development and reducing poverty while responding to climate change'.

Through these safeguards, both sub-national and national REDD+ projects are expected to achieve environmental and social sustainability. Actions to achieve environmental sustainability range from protection of biodiversity, avoidance of conversion from natural to plantation forests among others. These actions could replenish forest ecosystem functions such as nutrient cycling, land productivity, protection of water catchments (Attiwill and Adams, 1993), and climate regulation (IPCC, 2000), supportive to the current and future generations. Social sustainability measures include poverty alleviation, equity and rights of local communities to participate in and benefit from REDD+ activities and stakeholder participation in decisions. The debates on how to ensure environmental sustainability through forest protection have been presented in section 3.3. These include performance requirements such as additionality, avoidance of leakage and emission reversals, sustainable forest management and avoidance of forest degradation all aimed at increasing forests cover, biodiversity and carbon stocks. In the next subsections focus is given to social outcomes including, stakeholder participation and poverty alleviation /benefit sharing both at the national and local levels.

3.5.4. Stakeholder participation

Participation in the context of REDD+ implementation refers to the contribution of actors in executing globally agreed decisions at national and local levels

(Angelsen et al., 2009). Participation enables the knowledge and interest of affected actors to be accounted for in implementing policies (Ribot, 2009). At the national level, participation of various stakeholders in instituting REDD+ could generate vital information on forest management and strategic ways of addressing drivers of deforestation (Brockhaus et al., 2013, Di Gregorio et al., 2012). Stakeholder participation also enhances information flow and coordination between sub-national projects and national governments to create suitable multilevel governance systems for REDD+ (Murray and Olander, 2008, Di Gregorio et al., 2012). Some studies however are concerned that bureaucracy and resource centralisation regimes in developing country governments could impede involvement of all stakeholders in implementing REDD+ at the national level (Brockhaus et al., 2013). On the other hand multiple participatory activities could create REDD+ 'fatigue' and slow implementation (Di Gregorio et al., 2012). As such, there is a need to analyse the ways in which stakeholders are engaged in the ongoing implementation of REDD+ and unlock barriers that could impede implementation. Chapter 5 analyses how various stakeholders across sectors and including local communities are involved in implementing REDD+ at the national level.

Existing debates on participation have been mainly concerned with the participation of local communities in implementing REDD+ at national and local levels (Cerbu et al., 2011, Minang et al., 2014b). Scholars particularly point out that the weak agency of these communities in the global REDD+ design process compromises their participation rights in implementing REDD+ at national and local levels (Lederer, 2012, Schroeder, 2010, Sikor et al., 2010, Thompson et al., 2011). The global design such as carbon accounting procedures may not be well understood by these local communities who may have more interest in livelihoods than carbon. Luttrell et al. (2012) specifically argue that local support for REDD+ could be weak if local communities do not

perceive that, for example, carbon measures constitute fair benefit sharing mechanisms or are feasible with their understanding.

While weak agency could have implications especially for implementation, some scholars have argued that resource endowed actors in the global rule making process often attempt to legitimise rules among marginalised groups through financial support (Bäckstrand, 2008, Bäckstrand, 2006). In such circumstances, marginalised actors sometimes fail to recognise that their agency in the process is weak and instead become more supportive of the decisions made by the resource endowed actors (Bäckstrand, 2006). For instance, the private sector may implement sub-national REDD+ projects within local communities and legitimise the REDD+ rules within these communities. It is argued that such support has been used by some non-State actors as part of forum shopping to gain legitimacy over States, especially where States have failed to respond to the needs of these local communities (Gupta and Lebel, 2010) yet the State is still expected implement and safeguard resulting rules within national jurisdictions.

Local settings, including livelihood activities, household/community networks and land tenure, are crucial in shaping how people view, perceive and participate in REDD+ projects (Agrawal and Angelsen, 2009, Agrawal et al., 2011, Angelsen et al., 2012, Jindal et al., 2008, Wertz-Kanounnikoff and Kongphan-apirak, 2009, Pokorny et al., 2013). Empirical studies on how local settings shape participation in REDD+ activities are however scarce as focus has been given to how REDD+ impact on livelihoods. A few empirical studies, e.g. Romijn et al. (2012), found that human capabilities, skills and education shape both governments' and people's ability to understand and implement carbon monitoring activities. Maraseni et al. (2014) also found that community networks, e.g. Community Forest User groups in Nepal, provided local networks for increased exchange of information among community members

and subsequent understanding and participation in the Nepal's Forest Carbon Trust Fund.

Adapting project designs to local settings may also require adjustments in global designs to suit local settings. Corbera et al. (2009) studied Mexico's Programme of Payments for Carbon, Biodiversity and Agro-forestry Services (PSA-CABSA) and found that projects make procedural changes to original designs to enhance participation. Corbera et al. highlight that such changes in design procedures subject to local settings are sources of institutional interplay in implementing multilevel PES schemes and are indicative of institutional performance of such schemes, which requires research attention. Chapter 7 of this thesis analyses how local communities and their assets participate in implementing a globally-linked REDD+ project and how this participation shapes livelihood benefits and subsequent poverty alleviation.

3.5.5. Poverty alleviation

Poverty alleviation in the context of REDD+ involves development and livelihood impacts of REDD+ activities both at the national and local levels (Mwakalobo et al., 2011). Poverty is a major cause of deforestation in developing countries where communities depend on forests for livelihoods (IUFRO, 2009). As such by supporting development and livelihoods, REDD+ could reduce poverty and address deforestation thereby achieving its original goal of emission reduction and sustainable development (Pokorny et al., 2013).

At the national level, most African governments, e.g. Kenya (Republic of Kenya, 2013b), the Congo basin countries (Brown et al., 2011), and elsewhere, e.g. Vietnam (Di Gregorio et al., 2013), already align REDD+ with their economic development strategies. Such economic expectations usefully leverage government support for REDD+ at the national level (Di Gregorio et al., 2012). However, there are concerns that corruption in government

departments may result in misuse of funds and compromise expected developments (Di Gregorio et al., 2012, Peskett et al., 2011).

At the local level, REDD+ funds through sub-national projects are expected to support livelihoods (Brown and Bird, 2008, Schroeder, 2010, Thompson et al., 2011, Griffiths and Martone, 2009, Leach and Scoones, 2013, Ghazoul et al., 2010). Scholars however contest this notion based on equity grounds. Scholars, e.g. Ghazoul et al. (2010), think that livelihood benefits to local communities could be lost as forests become locked in commoditisation of carbon, potentially to the benefit of powerful government and business actors with greater agency in the global design process.

Related to equity concerns, some studies have cautioned that a transition to a purely carbon based approach to REDD+ could compromise local livelihood benefits as project investors' could be unwilling to fund non-carbon public goods such as capacity building (Brown et al., 2011, Pokorny et al., 2013) . This could be exacerbated by unstable carbon prices that have been shown to constrain funds for livelihood support (Mathur et al., 2013).

In the context of uncertainty created by external factors such as fluctuating carbon prices, some scholars argue that REDD+ may create false hopes by promising to alleviate poverty (Dzingirai, 2014). While such hopes may be sustained in some cases through project-specific strategies (Bernard et al., 2014), failure to meet these hopes could result in livelihood disfranchisement, institutional conflicts and uncertainty about what people should expect from REDD+ (Luttrell et al., 2012, Dzingirai, 2014). Angelsen et al. (2012) acknowledge that huge challenges face REDD+ implementation at the local level and this will require REDD+ projects to make certain choices regarding livelihood support to local communities. One key choice that has been emphasised in lietarture is the need for REDD+ to be pro-poor in order to succeed (Enright, 2012, Mohammed, 2011, Bond, 2010).

3.5.6. Pro-poor REDD+

From the perceptive of ecosystem services, the concept of pro-poor has been defined as policy actions that aim to increase the assets and capabilities of the poorer people in any given setting while avoiding any harm to these poor ones (Gross-Camp et al., 2012, Curren and de Renzion, 2006). Pro-poor actions became eminent in REDD+ implementation debates due to two claims; 1) that REDD+ is emerging as part of regulated market for ecosystem services with institutional architecture focused on efficiency rather than equity and this might harm poorer people with scarce asset entitlements (Ghazoul et al., 2010, Griffiths and Martone, 2009, Corbera et al., 2007) and 2) that poorer people in developing countries depend more on forests and are responsible for deforestation and so to effectively protect forests, their needs should be prioritised (Mohammed, 2011, Gross-Camp et al., 2012, Bond, 2010).

These concerns have shaped views about pro-poor REDD+ in terms of tangible livelihood benefits and non-tangible social benefits to the poorer people living in areas targeted for REDD+ implementation. In terms of tangible benefits, REDD+ should support co-benefits and build livelihoods and capabilities of the poor people and avoid harm to them (Angelsen, 2008, Pokorny et al., 2013, Enright, 2012, Mohammed, 2011, Bond, 2010). Non-tangible pro-poor benefits largely entail inclusion and recognition of the rights and knowledge of poor people in REDD+ decisions and activities (Enright et al., 2012, Bond, 2010, Schroder and McDermott, 2014). REDD+ initiatives should inform people of potential harms, clarify carbon rights, legal implications etc. and these should be supported by transparent and democratic local institutional arrangements (Ribot, 2011, Martin et al, 2010). Ideally, pro-poor strategies should create a strong sense that the poor are gaining more relative to the non-poor (Gross-Decamp et al, 2014). Proponents of pro-poor REDD+ add that the approach would make REDD+ more legitimate and effective in developing countries

where a majority are poor and dependent on forests (Mohammed, 2011, Karsenty et al., 2014).

Some studies are however sceptical about this pro-poor notion, arguing that mitigation action is urgent to prevent climate change and should not be burdened with additional objectives such as addressing poverty and bio-diversity (Torres and Skutsch, 2014). Others argue that pro-poor approaches may not necessarily improve effectiveness because there exist a complex relationship between multiple ecosystem services (Martin et al., 2010). In this Martin et al. (2010) and Gross-camp et al., (2012) argue that non-poor may still draw more benefits in PES schemes such as REDD+ given their greater entitlements to assets such as land that are critical for REDD+ rewards. It has further been argued that market mechanism through which REDD+ is evolving may not function efficiently with pro-poor institutions which are largely informal and may not support efficiency thereby weakening private sector commitment to REDD+ (see Bulte et al, 2008, Corbera et al., 2009). Concerns about asset entitlements for REDD+ implementation has invoked arguments that profit-seeking actors who may have strong agency in the global process could steer REDD+ investments away from poor communities in a bid to avoid high investments costs (Thompson et al., 2011, Vatn and Vedeld, 2013). A large cadre of literature claims that poor socioeconomic development has impeded CDM activities in most poor countries and communities (Pearson et al., 2006, Saunders et al., 2002, Silayan, 2005).

The competing concerns reveal that pro-poor approaches could be important in ensuring effectiveness of REDD+ especially in terms of forest conservation and sustainable livelihoods. However, focusing on the poor people could, to some extent, compromise efficiency especially due to the low levels of asset entitlements (unclear tenure regimes, small land size etc.) which could impede efficient operations of markets for REDD+. Global policy process on REDD+ have nonetheless made efforts to consider pro-poor principles in REDD+ design

both in terms of spatial targeting and safeguards (decision 4/COP 16). There is a generic notion that REDD+ is pro-poor climate policy instrument because it targets developing countries (Angelsen, 2008c, Pokorny et al., 2013). It is viewed that REDD+ should increase participation of poor countries in carbon markets and achieve sustainable development (UN-REDD, 2010, World Bank, 2011, Stern, 2006). Some studies have argued that simplified standards and diversified funds within REDD+ potentially enable REDD+ investments within poor communities, e.g. smallholders to access carbon funds, compared to the CDM (Bond et al., 2009, Diaz et al., 2011). Also, most proponents of sub-national projects have justified their activities on a pro-poor basis, advancing claims that their projects provide better conservation and development alternatives in these poor areas (Cerbu et al., 2011, Wildlife-Works, 2008). However, while the pro-poor spatial targeting is based on the fact that REDD+ targets developing countries, little is known as to whether REDD+ is spatially pro-poor within developing countries. As such, Ebeling and Yasué (2008) voice the need for REDD+ to be scientifically checked against repeating the same CDM mistakes of maginalising the poor. Chapter 6 of this thesis draws evidence from Kenya to analyse whether REDD+ is actually pro-poor within a developing country specifically focusing on the spatial choices of globally linked REDD+ demonstration projects against varying sub-national socioeconomic circumstances.

Empirical studies on the implications of pro-poor approach for REDD+ in practice have mainly interrogated development/livelihood impacts of globally-linked REDD+ projects. Case studies both in Africa e.g Mozambique and Democratic Republic of Congo (DRC) (Mathur et al., 2013), Tanzania (Luttrell et al., 2012, Mustalahti et al., 2012), Ghana (Hashmiu, 2012), Kenya (Entenmann et al., 2014) and elsewhere e.g. Brazil (Pokorny et al., 2013) and Mexico (Corbera et al., 2007), report that projects have achieved some positive livelihood impacts including employment, increased income and awareness

creation. A fundamental claim common across the empirical studies is that the acceptance and subsequent success of the projects largely depend on pro-poor livelihood support that incentivise forest conservation and keep people out of forests (Pokorny et al., 2013).

The need for REDD+ to be pro-poor is an empirically established fact. A key concern raised in the empirical studies however remains on how the pro-poor approaches can be achieved especially with respect to equity in benefits sharing between projects, land owners and non-land owners. A review of projects under the CIFOR's Global Comparative study reveals widely varied conceptualisation of pro-poor and equitable benefit sharing among these projects (Luttrell et al., 2012). Some of the projects conceptualise benefits based on carbon rights or forest stewardship. Others direct benefits to those who incur costs, e.g. implementation, transaction and opportunity costs, while some channel benefits to the people thought to be effective implementers of project activities. Luttrell et al. (2013) are concerned that these perceptions make it difficult to understand how equitable benefit sharing should be measured in REDD+ and recommend that REDD+ countries need to engage all affected stakeholders in defining common benefit sharing mechanisms. Ideally, some of these benefit sharing attributes are not in line with pro-poor theories outlined in the previous paragraphs. To inform the debates on REDD+ implementation and pro-poor discourse, empirical evidence on various benefit sharing mcahnisms among different social groups and the pro-poor strategies that work out are required (Luttrell et al., 2013). According to Mustalahti and Rakotonarivo (2014), empirical studies could clearly conceptualise pro-poor strategies in REDD+ by facilitating participatory wealth ranking to identify poorer members of participating communities. Chapter 7 of this thesis examines the implementation of a globally linked REDD+ project and applies wealth ranking to reveal how various social groups draw, perceive and expect benefits from REDD+.

Benefit sharing, from a pro-poor perpective and participation are important issues in REDD+ implementation debates. The challenge however is that REDD+, with its globally designed procedures, is new to these settings and may not immediately adapt to the local context, especially in terms of what forms of participation or benefit sharing that count in these settings. One way of adapting REDD+ to local contexts is by drawing lessons from pre-REDD+ ICDPs that have worked in these settings over many years addressing conservation and development (Agrawal and Angelsen, 2009).

3.5.7. Learning lessons from ICDPs

ICDPs had been introduced in subsection 2.2.3 but this subsection briefly discusses their linkages with REDD+. ICDPs are conservation and development initiatives that have been implemented in the local settings of developing countries targeting the same sustainable development goals as REDD+ (Agrawal et al., 2008, Brandon and Wells, 2009). In their work, the ICDPs have engaged local settings in different ways, establishing varied participation and benefit sharing approaches that could influence the way REDD+ is perceived, judged or accepted. Theoretical literature closely associates ICDPs design, activities (Minang and van Noordwijk, 2013, Blom et al., 2010), actors (Cerbu et al., 2011) and investments choices (Cerbu et al., 2011, Sills et al., 2009) with those of REDD+. Other studies suggest that REDD+ could build on certain positive ICDP and Community Based Natural Resource Mangement (CBRM) approaches such as community mobilisation (Minang and van Noordwijk, 2013) but could also correct ICDP failures (se subsection 2.2.3). Such empirical analysis could reveal whether REDD+, in its multi-governance system, could create a shift in forest governance or maintain the status quo as in the case of ICDPs. Lessons need to be empirically analysed through the implementation of REDD+ (Agrawal and Angelsen, 2009, Blom et al., 2010). The last empirical Chapter of this thesis (Chapter 8) analyses the

implementation lessons that REDD+ draws from ICDPs that have operated in the same local setting targeted for REDD+.

Overall, this section has presented research needs for analysing the implementation of REDD+ in the context of sustainable development. The key issues revolve around poverty alleviation, benefit sharing and participation both at the national and local levels. While national level benefits are still not in place, participation of stakeholders, including local communities, in the on-going institutionalisation of REDD+ rules at the national level is crucial. At the local level, both participation and benefit sharing are crucial and mutually linked outcomes determining effective implementation of REDD+. As such, using suitable analytical frameworks to analyse how the outcomes are achieved in practice and the sources of interplay from the global process could help identify implementation deficits.

3.6. Conclusion

This Chapter has examined scientific debates on REDD+ ranging from technical to institutional and implementation issues. In these debates, research gaps have been highlighted. The debates show that a key challenge to REDD+ remains on how to harmonise global REDD+ institutional process characterised by multi- actor interests with national level polices and local socioeconomic settings where forests are hosted. This Chapter thereby reveals the need for multilevel analysis of REDD+ institutions and their implementation within national and local contexts to identify institutional conflicts and synergies in REDD+ design and implementation. The Chapter has also discussed the suitability of the SLF in guiding the analysis but also highlights that the framework is limited in linking local context to broader institutional processes as envisaged in this study. To fill the gap, the next Chapter draws on the SLF to develop a more comprehensive multilevel and multi-actor institutional framework ‘the IDAF’ that is applied in this study.

Chapter 4

Study area, design and methods

4.1. Introduction

This Chapter describes and justifies the study area, design framework and methodological steps taken in gathering and analysing data to answer the study objectives. The Chapter is divided into seven sections. Section two describes and justifies Kenya as a suitable case study country for understanding how globally designed REDD+ rules are implemented. The section describes the trends and status of Kenya's biophysical, socioeconomic and policy features relevant to forests and livelihoods. The third section describes the specific study sites including procedures and justifications employed in selecting the sites. The overall study design and analytical framework are discussed in the fourth and fifth sections respectively. The linkages between study concepts, objectives and data collection methods are indicated in the design. Section six, provides an overview of methods employed in collecting and analysing data. The section draws on relevant methodological literature to justify each method in terms of their strengths and relevance to specific study objectives. The steps taken to overcome certain weaknesses of individual methods are outlined as necessary and the main study limitations are also acknowledged. It should be noted that methodological discussions here are general. Specific methodological details are included in each empirical Chapter (Chapters 5-8). The seventh section of this Chapter outlines ethics and positionality of the researcher during data collection, handling and presentation.

4.2 . Study Area: Kenya

Kenya was selected as a suitable case study country for understanding how globally designed REDD+ is implemented. This section first discusses the use

of a case study approach and then justifies the suitability of Kenya as a case country. The key biophysical, socioeconomic and policy settings of Kenya are then discussed and linked to forests and climate change policies. The section also outlines the procedures employed in selecting specific case project and study sites within Kenya.

4.2.1. Case study approach

A case study approach involves using a particular setting to describe, test or generate theory (Yin, 1984). The approach is supported as a useful way of understanding how rules are translated into practice (Eisenhardt, 1989). Multiple cases can be used as case studies, especially in pursuing multilevel analysis (Yin, 1984). The strength of a case study approach lies in the fact that it permits detailed interrogation of issues and generates informative lessons that can be applied in similar cases (Eisenhardt, 1989, Yin, 1984). The case study approach is particularly suitable for analysing REDD+ institutions that are globally standardised but are targeted for implementation within diverse developing country settings; settings which are practically impossible to be covered in a single study. REDD+ studies have therefore commonly applied the case study approach for various levels including country cases (Minang et al., 2014b) and project cases (Pokorny et al., 2013). The case study approach is however critiqued on the basis that findings from a single case may not be generalised to other settings (Eisenhardt, 1989). To improve the generalisation of case study findings, Yin (1984) recommends the use of representative cases that reflect other settings and the wider framework of the topic under investigation. In this study, Kenya was selected as a representative case country.

4.2.2. Suitability of Kenya as a case country

Kenya was selected as a suitable case country for three reasons. Firstly, Kenya has committed to international climate actions. The country is a signatory to the

UNFCCC (in 1994), the Kyoto Protocol (in 2005), and is currently involved in REDD+ negotiations (Republic of Kenya, 2011). As part of national and international climate obligations, the Kenyan government has prepared a climate change action plan for 2013-2017. In the plan, REDD+ is emphasised as one of the low-carbon development pathways in the country's development plan 'the vision 2030' (Republic of Kenya, 2012a). The UNFCCC also expects other African countries to align their REDD+ plans with development agenda. As such, Kenya's climate institutions and actions provide a national case for understanding and informing the multilevel linkages between international and national REDD+ activities in the context of sustainable development.

Secondly, Kenya, alongside 16 African countries, currently participates in the REDD+ readiness process under the World Bank's FCPF and UN-REDD. Lessons generated from this study, could be adopted widely by the other African countries whose institutional processes draw from similar readiness procedures and conditions.

Thirdly, Kenya is a leading adopter of REDD+ demonstration projects compared to most African countries (Cerbu et al., 2011, Diaz et al., 2011). Kenya hosts 'the Kasigau Corridor REDD+ project, the world's first globally linked REDD+ project to sell verified carbon credits in the voluntary carbon market (Peters-Stanley et al., 2013). Lessons from such REDD+ interventions will be of interest to most project developers implementing or intending to implement REDD+ projects in different parts of Africa and elsewhere.

4.2.3. General background of Kenya

Kenya is in East Africa at 0.4252° S, 36.7517° E. The country covers an area of 580,728 square kilometres, 2.2% of which is covered by water bodies. Kenya is administratively divided into 47 Counties making up eight provinces (Republic of Kenya, 2010c). The country's population currently stands at 41 million persons (Republic of Kenya, 2009). Of the 41 million persons, 67.7%

live in rural areas where they mainly practice rain-fed agriculture and other land based forms of livelihoods. Eighty percent (80%) of Kenya's terrestrial land is classified as semi-arid to arid (ASALs) and only 20% with humid and semi-humid conditions.

Kenya's economy and livelihoods depend significantly on her natural capital including agricultural land and forests. Rain-fed subsistence and commercial agriculture are the main sources of local subsistence livelihoods and national GDP earnings for Kenya. Agriculture directly contributes about 25% of Kenya's GDP and also supplies numerous non-marketed goods and services such as firewood, construction material, fruits and opportunities for informal labour to the country's rural population (Republic of Kenya, 2010a). The role of forests in supporting Kenya's economy and livelihoods is crucial but, as outlined in the next subsection, these forests are subjected to both threats and conservation efforts.

4.2.4. Kenyan forests: status, functions, threats and conservation

Kenya hosts a diversity of forests ranging from indigenous or natural closed canopy, plantation, mangrove and open woodlands occurring in humid and dryland ecosystems (Republic of Kenya, 2013a). Kenya's forest cover currently lies at 6% of the country's land area and this is approximately half of the coverage five decades ago (Republic of Kenya, 2013a). On average, Kenya losses about 12,000 hectares of closed canopy forests annually (FAO, 2010b). The remaining forests constitute about 10% humid forests and close to 85% dryland forests comprising woodlands and savannah grasslands (Republic of Kenya, 2013a).

Through ecosystem services such as rainfall, temperature regulation, and erosion control across water catchments, Kenyan forests support both subsistence and commercial agricultural activities (Campbell et al., 2000, Republic of Kenya, 2013a). Some 10% of Kenyans, mainly local communities

including indigenous people, live within five kilometres of both dryland and humid forests and pursue rain-fed farming within these forests (Geller et al., 2007). These local communities also use forest provisioning services such as livestock fodder, firewood and charcoal for livelihoods and for coping during hard times, such as during climatically induced agricultural failures (Thenya and Kiama, 2008).

Kenya's humid forests are water towers for hydroelectric power generation for the country's industrial activities. They also provide enabling ecosystems for the Kenya's cash crops e.g. tea and coffee. Dryland forests host most of the country's wildlife conservancies such as the Tsavo national park and Maasai game reserve. These conservancies are sources of touristic revenue for the Kenyan economy. The dryland forests also constitute expansive savannah and grassland ecosystems supportive to pastoral and agropastoral activities (ole Riamit, 2010).

Both humid and dryland forests are however under threat, mainly from anthropogenic activities. Much of the deforestation in Kenya (about 83%) occurs within indigenous closed canopy and open woodland forests (Table 4.1).

Table 4.1: Trends in the spatial cover of various types of Kenyan forests. Source: FAO (2010)

	Area ('000 ha)				
Category of forest resource (FAO definition)	1990	2000	2005	2010	Change between 1990-2010 ('000 ha)
Natural closed canopy forests	1240	1190	1165	1140	-5
Indigenous Mangrove Forest	80	80	80	80	0
Open woodlands	2150	2100	2075	2050	-5
Public Plantation Forests	170	134	119	107	-3.15
Private Plantation Forests	68	78	83	90	+1.1
Total Forest Change	**3708**	**3582**	**3522**	**3467**	**-12.05**
Bush lands	24800	24635	24570	24510	-14.5
Farms with trees	9420	10000	10320	10385	48.25

Deforestation results mainly from a nexus of livelihood, development and political interests (Mogoi et al., 2012, Wass, 1995). Forest encroachment for peasantry agriculture is a direct cause of forest losses in Kenya (Wass, 1995). Peasantry driven deforestation evolve from the initial forest management approaches such as shifting cultivation in the 1970s and the shamba system in the 1980s. Both shifting cultivation and the shamba system aimed to integrate subsistence farmers into forest management by allowing them to cultivate crops in the forests and plant and care for the trees before moving to other forest sections (Republic of Kenya, 1994).

In the context of a rising population, the post-colonial authorities, especially in the lands sector used peasantry agriculture as spaces for politically driven allocation of forests lands. The authorities allocated gazetted forests as part of settling landless peasants (Ndungu Land Commission, 2004). In the era of multi-party democracy in Kenya and associated competitive electoral politics, resettlements in forests areas were executed mainly as part of gaining electoral advantage. Sections of gazetted natural forests were also allocated to loyal political and private sector actors for commercial agriculture such as tea plantations (Ndungu Land Commission, 2004). Additionally, corrupt forestry and local government officials administering the resettlement process extended official resettlement boundaries allocating, to themselves, extra forest areas. As a result, in the period between 1972 and 1990 Kenya recorded the highest losses of natural forests (Wass, 1995). In the context of international concerns on environment and development, significant efforts have been made to conserve Kenyan forests.

Efforts towards conserving Kenyan forests build on emerging forest decentralisation policies that support participatory forest management in a bid to curb peasantry forest encroachment (Republic of Kenya, 2007a). The Kenya Forest Act of 2005 particularly legalises community forest associations (CFAs) as a mode of governance within which local communities can participate and

benefit from integrated forests management initiatives (Republic of Kenya, 2005). A number of other policies such as Kenya's new constitution, and in agriculture, climate change and REDD+ plans also target enhanced management of land resources including forests (Table 4.2).

Table 4.2: Forest related policies in Kenya

Policy	Description
The Constitution of Kenya (2010) and Vision 2030. (Republic of Kenya 2010c)	Provides the legal basis for policies in Kenya. The constitution establishes the bill of rights that recognises people's rights to clean and healthy environment. This bill of right provides the policy framework climate change mitigation and adaptation initiatives in the forestry sector.
National Climate Change Action Plan 2013-2017 (NCCAP) (Republic of Kenya, 2012a)	The Plan provides a framework for instituting climate change mitigation and adaptation actions in various sectors. The Plan recognises forests as the most cost effective way of mitigating climate change. The plan emphasises REDD+ as a way of archiving forestry mitigation and adaptation within an international framework.
REDD+ readiness plans (Republic of Kenya, 2010b)	REDD+ readiness plans aim to technically and institutionally prepare Kenya for effectively participating in REDD+. The REDD+ readiness involves 48 other developing countries, a third of which are from Africa. The process is supported through established multilateral funds under the World Bank and the UN-REDD.
The Kenya Forestry Master Plan 1995-2020 (Republic of Kenya, 1994)	This is a 25 year plan aimed at informing sustainable management of Kenya's forests and associated resources. The plan provides the basis for the Kenyan Forest Act of 2005 and the Forest Policy of 2007.The Plan recognises the role of forests in climate change mitigation and adaptation.
Land Act (National Land Policy, 2007)	This policy establishes reforms in the land sector by reinforcing principles of equity, productivity and sustainable land use. The Act recognizes various forms of land ownerships (e,g. leasehold and freehold and land types (private, public and communal). The provisions on land access and ownership influences how different types of forest land can be owned, acquired or transferred.
The Kenya Agricultural Sector Development Strategy (Republic of Kenya, 2010d)	This policy specifies strategies for agricultural development in Kenya. Its objective is to promote agricultural development that enhances economic returns and alleviate hunger and poverty. It recognises the need for sustainable land management in agricultural land use.
Environmental Management and Coordination Act (Republic of Kenya, 1999)	This Act provides a national framework for environmental management including environmental coordination and assessment as well as approval of development projects in the forestry (and other) sectors. The Act established the National Environmental Management Authority which is the Designated National Authority (DNA) and Implementing Entity (NIE) for mitigation programmes such as REDD+ and CDM and Adaptation Fund respectively.

Conservation efforts through ICDPs have mainly been targeted at humid forests that are considered as water towers supportive to industrial and commercial agricultural activities. However, Kenya's dryland forests have received little

attention even though they too contribute significantly to the country's economy. The dryland forests have long been neglected and are now frontiers of deforestation as humid forests become restricted. The Kenya's climate change action plan recognises both dryland and humid forests but emphasises the dryland ones as crucial for REDD+.

4.2.5. Kenya's climate change plan and REDD+

Kenya's National Climate Change Action Plan (NCCAP) for 2013-2017 (Republic of Kenya, 2013a) outlines mitigation and adaptation options that are in line with the UNFCCC framework and Kenya's development plans. The plan outlines specific climate compatible development actions within key economic sectors such as forestry, energy, transport, industry, electricity and wastes. The plan argues that selected sectors present the most effective opportunities to achieve national mitigation commitments and development needs.

Agriculture and forestry sectors are particularly targeted for low carbon development because they collectively emit the most GHGs (72%) in Kenya and also support the country's economy and livelihoods. For both these sectors, forestry activities are emphasised. Agroforestry practices such as on farm woodlots and boundary and hedge row plantings are targeted to offset the country's agricultural emissions expected from increasingly mechanised cash and food crop production. Net emission reductions are mainly expected from forests. The NCCAP reveals that deforestation accounts for 32% of national GHGs and if curbed, could significantly contribute to the country's emissions abatement targets.

The climate plan singles out REDD+ as the main intervention for funding and achieving emission targets through forests. Specifically, REDD+ would achieve this through incentivising the rehabilitation of degraded lands and protecting existing forests especially those in dryland areas. Rehabilitating and protecting dryland forests are targeted as cost-effective undertakings because of available

land, relatively low populations and yet increasing forest exploitation in these areas. Already, a concept paper for restoring dryland forests through REDD+ has been prepared (Murphy and McFatridge, 2012). The concept proposes incentive driven restoration and rehabilitation of dryland forests. Such incentives may include non-charcoal enterprises, capacity building and demonstrations based on evidence generated through research and other government inventories.

As mentioned earlier, Kenya is preparing to implement these REDD+ practices in line with an internationally agreed framework. Since 2008, the country has been putting in place national REDD+ institutions using technical and financial support or 'readiness support' from the World Bank's Forest Carbon Partnership Facility (FCPC) and the UN-REDD. In the context of readiness support, Kenya has prepared a readiness plan that includes forest management strategies and ways of addressing deforestation, and necessary institutional arrangements for implementing monitoring and reporting forest and carbon stock changes. The readiness process also allows Kenya to build financial networks for her REDD+ activities and exchange REDD+ lessons with the other countries involved in the readiness process (FCPF et al., 2010) (see section 4.3.3 for more details).

This section reveals that Kenyan forests are a key natural resource for the country's economy and livelihoods. Kenyan policies therefore target REDD+ as a new strategy for incentivising forest conservation, meeting her climate commitments and attending to development. REDD+ policies are however still evolving. At this critical point, there is a need for evidence on how REDD+ can work as the country navigates the institutional pathway to full implementation. Targeting ongoing implementation of REDD+ demonstrations for research analysis can generate crucial empirical evidence on what works or not (Caplow et al., 2011).

4.3 Case study REDD+ project and field sites

This section explains the procedures employed in selecting a case study REDD+ project within Kenya and how specific sites were chosen from the project area. The relevant characteristics of the selected case project and associated sites are also described here.

4.3.1. Selection of case study REDD+ project

This study analyses the REDD+ design process at the global level and takes Kenya as a case study country to understand how resulting rules are implemented at national and local levels. While the rules are still being instituted (implemented) at the national level in Kenya (Republic of Kenya, 2013b) and other developing countries, implementation at local levels is ongoing through sub-national demonstration projects. These projects comprise a hybrid of forestry and agroforestry initiatives (Brandon and Wells, 2009, Peters-Stanley et al., 2013). Primary field data were therefore collected from sites where there is ongoing implementation of REDD+ projects (objectives 3, 4 and 5).

The selection of a suitable case project for this study was informed by objective 3 (Chapter 6) which mapped and evaluated REDD+ projects across Kenya's socioeconomic settings. From a total of 15 projects, the Kasigau Corridor REDD+ project was selected. The selection process was based on three criteria aided by expert consultations: (1) international verification (2) project implementation period (3) socio-ecological context. In the first step, a project accredited by an international standard, specifically the VCS, was preferred. This is because most buyers of forestry credits prefer the VCS standard and perceive it as credible in verifying credits (Peters-Stanley et al., 2013, Kollmuss et al., 2008, 2014). Due to this legitimacy, the majority of REDD+ demonstrations seek the VCS as a way of getting carbon buyers (Peters-Stanley and Gonzalez, 2014). The VCS is also recognised in the UNFCCC negotiations

as an appropriate expert standard for verifying REDD+ projects (UNFCCC, 2010). The VCS provisions thus make it possible for a project's design and implementation to be linked to global rules and shared across other projects. Out of the 15 projects, ten were registered under the VCS although only three had been VCS certified.

The certified projects were prioritised and assessed against the implementation period criteria. A project that had engaged communities for more than five years was preferred as a suitable case for enhancing confidence in data collected. Confidence in data in this case results from project exposure to dynamic socioeconomic and ecological processes for a relatively longer time thus providing realistic experiences on the interplay between REDD+ activities and local settings (Jagger et al., 2010). From the three projects, the Kasigau Corridor REDD+ project and the Kenya Agricultural Carbon Project (KACP) had worked with local communities for eight and five years respectively. In the final analysis, the Kasigau project was preferred to the KACP mainly due to the project's sociological context. The project specifically operates in part of the dryland ecosystem that the Kenya's climate plan prioritises for REDD+ (see subsection 3.1.5). The project is the world's first REDD+ initiative to sell verified carbon credits in the voluntary market (Peters-Stanley and Gonzalez, 2014). Evidence drawn from the Kasigau project is therefore more useful for emerging policy interests in dryland forests in Kenya and other developing countries. The project proponent is a United States based private company, Wildlife Works. Wildlife Works has operated in the Kasigau area since 1998, with specific interests in wildlife conservancies and eco-tourism. The project protects 500,000 acres of dryland forest for carbon credits and engages the local community in conservation and development activities (see more project description in subsection 7.3.3).

4.3.2. Selection and characteristics of field sites

The Kasigau project is located in Taita-Taveta County in the Coastal Province of Kenya (Figure 4.2). Taita-Taveta county occupies an area of 17,084.1 square kilometres and is the 12th largest among the 47 Kenyan counties (Kenya National Bureau of Statistics, 2007). Most parts of the county extend through low-land areas dominated by dryland ecology and receive less than 400 mm of rainfall per annum. However, a small section of the county to the north is dominated by mountainous semi-humid ecosystems that receive relatively higher rainfall. Sparse open woodlands dominate the low-land areas while the mountainous areas have relatively dense close canopy woodlands. The dominant open woodlands in the low-land areas are rich in terrestrial wildlife resources within which the Tsavo National Park, the biggest wildlife conservancy in Kenya, is hosted. Taita-Taveta County is, however, ranked among the poorest with a poverty rate of 54% of persons living below the poverty line, higher than the national average of 51% (Kenya National Beureau of Statistics, 2007). Rain-fed farming and livestock rearing are the main livelihood and economic activities in the area but these are affected by highly variable rainfall (Figure 4.1). Maize is the main food crop grown in the county while green grams is mainly cultivated for sale.

The Kasigau project area covers five locations in Taita-Taveta County (Figure 4.2). To establish a counterfactual project-livelihood interaction for objective 3 (Chapter 6), data were collected from sites within and outside the project area based on the Matched Control Intervention (MCI) approach (Jagger et al., 2010). The MCI involves establishing a counterfactual scenario by comparing data from the intervention where activities are taking place with control sites where there are no project activities. The approach is useful in enhancing data validity (Caplow et al., 2011) and has been applied in Jindal (2010) and Brown et al. (2004) mainly in researching project impacts on livelihoods.

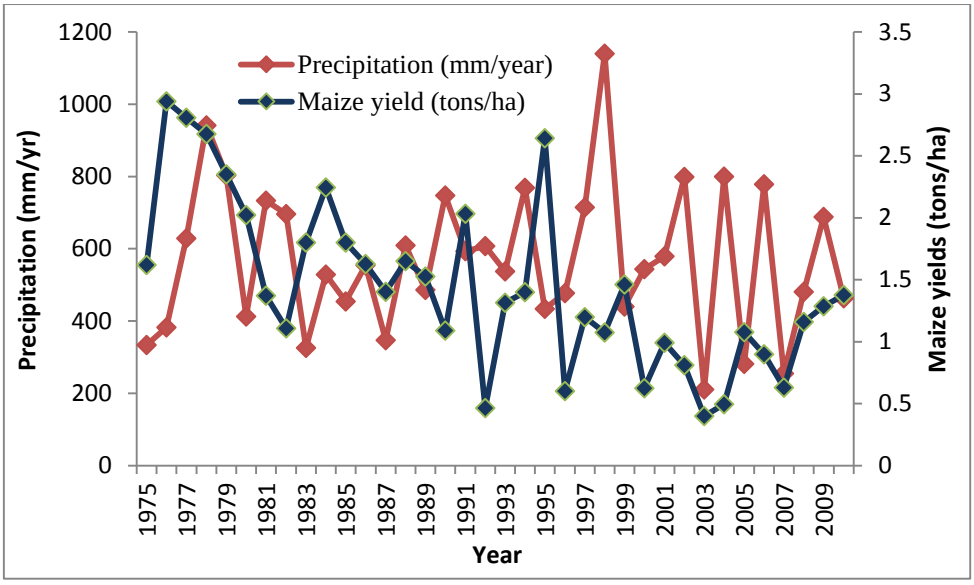

Figure 4.1: Rainfall and maize yield trends in Taita-Taveta county over a period of 35 years (1975 – 2010).

Data sources: Kenya's Departments of Meteorology and Agriculture

Sites within the project area were designated as intervention sites while those outside were designated as control sites. Marungu and Kasigau locations, both occurring in the south of the project area, were purposefully selected as intervention sites. The two locations had closely engaged with the REDD+ project and so households living and working in these areas would be more likely to be able to give an accurate account of the project interactions with the local settings. The sites were selected through a rapid rural appraisal process and consultation with community informants and extension staff from the case project (Chambers, 1994) (see subsection 4.5.4).

Mbololo occurs outside the project area towards the north and was selected as a control site. The MCI approach requires that the intervention and control sites be of similar socioeconomic characteristics in order to establish a factual comparative basis. The rapid rural appraisals and community informants helped in affirming socioeconomic similarities between the Mbololo and the intervention sites. Data obtained from the Kenya national household survey (Kenya National Beureau of Statistics, 2007) also assisted in affirming the

similarities against other potential control sites (Schreckenberg et al., 2010). The Mbololo site is also located relatively far from the project sites, 26 km away, to minimise possible spill-over effects from the project activities (Jindal, 2010).

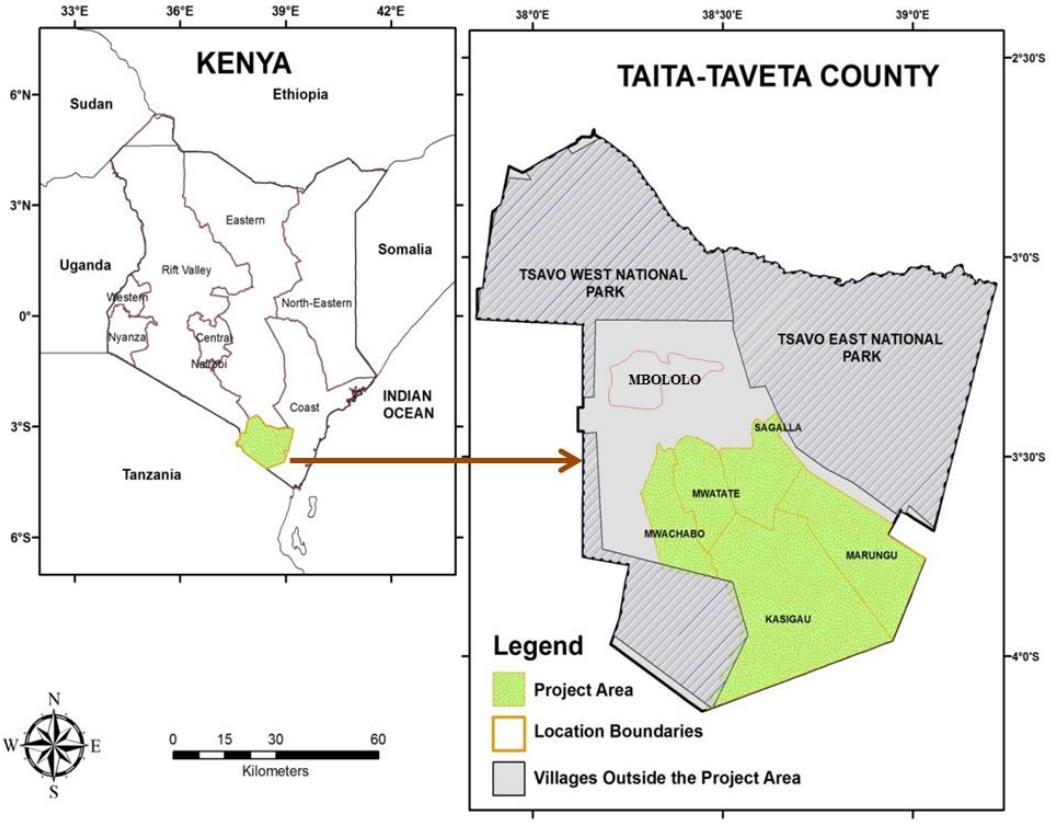

Figure 4.2: Location of Taita-Taveta county in Kenya and specific study sites (Marungu, Kasigau and Mbololo) in the County.

The communities pursue various livelihoods strategies such as small scale agriculture, ranching and charcoal production (Table 4.3). Both the intervention and control sites are overlapped by the Tsavo national park and host both communal and private forests. Some parts of Mbololo's forests are however still managed by the local government as trust lands. The diversity of land and forest ownership in the sites is crucial for the REDD+ project as the next subsection discusses.

Table 4.3: Main socio-ecological characteristics of study sites.

Source: Kenya National Beureau of Statistics (2007)

Asset category	Indicator	Maungu and Kasigau (Intervention sites)	Mbololo (control site)
Natural	Geographical location	3° 33' S / 38° 45' E	3° 16' S / 38° 28' E
	Forest type	Communal forest (hills), ranches	Trust forests, communal, ranches
	Household land size (acres)	5	4
	Crop yields (mean bags/acre)	1.89	2.0
	Distance from the project	0.5km	26km
Financial	Main source of income expenditure	Faming/business	Faming/business
	Main expenditure	Food	Food
	Average number of goats (mean)	4	5
	Poverty rate (% households under a dollar/day)	54	56
Human	Literacy rate (% households able to read and write)	72	79
	Access to primary school at 5 km or less (% households)	53	56
Social	Agro ecological condition	Semi-arid	Semi-arid
	Ethnic composition	Taitas, Durumas and Kambas	Taitas and Durumas
	Household size (mean	5	6
	Forest management	Private, communal, trust	Private, communal, trust
	Causes of crop failure (majority)	Drought	Drought
	Land acquisition	Inheritance	Inheritance
	Land ownership	Private/family and communal	Private/family and communal
	% handholds with land title deeds	4.3	5.2
Physical	Water access (hours taken to access water	2	2

4.3.3. Land tenure in the study sites

The land tenure system in both study sites draws from the national land policies that recognise leasehold and freehold ownership of private, public and communal land (National Land Alliance, 2007). The area's land is dominated by group ranches with patches of communal and private lands. Group ranches are relatively expansive grassland with continuous dry land vegetation (both shrubs and trees). The ranches were originally owned by the State but in the post-colonial period, (in the 1970s) the government reclassified the land and allocated it to community groups formed as private companies such as Rukinga and Taita Ranching Co. Ltd, among others (Korchinsky et al., 2008). The groups were issued with ranch titles as provided for under the Land (group representation) Act of 1968 (Republic of Kenya, 1968). Each group ranch comprises between 20-2500 individuals holding transferrable shares to the

ranches. Given the dryland conditions, most local peasants initially attached little value to the ranches and subsequently sold most of their shares to buyers who largely hailed from outside the community. As such, most local peasants living around the sites have no shares in the ranches.[1]

Alongside the private group ranches, there exists communal land that is mainly hills which are managed by the community. Individual lands, where households have settled, also exist in patches between the communal hills and the group ranches. The individual lands were initially part of the communal land that the local authority through the Chief had powers to allocate to landless locals and immigrants. However, community members claim that the process was characterised by corruption with some relatively rich people receiving large parcels to which they further acquired title deeds. For most poor immigrants and local peasants however, knowledge held by the village elders or the chief remains the main authority justifying their ownership and they have hitherto passed ownership rights to their sons through inheritance. In the project area, ranches constitute about 75% of the total land area under the project while the communal hills and private lands take up the rest (Wildlife-Works, 2011).

4.3.4. Landscape history: ethnicity and interventions

As in most parts of Kenya, social life in the localities of Taita-Taveta County revolves around predominantly male-headed households. Male children are often conferred the mantle to carry on the family lineage while the female ones get married and move to some distant land. Households belonging to a given family reside within a homestead either in a single house or separately. A number of homesteads that are part of a particular family lineage become part of a unit called a clan. A group of these clans forms the village that is headed by the village elders who are often appointed on the basis of their age, experience and good moral standing in the community. It is from the village set

[1] Discussion with village elders during scoping study, Kasigau, October, 2012

up that formal governance units such as sub-locations and locations headed by the Chiefs or assistant Chiefs exist as links to the central government. As such the chief and the village elders are key authorities in the study sites.

A mix of ethnic tribes including Taitas, Durubas, Kambas and Swahilis live in the study sites and have, over time, adopted common socio-cultural practices. In the 1970s, most villages were dominated by the Taitas who were the original occupants. In the late 1970s, the Taitas, who mainly practiced rain-fed agriculture, sold off their ranch shares to outsiders and Somali pastoral communities then moved in to moist mountainous areas in the north ' the Taita hills'. In the early 1980s, other immigrants, including the Kambas and Durubas, settled in the area as squatters, mainly subsisting through making charcoal from the now protected dryland forest. In the 1990s, the charcoal business became a booming economic venture thanks to the expanding tourism activities within the Tsavo National Park and nearby Mombasa city. The increasing economic prospects in these low-land areas triggered a return of some Taitas who resettled to pursue charcoal businesses and subsistence agriculture. Today, the project area constitutes sparse settlements of Taita, Duruba and Kamba communities who have few or no shares in the expansive ranches.

Given the anthropogenic threats such as charcoal burning and peasantry agriculture that threatens the area's dryland forests and wildlife resources, a number of ICDPs have attempted to conserve the forests and wildlife alongside providing livelihood support to local communities. The Tsavo national parks are one such initiative by the government. The parks span over 24,000 square kilometres. The parks were initially established by colonial governments who intended to curb anthropogenic wildlife destruction and promote wildlife related sports such as hunting. In the post-independence period (1970s), the Kenyan government has used the parks mainly as a source of touristic revenue for national GDP (see subsection 8.2.2). World Vision, CARE Kenya alongside other NGOs have also worked in the area since 1999 and has engaged local

communities in projects such as food for work; food for conservation and food for assets (see subsection 8.2).

Overall this section reveals the diverse policy and socioeconomic circumstances that a globally linked REDD+ project is likely to face during implementation at the local level. Generating evidence on this interaction requires an interdisciplinary research design and methods as described in the following sections.

4.4. Study design

This section presents research design indicating various research activities undertaken at different timelines. The research design is schematically presented in Figure 4.3. The design follows a multilevel approach. It shows key activities and timelines for each level of analysis.

After developing an initial research concept, a scoping study was undertaken in Kenya from November 2011 until March 2012. A scoping study is a prior exploration of a particular research topic and possible sources of evidence to support the given topic (Mays et al., 2000). Scoping studies are more useful in situations where little is known about the dynamics of a particular research subject (Arksey and O'Malley, 2005). While REDD+ is reasonably understood at the global level, to most local communities and national stakeholders it is a new venture not because it seeks to protect forests, but because it revaluates forests in terms of carbon as a commodity for sale within globally set rules. Therefore it was necessary to undertake a scoping study during the period of November 2011 until March 2012 to identify the key research issues to investigate.

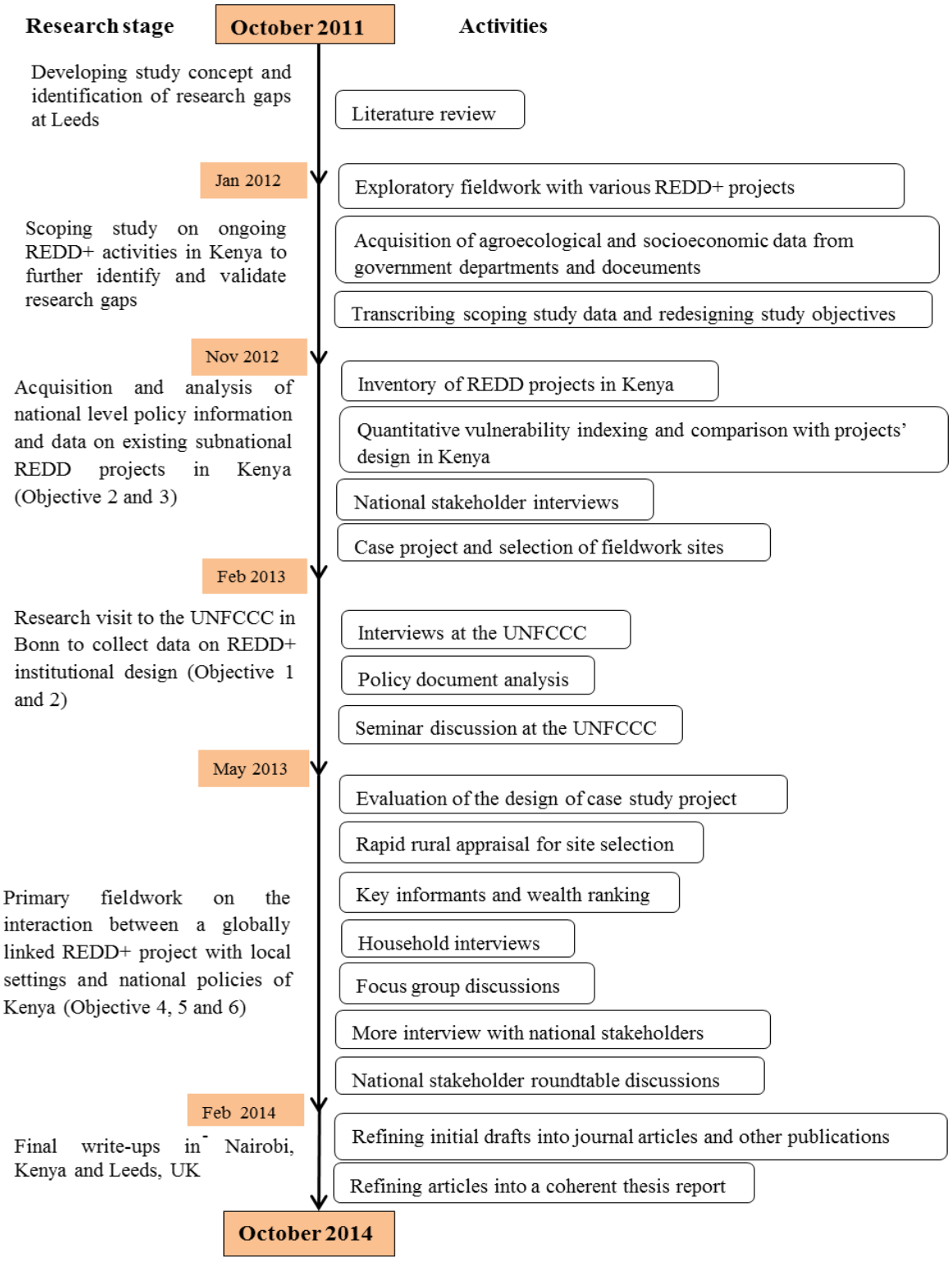

Figure 4.3: Research process indicating the link between different levels of analysis, objectives and methods

During the scoping study, a number of REDD+ projects and their activities were documented through snowball consultation. Field visits were made to two projects (the Kasigau Corridor REDD+ project and the Kenya Agricultural Carbon Project -KACP). During the visits, semi-structured discussions and interviews were held with a variety of people attached to the projects. A total of 107 household interviews, 9 group discussions and 12 key informant interviews were executed within both projects. Among other findings, the scoping study pointed to a multiplicity of perceptions about carbon initiatives. The findings were used to refocus and reformulate the objectives of the thesis.

Due to presidential elections taking place in Kenya in March, 2013, it was necessary to bring forward data collection for global level REDD+ activities (objective 2). As a result, a research visit to the UNFCCC was undertaken to collect global level data during the elections (objective 1). After the UNFCCC visit, the researcher travelled to Kenya in June 2013 to collect primary data drawing on the activities of the Kasigau Corridor REDD+ project. Data analysis and initial write-ups for each objective were executed alongside data collection. The overall methodological framework developed to guide the conceptual focus and data collection in this thesis is outlined in the next section.

4.5. Methodological framework: the IDAF

Section 3.7 discussed the Sustainable Livelihood Framework (SLF) as a suitable basis for framing local settings where REDD+ is implemented. The section, however, showed that the SLF does not address the linkage between local assets and broader institutional processes at national and global levels. This section therefore integrates the SLF with the Institutional Analysis and Development Framework (IAD) and the Policy Process Analytical Framework (PPA) to develop the Institutions and Development Analytical Framework (IDAF) that links the global REDD+ design process and implementation at national and local levels. Given that the SLF has already been discussed (section 3.6), this section briefly reintroduces the SLF then moves to discuss the IAD and the PPA

to highlight their strengths and weaknesses, and how they were integrated to create the IDAF.

4.5.1. The Sustainable Livelihood Framework (SLF)

Having drawn from the literature to show the need for multilevel analysis of REDD+ institutions and their implementation, this section discusses the sustainable livelihood framework (SLF) (Figure 4.4) as a basis for linking REDD+ institutions and implementation. The SLF (DFID, 1999) holistically contextualises the socioeconomic settings in terms of five livelihood capitals and also highlights the role of institutions in structuring these capitals in the context of sustainable development.

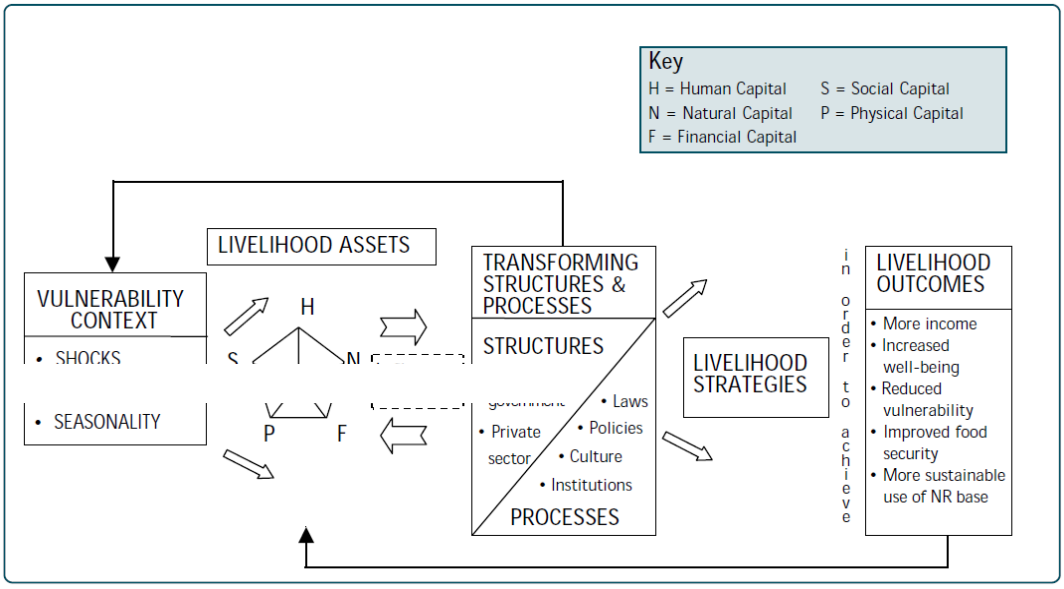

Figure 4.4: The Sustainable Livelihood Framework

Source DFID (1999: 2.2)

Other frameworks such as Institutional Analysis and Development (Ostrom et al., 1994a) or the Policy Process Analytical Framework (Keeley and Scoones, 2003) provide an alternative analytical basis but these are limited to institutional processes and do not comprehensively contextualise the local settings within which such institutions are implemented. These other frameworks were however adopted into the SLF to form an integrated institutions and

development analytical framework (IDAF) (section 4.4) that usefully links the SLF to broader multilevel and multi-actor institutional processes to which this thesis begins analysis (Scoones, 2009).

The SLF draws on the sustainable development concept. SLF evolved as part of attempts to operationalise sustainable development within rural settings (Chambers and Cowie, 1992). Chamber and Cowie (1992: 6) define a sustainable livelihood as 'a livelihood [that] is sustainable when it can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to other livelihoods at the local and global levels and in the short and long term".

The SLF conceptualises sustainable livelihoods in terms of livelihood assets, vulnerability and institutions. Livelihood assets are tangible and intangible goods and services owned and used by households or communities for living and are sorted into five broad categories: natural capital, financial capital, human capital, social capital and physical capital (Scoones, 1998). Emission reduction under REDD+ builds directly on the natural assets, such as land, forests from which most rural populations draw livelihoods. Financial assets, including income, savings and fixed assets (Vincent, 2007), are equally useful in the local context, particularly as they allow households or communities to pursue various livelihood strategies including farming and business, and in so doing may structure the drivers of deforestation under REDD+ (Asquith et al., 2002). Capabilities, skills, education and employment are human assets (Fry, 2008, Gupta et al., 2010, Brooks et al., 2005) that aid the successful pursuit of different livelihood strategies and even in understanding the contents and objectives of REDD+ projects.

Social assets include household/community networks, social claims, affiliations and associations (Vincent, 2007) that help households or communities in

coordinating their livelihood strategies (Vincent, 2007) and in their participation in REDD+ projects (Maraseni et al., 2014). The mix of these assets at household and community level may impede REDD+ or make it successful in terms of achieving global mitigation goals and meeting local livelihood needs. For instance, weak land tenure at the local level may be a barrier for credible and legally defendable emission reductions in REDD+ projects (Chhatre et al., 2012, Jindal et al., 2008).

The SLF also includes a vulnerability component which reflects the sustainability of households or community livelihoods in the context of shocks such as climate change. Livelihoods that are able to cope or adapt to shocks are less vulnerable and sustainable while those that unable to cope are vulnerable and unsustainable. Interventions, though not explicit in the framework, are highlighted as activities that provide case situations which could offer suitable institutional entry points for sustainable livelihoods (Scoones, 1998). Such interventions mainly include ICDPs which have been operating in these local settings and could offer vital implementation lessons for REDD+.

Institutions are also considered as part of the SLF. Institutions provide the social link which structures access, utility and flow of resources among households thereby identifying opportunities and barriers to sustainable livelihoods. Examples of such institutions range from tenure regimes, family labour sharing, household networks and credit arrangements, local organisations and networks, most of which are also part of social capital. Institutions thus mediate access to and control of livelihood assets and reveal negotiations and trade-offs involved. In the context of REDD+, these institutions are crucial in mediating participation, benefit sharing, rights and equity of various groups involved in REDD+ at the local level (Maraseni et al., 2014). The SLF however lacks provisions for linking livelihood assets to broader institutional processes such as those taking place at the global level (Neylan, 2008, Scoones, 2009).

In failing to address broader policy issues, the SLF is limited in addressing issues of agency, power and equity in resource access and decision making (Toner, 2003, Baumann, 2000, Scoones, 2009). Yet REDD+ is a global regime drawing its institutional mandates design from the global UNFCCC negotiations. The implementation of REDD+ within national and local settings is ideally governed by interactions at the global level where the policies are designed. Multilevel institutional analysis is therefore necessary to generate meaningful information on institutional coordination, equity and effectiveness of global environmental regimes such as REDD+ (Clement, 2010, Ostrom, 2008). In order to create clear linkage between REDD+ design at the global level and implementation at the national and local levels, the SLF needs to be integrated with broader multilevel and multi-actor institutional frameworks.

4.5.2. The Institutional Analysis and Development Framework (IAD)

The IAD framework is one of the most widely tested frameworks in policy analysis (Rudd, 2004, Gibson et al., 2005) and empirical theoretical development research (Lam, 1998, Clement, 2010). The IAD identifies institutional process as an action arena where actors at various governance levels interact and inform each other rationally and collectively in making policy decisions. The action arena is influenced by existing biophysical and socioeconomic factors (e.g. resource abundance, uses, threats and uncertainty) as well as rules in use. Ostrom et al. (1994b) define rules in use as existing statements about what actions are required, prohibited, or permitted and the authorised enforcement actions if the rules are not followed. These rules are linked across levels of governance i.e. global, national and local. The resulting rules are evaluated based on particular criteria that reflects the original goals and expected outcomes of the policy. A key emphasis in the IAD is that resulting rules from the action arena, e.g. global level, can only be effective if they are compatible with rules in use. For instance, formal international or

national agreements can intersect informal rules at the local level and be interpreted with relative freedom and collectively shared within a community. As such, the IAD enables multilevel institutional analysis (Clement, 2010) and incorporates evaluative criteria for assessing the implementation of rules. This is relevant for REDD+ where rules from the global arena are to be implemented within existing sectoral polices with sustainable development as an evaluative criteria.

However, the IAD assumes that actors in the action arena collectively negotiate rules on an equal footing. In this, the IAD assumes that every actor equally and rationally contributes to the rule making process with no other interests but to solve the problem under negotiation. This contrasts the actual situation in global environmental regimes such as REDD+, which are significantly shaped by development interests and capabilities among different States and non-State actors resulting in some actors exercising more agency while others are marginalised (Ribot, 2009). This makes the IAD limited in terms of evaluating the institutional interests that could create implementation deficits in global regimes such as REDD+ (Imperial, 1999). As such, the multilevel aspect of IAD was adopted but components of the PPA were adopted to account for interests and agency in the institutional process.

4.5.3. The Policy Process Analysis Framework (PPA)

The PPA (Keeley and Scoones, 2003) involves analysis of narratives, actors and interests in a policy process. The framework has been widely applied in analysing policy processes related to climate change adaptation programmes in Africa (CCAA), with specific focus on Kenya, Malawi and Tanzania (IDS, 2009, Naess et al., 2011). The framework usefully presents the process of making rules through actor interactions, revealing their influence in the process. Actors have been defined in section 2.4.3 and a similar definition is offered in this framework, i.e. individuals, groups or organisations with decision making

rights in a policy process. Actors often come together to form actor networks and use their expertise, knowledge and resources to push for particular narratives in a policy process. The PPA states that the strength of a particular policy option is determined by the strength of the actors who uphold the option and if key actors withdraw their support, the particular option becomes weak and may not find its way into a final policy decision. In analysing actor interactions, the framework considers interest and politics as part of actor agency in the process. The interests can be analysed through actors' statements, documents and actions. For instance, the various actor constellations within REDD+ such as private sector, consultants and scientific bodies have organisational documents and submissions to the UNFCCC that could be reviewed to reveal their interests and influence in REDD+.

For this thesis, PPA's focus on actors, their interactions and influence in a policy process was applied to analyse the agency of actors in designing REDD+ at the global level. The actor approach in the PPA however fails to consider the various levels of governance (Clement, 2010) but this was accounted for by use of the IAD. The various components of IAD and PPA were embedded in the SLF to form the integrated framework (IDAF) described in the next subsection.

4.5.4. The Institutions and Development Analytical Framework (IDAF)

The IDAF (Figure 4.5.), developed for the requirements of this study, consists of three parts: existing policy environment (part 1), interactions in designing and implementing new policies (part 2) and implementation outcomes in the context of sustainable development (part 3). Part 1 of the framewrok constitutes the existing policy environment including relevant laws e.g. national and international conventions and national legislations that are linked to forests in one way or another. In a policy process, these existing policies define the mode of governance of actors/stakeholder so as to influence the preferences and positions of those involved in negotiating a new policy (Dellas et al., 2011) (see

section 3.4.2, 3.4.3 & 3.4.4). For instance multilevel environmental regimes involving negotiations such as REDD+, States and non-State actors often push for policy options that align with these mode of governance and so some actors would prefer for instance that REDD+ consider poverty alleviation in the financial mechanism because these are central in their policies. On the other hand, private sector actors may push for market mechanisms for REDD+ because profit generation and capital investment is core to their policies. Ultimately, these different preferences shape the interactions in the negotiations.

Part 2 of the IDAF conceptualises the REDD+ policy process and implementation of resulting rules. The policy process is analysed in terms of interactions between various actor preferences (e.g. expertise, interests and representation) in the negotiations. The actors exercise varying agency in the resulting rules (Keeley and Scoones, 2003, Schroeder, 2010) (also see section 3.4.3 and 3.4.4). Agency here reflects how much of actors' preferences become part of the final rules. Looking at the agency in a policy process allows for insights into the compatibility of resulting rules with existing settings where policies are implemented (Biermann et al., 2009, Paavola, 2003) (section 3.4.2). Drawing on literature on REDD+ implementation (see section 3.5), the IDAF analyses implementation based on the interaction of resulting rules with existing policy and socioeconomic settings. At the national level, rules of a global regime such as REDD+ will have to traverse existing national sectoral policies, development strategies, visions, climate plans among others. At the local level, where forests are hosted, practical on-the-ground implementation involves interaction of the resulting rules with local settings coneptualised in terms of livelihood capitals; natural, financial, human, social and physical. The framework additionally recognises conservation and development initiatives as part of the local setting and could shape the way people view, judge of perceive new policies e.g. REDD+. The implementation results in outcomes that

contribute to the overall goal of REDD+ as a policy. These outcomes are outlined in the UNFCCC safeguards (appendix 1/COP 16) (also see section 3.5.2) and are coneptualised into the IDAF as the evaluative criteria.

The evaluative criteria constitutes part 3 of the framework. In this, the framework recognises that every policy is expected to achieve particular goals and these goals define the performance of the given policy (Jordan, 1999). For climate change policies such as REDD+, sustainable development is the main expected outcome (UNFCCC, 1992). The framework operationalizes sustainable development in terms of policy convergences between global rules and existing national policies, stabilization of naturel resource base, poverty alleviation, and participation. These variables are outlined in the REDD+ safeguards as key implementation outcomes (see section 3.5.3).

Overal, the IDAF draws on theoretical literature and frameworks to synthesise and link key concepts about REDD+ policy process and implementation and in so doing, holistically identifies sources of policy implementation deficits. Lack of holistic and interdisciplinary approaches to multilevel REDD+ analysis has been cited as one of the key impediments to identifying multilevel sources of REDD+ implementation deficits (Jagger et al., 2014, Viseren-Hamakers et al., 2012). As such by clearly indicating the key analytical variables to focus on at each level of governance, the framework provides one of the first simplified step-by-step guidelines for pursuing multilevel policy analysis. This is a novel contribution to the current literature on REDD+ governance that has sustained calls for multilevel analysis, yet a systematic framework for doing so lacks (Viseren-Hamakers et al., 2012). The applicability of IDAF including specific methodological steps (see section 4.6) has been demonstrated in this thesis in a manner replicable in other studies and contexts. The experience and outcomes of IDAF's application indicate that the framework has the potential to generate rich, insightful and interdisciplinary empirical evidence for policy and academic debates.

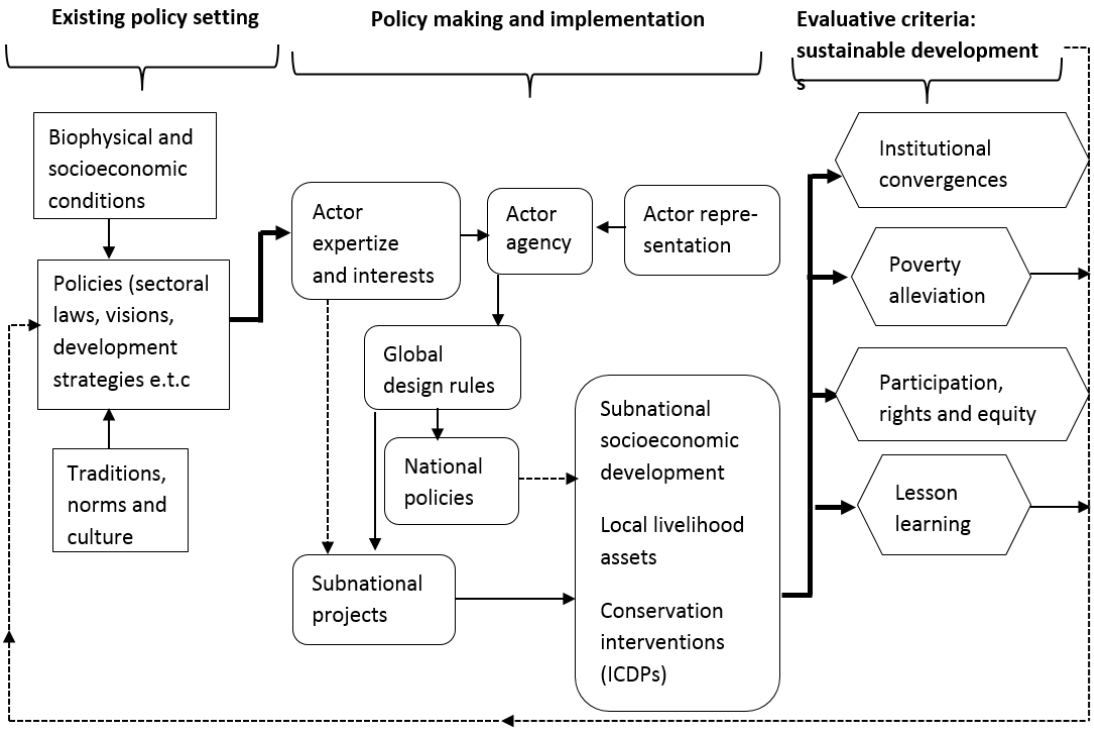

Figure 4.5: Integrated Analytical Framework, combining institutional analysis and livelihoods

4.5.5. Data types and approaches for the IDAF

Both quantitative and qualitative data gathered from various sources, using participatory approaches, were crucial. A mix of quantitative and qualitative data is particularly useful in establishing a strong evidence base on the linkages between multilevel policy formulation and implementation (Scoones, 2009, Jick, 1979).

Quantitative and qualitative data were triangulated (Tashakkori and Teddlie, 2010) and sequenced (Caracelli and Greene, 1993) in this study. Sub-national quantitative data on socioeconomic development and a REDD+ projects inventory (objective 3) were triangulated with global and national level qualitative policy data on actor roles in designing REDD+ rules (objective 1 & 2). The role of local behaviours and social networks in influencing local people's choices, perceptions and expectations from REDD+ may not be revealed from the quantitative information (Ellis, 2000). The quantitative

information however informed the selection of a suitable case study project and livelihood assets upon which project implementation at the local level were assessed (objectives 4 and 5) using a range of participatory methods.

Scholars view participatory methods to be crucial in generating valid and informative evidence for linking policy and practice (Chambers, 2008, Yin, 1984). These scholars argue that participatory approaches generate representative evidence from local contexts comprising various social groups e.g. the poor, the rich and immigrants among others (Chambers, 1997, Chambers, 2008). Such differentiated evidence reveals interests and circumstances of various affected actors, especially local communities targeted for implementing most environmental policies (Chambers, 2008, Chambers and Conway, 1992, Chambers, 1994, Tolman and Brydon-Miller, 2001, Schensul et al., 2014, Martin and Sherington, 1997, Dougill et al., 2006). In this study, participatory methods such as participant observations, semi-structured interviews and discussions (Chambers, 1997) allowed for the collection of data on REDD+ design process at the UNFCCC and implementation at national level. At the local level, methods such as wealth ranking transect walks, informal discussions, non-structured and semi-structured interviews made it possible to collect evidence from different groups of people on the interactions of their livelihood conditions with REDD+ as well the role of ICDP experiences in the REDD+ project implementation. Retrieving this data was crucial given the heated debates on equity and rights in REDD+ especially with regards to local communities.

Participatory methods may however generate biased information steered by seasons or skewed by the views of influential people participating in the research (Cooke and Kothari, 2001, Chambers, 1997). Certain commonly employed participatory methods such as household surveys have also been associated with research fatigue among local households (Clark, 2008). These weaknesses were mainly overcome through triangulating the various methods

and drawing mixed sampling techniques. Combining probability sampling techniques (stratified and random sampling) and non-probability techniques (purposive and snowball sampling) enabled the selection of relevant research subjects thus reduced the risk of overburdening particular people with questioning (Shively, 2011). The next section provides an overview of individual methods and associated sampling techniques.

4.6. Overview of data collection methods

This section provides an overview of data collection methods (Table 4.4) highlighting their strengths and weaknesses and indicating the objectives to which they were applied. Detailed methodological steps take for each objective is provided under the respective empirical Chapters (Chapters 5-8).

Table 4.4: Data collection methods employed for study objectives at various research levels.

Method	**Global design and national level implementation (objective 1 and 2)**	**Subnational level implementation within socioeconomic factors (objective 3)**	**Local level implementation within livelihood assets and ICDPs (objective 4 & 5)**
1. Document analysis	X	X	
2. Expert interviews (n=12)	X	X	
3. Stakeholder interviews (n=25)	X	X	X
4. Rapid Rural Appraisal and Transect walks			X
5. Wealth ranking			X
6. Household questionnaires (n=150)			X
7. Focus Groups and group meetings (n=10)			X
8. (Non)participant observations	X	X	X
9. Seminar discussions (n=1)	X		
10. Stakeholder roundtable discussion (n=1)	X		

4.6.1. Document/Policy analysis

Qualitative and quantitative data were extracted from a range of policy documents and inventories retrieved from the UNFCCC archives, government departments and projects archives (Table 4.5).

Table 4.5: Categories of policy and evaluation documents analysed for data

Document name and year	Documents source	Type of data
Global level documents		
COP Reports (2008,2009,2010,2011,2012,2013)	UNFCCC archives http://unfccc.int/methods/lulucf/items/6917.php	Qualitative data on global REDD+ design process *(objective 1)*
SBSTA reports	UNFCCC archives	Qualitative data on global REDD+ design process *(objective 1)*
Parties and observer submissions	UNFCCC archives	Qualitative data on global REDD+ design process *(objective 1)*
World Bank and UN-REDD readiness reports (2008,2010, 2012)	World Bank and UN-REDD archives	Qualitative data on global REDD+ design process
CIFOR reports	CIFOR archives http://www.forestclimatechange.org/redd-map	Quantitative and qualitative data on REDD+ projects *(objective 2)*
National level documents		
Revised REDD Readiness Preparation Proposal for Kenya (2010).	Ministry of Environment	Qualitative data on national REDD+ design process *(objective 2 and 3)*
National Climate Change Action Plan (2012)	National Climate Change Secretariat	Qualitative data on Kenya's climate change policies *(objective 2and 3)*
Forest Act 2005	Ministry of Environment	Qualitative data on Kenya's forest policies *(objective 2and 3)*
National Land Policy 2007	Kenya National Land Alliance	Qualitative data on Kenya's land policies *(objective 2 and 3)*
Agricultural Sector Development Strategy (2010-2020)	Ministry of Agriculture	Qualitative data on agro-forestry policies *(objective 2 and 3)*
National Population and Household Population Census (2009)	National Bureau of Statistics	Quantitative data on population *(objective 3)*
Economic Review of Agriculture (2012)	Ministry of Agriculture	Quantitative data on agricultural productivity *(objective 3)*
District Agricultural Development Reports (1970-2010)	Ministry of Agriculture	Quantitative data on agricultural productivity *(objective 3)*
National Climatic Records (2012)	Kenya Meteorological department	Quantitative climate data (temperature and rainfall)
Kenya Integrated Household Budget Survey 2005/2006 (2007)	National Bureau of Statistics	Quantitative sub(national) socioeconomic data *(objective 3, 4 & 5)*
Project/Local level documents		
Kasigau Project Design Document Phase I	Kasigau Project	Qualitative data on project linkage to global design and national policies *(objective 4 & 5)*
Kasigau Project Design Document Phase II	Kasigau Project	Qualitative data on project linkage to global design and national policies *(objective 4 & 5)*
Kasigau Project progress document	Kasigau Project	Qualitative data on project procedures *(objective 4 & 5)*
Kasigau Project Standard Operating Document (2012)	Kasigau Project	Qualitative data on project operational procedures *(objective 4& 5)*
Constitution document of the local CBO: Marungu Hills Conservancy	Marungu Hills CBO	Qualitative data on community groups *(objective 4 & 5)*

The documents were analysed through a combination of exploratory analysis (Thai et al., 2008) and iterative content analysis (Marsh and White, 2006, Kohlbacher, 2006). Exploratory analysis involves a broad and quick overview of documents to identify specific issues of concern e.g. actors in a policy process (Thai et al., 2008) while iterative content analysis involves in-depth analysis to establish a particular information sequence (Marsh and White, 2006). A combination of exploratory and iterative document analysis provides a systematic way of retrieving useful information from documents (Kohlbacher, 2006).

The document analysis gathered information on REDD+ design at the global level and implementation at the national and project (local) levels. Global level documents, drawn from the UNFCCC archives were analysed to identify actors and their contribution to the REDD+ design process and to partially achieve objective 1 'analysis of global REDD+ design' (see subsection 5.2.1).

National level policy documents were analysed to achieve objective 2 'national level REDD+ implementation' (subsection 5.2.2). National agroecological inventories from agricultural, statistics and meteorology departments among others were surveyed for quantitative socioeconomic and agroecological data. The agroecological data retrieved included historical rainfall, temperature and maize yield data while socioeconomic data included livelihood assets for each of the 47 Kenyan counties. The data were quantitatively analysed to generate vulnerability indices against which sub-national projects' design and distribution were analysed to achieve objective 3 'interaction between REDD+ design and Kenya's socioeconomic conditions' (see details in subsections 6.2.2 and 6.2.3). Project design documents were an important source of information on REDD+ implementation at the local level to partly answer objective 4 'REDD+ interaction with local assets' (subsections 7.2.1) and objective 5 'ICDP lessons for REDD+ implementation' (subsections 8.3.2). Information retrieved from global, national and project level documents was triangulated

with expert interviews, stakeholder interviews, household surveys, focus groups and key informants at various levels.

4.6.2. Expert interviews

Experts are individuals with professional knowledge and insights into a particular policy or research field (Fitzpatrick et al., 2009). Expert interviews provide insights into specific policy issues and their connections with the real world (Dorussen et al., 2005). Expert interviews in this study generated insights into REDD+ design process (objective 1). Combining expert interview and document analysis is a recommended approach to understanding how policies are made and the potential outcomes of their implementation (Urwin and Jordan, 2008). As such, the experts usefully triangulated information retrieved from documents and also revealed insights into new sources of information on REDD+ design and implementation.

The experts (n=12) interviewed were mainly drawn from the UNFCCC. The UNFCCC Secretariat is the legitimate custodian of most information from State and non-State actors involved in the REDD+ design process. Experts based at the Secretariat had insights about the negotiation procedures, and the contribution/submissions of actors to REDD+ design components such as methodology, finances and safeguards. The experts were identified through a combination of purposive and snowball sampling techniques. Combining purposive and snowball sampling provides a useful way of obtaining information from interdependent sources that are sometimes difficult to access (Biermann, 2002, Reed et al., 2009). The interviews focused on the roles of various actors, especially African States, where REDD+ is targeted for implementation, in designing REDD+ and the linkage with national and sub-national REDD+ activities (subsections 5.2.1, 5.2.2, 5.2.3). The interviews were carried out on a face to face basis and took the form of guided discussions (Hay, 2000). Executing the interviews in form of guided discussions enabled insights

and key issues about REDD+ design to coherently emerge and in a manner useful for generating particular narratives from the information (Babbie and Mouton, 2001). Interview notes were written down on a note book and backed up with a digital voice recorder. The expert interviews revealed a number of linkages between global REDD+ design and national implementation and these linkages were further detailed through national level stakeholder interviews.

4.6.3. Stakeholder interviews

A stakeholder is an individual or group with a level of influence on decisions or who is influenced by decisions (Reed et al., 2009). Stakeholders were mainly interviewed on how global REDD+ rules are implemented at the national and local (project) levels. Stakeholders interviewed were purposively selected mainly drawing on a stakeholder analysis process that involved review of government policies linked to forests and enquiries from local informants. A total of 27 stakeholders were interviewed for the national and local level implementation processes. At the national level, stakeholder interviews (n=13) aimed to partially achieve objective 2 'implementing REDD+ rules at the national level'. The national interviews targeted government staff drawn from various forest related sectors e.g. lands, agriculture and forestry. Government staff and institutions were targeted because they are the ones expected by the UNFCCC to create national policy options and oversee the implementation of globally negotiated REDD+ rules (McDermott et al. 2012). The government staff revealed useful information on how REDD+ is implemented at the national level and how the national process links to global and sub-national project designs (subsections 5.2.2 and 5.2.3).

At the local level, stakeholders interviewed (n=14) included persons linked to local institutions such as CBOs, local administration, local development committees and staff of case REDD+ and ICDP projects. These stakeholders play key roles in defining and reinforcing rules on resource access and use at

the local level and in doing so, make decisions which influence activities of a REDD+ project being imeplemented in these localities. The local and project stakeholders were mainly interviewed to obtain information on project implementation at the local level. The stakeholders additionally provided insights into the project's linkage with national instituions and ICDPs. Interviews were executed in English except in certain local circumstances where some stakeholders were comfortable with the local languages *(Kitaita or Kiswahili)*. The interview followed an open discussion with interview notes captured both digitally and on paper (see subsection 4.6.2). Detailed data on REDD+ implementation at the local level were further obtained through fieldwork targeted at specific ongoing REDD+ and ICDP projects' activities.

4.6.4. Rapid rural appraisal and key informants

Rapid rural appraisal (RRA) was undertaken through transect walks together with community informants. RRA involves a quick and cost-effective visual appraisal of rural conditions and was aimed at identifying and characterising the study sites and subjects. RRA is more informative when undertaken with key informants who can explain relationships and trends of observed features in a manner informative to sampling sites and subjects (Agrawal and Ribot, 1999, Chambers, 1997). Key informants comprising of village elders (n=3) and community resource persons (n=2) were identified from within the study communities to guide the RRA process. The informants were chosen based on their deeper understanding of the socioeconomic status, history, norms, demography and traditions of the study sites as they demonstrated during initial meetings (Shively, 2011).

During the RRA process, the informants were asked about the key livelihood activities in various sites. The village elders orally narrated the history of the landscape and the changing resource abundance, use, traditions and ethnicity in the area and past interventions. In doing so, the RRA process aided the

identification and comparison of intervention and control sites for data collection (see subsection 7.2.2) and in revealing the nature of local level stakeholders and households to be interviewed (see subsection 7.2.2). Village elders are respected opinion leaders in the study area and their presence during the RRA made it easier for the researcher to be accepted by the local people prior to interviews and discussions. Key informants may however sometimes give skewed information biased towards the interests of their social groups (Shively, 2011, Warrick, 2009). To minimise such biases, information from an informant was triangulated with views of other informants. After identifying sites through RRA and informants, households in the identified sites were grouped into wealth categories for the purposes of drawing samples for household questionnaire surveys.

4.6.5. Wealth ranking

Local communities are heterogeneous and are made up of diverse social groups with varying perceptions and entitlements to resource access and use (Scoones, 1998). Various social groups utilise forests in different ways with the poorer segment of local communities reportedly more dependent on forest provisioning services than the richer segment (Kalaba et al., 2013a). Because REDD+ aims to protect forests, socially differentiated households potentially posit varying implications on a project's ability to protect forests. Capturing views of various social groups is also critical for REDD+ research, especially in the context of debates on rights and equity with regards to local communities. In order to capture views of various social groups, a wealth ranking procedure was developed and used to group households in the study sites into various wealth categories (subsections 7.2.2 and 8.2.2).

Wealth ranking can be drawn from secondary income data or local people's knowledge of their assets and conditions (Scoones, 1995). The people based approach reportedly generates more contextually accurate wealth rankings due

to people's close understanding of local processes such as livelihood seasonality and trends (Scoones, 1995). The approach has been widely applied in many empirical studies on natural resource management in Africa (Oino and Mugure, 2013, Reed et al., 2007, Scoones, 1995). The people approach was adopted in this study and implemented with the help of village elders. These elders, compared to other local people, had a deeper understanding of important assets due to their many years of living in the study areas and also through their role in mediating resource conflicts between households and groups (Chambers, 1994).

Wealth status in sub-Sahara Africa is mainly based on natural capital (Scoones, 1995) and key capabilities to diversify assets into livelihood strategies (Chambers and Conway, 1992). Through consultation with village elders, the size of land owned, crop yields, number of sheep owned and educational capabilities were the key assets used in wealth ranking (Table 4.6). The wealth ranking guided sampling of households interviewed using the household questionnaire.

Table 4.6: Wealth ranking criteria

	Land size (acres)	Livestock numbers (sheep)	Crop yields (maize bags/acre)	Educational capabilities (level)
Low	1-1.5 or none	1-2 sheep or none	<1.5 or none	Primary level or none
Middle	Household meeting any 2 of the asset criteria for the high category			
High	>6	>10	>3	Tertiary level

4.6.6. Household questionnaires

A total of 150 households were interviewed using semi-structured questionnaires to further achieve objective 4 and 5. The households were sampled from each wealth category and across the study sites. Household questionnaires enabled micro-level insights into the social, demographic and economic interactions, perceptions and expectations about REDD+ (Jagger et

al., 2010). A household was defined based on the Kenyan Ministry of Planning and Development's definition that a household is a production, consumption, social and demographic unit (Republic of Kenya, 2003). Specifically, this study defined a household as people (normally family members) living together under the same roof, and whose production and consumption activities are organised into a social unit.

The questionnaire design followed the HAI+ (Household characteristics, assets owned, income of the household + special research questions relevant to the objectives) framework (Lund et al., 2011). The questionnaire comprised of seven parts including introduction, household demographic and livelihood profile, household engagement in REDD+ project, interaction of household assets with the project activities, community expectations and suggestions, and interaction of the case REDD+ project with ICDPs (see details in subsection 7.2.2, 8.2.2 and appendix 1). The questionnaires were administered through face-to-face interviews that enabled rural households with little access to digital communication facilities (e.g. internet, telephone etc.) to effectively participate in and validate data for the research (Figure 4.6).

Figure 4.5: Interview of a male household head in Marungu village, August 2013.

The questionnaires were administered to household heads with the help of two research assistants. The research assistants, selected from the study area, were conversant with the local language and had a reasonable understanding of climate change and carbon issues (Jagger et al., 2010). The assistants were thoroughly trained on the research aim and questions contained in the questionnaire and their understanding evaluated through a questionnaire pilot with 15 households.

The pilot also helped in assessing the feasibility of the questionnaire within the target respondents (Angelsen and Lund, 2011). This was crucial given that carbon issues are still new for most households in these local settings (Jagger et al., 2010). The pilot revealed that households needed more explanation to understand certain questions related to carbon. One possible way to address this was to document the more general information which respondents could easily provide then triangulate these with group discussions. However, in the quest for insights beyond the exploratory evaluations commonly deployed in studying carbon projects (see subsection3.5.5), the interview schedule was adjusted to incorporate more time and flexibility in the questioning sessions. This was done by reducing the number of interviews targeted for a day from eight to five and allowing more than one questioning session. Reducing the number of questionnaires enabled adequate time for explaining, reframing and discussing questions with respondents.

While the questionnaire targeted the household heads as the observation unit, other members of a household were allowed to join in the interview and provide additional explanations. Flexible interview sessions also helped to minimise interview fatigue (Lund et al., 2011). In the end, the household questionnaire adopted a more discussion based approach than was planned, lasting for 2.5- 3 hours and longer than the earlier stipulated time of 2 hours. Each questionnaire was assigned a special identification code incorporating the first letters of the village name, enumerator's name and the household number (e.g.KA001). The

coding was necessary for follow-up on arising issues or future investigations but was kept confidential in line with ethical provisions outlined in section 4.8.

4.6.7. Focus group discussions and community meetings

A focus group discussion (FGD) is a one off meeting of selected individuals aimed at discussing a particular research or policy topic based on a guiding list of inquiries into the topic (Bedford and Burgess, 2001). FGDs enabled collective discussion of REDD+ and livelihood issues in a manner that usefully overcame the relatively low understanding of carbon issues among individual households. The FGDs were carried out based on the procedures recommended in Cundill et al. (2011). A total of ten (10) FGDs were undertaken with a diversity of local people including women, men, youth, village elders, land owners (both communal and ranches) and representatives of community groups(Figure 4.6). The participants had varying asset ownership and social entitlements that are influential to REDD+ project implementation and informative the aim of this study.

Figure 4.7: Focus group discussion in Marungu location of Taita-Taveta county, September, 2013.

Six of the FGDs were undertaken for objective 4 ‘project interaction with livelihood assets’. The six FGDs mainly focused on triangulating the household data through livelihood calendars and ranking assets in terms of their significance in implementing REDD+ (see subsection7.2.3). The other four FGDs were undertaken for objective 5 ‘project interactions with ICDPs’. These four focused on the areas’ intervention history and also triangulated household data on lessons the REDD+ project draws from ICDPs in the area (see subsection 8.2.3).

The FGDs were organised and conducted with the help of village elders and community informants. The discussions were undertaken at convenient sites such as chief’s camps, schools and sometime farmers’ homesteads. A topic guide (appendix 3) was used to guide all the discussions. Contentious issues in the discussions were subjected to voting to achieve consensus (Cundill et al., 2011). FGDs have however been critiqued on account of constraining women from speaking especially in male dominated societies (Darlington and Scott, 2003). Even though the FGDs included a number of women holding group leadership positions e.g. women group leaders and were able to speak openly without any intimidation from their male counterparts, some women participants, especially those with no leadership positions, were sometimes a bit intimidated to speak. To improve representation of women in the FGDs, participants included equal number of women as men to enable equal voting strength on issues. Women were also allocated special sessions to give their views during the discussions. To capture views of women with little confidence to speak in the FGDs, a number of meetings and discussions were specifically held with women groups especially during their group activities such as farming (Figure 4.9).

In addition to the FGDs, two general community meetings were organised with the help of the chief to discuss general issues of livelihoods, climate change and

the REDD+ project work. The general meetings were aimed at gathering views from community members who were not part of the FGDs. The meetings were also used as learning forums where the researcher explained to the community about climate change causes, impacts, mitigation and adaptation. Each FGD and general community meeting lasted 2-3 hours compared to the planned time of one and a half hours. This was because participants could sometime engage in prolonged debates on issues and such debates unveiled certain information relevant to the study.

4.6.8. Participant and non-participant observation

Participant observation provides practical evidence of reported behaviours (Holland and Campbell, 2005). Participant observation was mainly applied at the local level to achieve objective 4 (implementing REDD+ within local assets) and 5 (implementing REDD+ in the context of ICDPs). In pursuit of participant observation, the researcher engaged in various communal activities such as women group meetings and farming sessions (Figure 4.8).

Figure 4.8: Researcher participating in a women group's farming activities in Marungu village, August 2013.

During these times, the researcher listened and asked probing questions about livelihoods and implications for REDD+ project (subsection 7.2.3).

Non-participant observation involves observing activities without contributing to the activity in under observation (Holland and Campbell, 2005). The non-participant observation was mainly applied at the global level to achieve objective 1 (Global REDD+ design) and partly at the local level. At the global level, the observations were made during various UNFCCC workshops and seminars which provided insights on the process of preparing, organising and administering meetings and negotiations on REDD+ (subsection 5.2.1). At the local level, non-participants observation was applied in two community meetings, one where the community was making decisions on how to invest a share of carbon money from the communal hills and another one during a meeting of ranchers and trustees of communal carbon money. These enabled the researcher to listen to how people link their livelihood priorities with benefits from the REDD+ project.

4.6.9. Seminar and roundtable discussions

A seminar discussion to explore the implications of REDD+ design on the national process was held on 11 April, 2013 at the UN University conference hall. The seminar audience included staff from the UNFCCC, UN University and PhD and masters students from Bonn University. The researcher presented preliminary findings on REDD+ design issues, followed by a structured discussion on the implications of the findings on REDD+ implementation. In Nairobi, a policy roundtable discussion bringing together 15 stakeholders drawn from across government sectors, research, development partners, private sector and farmers was undertaken on the 16th April, 2014. The discussions took place at Kenya's Ministry of Agriculture. The researcher presented national and local level findings and through structured discussions in small groups, participants provided useful information on the on-going development of climate policies in

Kenya and associated challenges. These discussions usefully informed objective 2 (national level REDD+ implementation) and 6 (synthesis and policy recommendations).

4.6.10. Data analysis

For objective 1 (designing REDD+ at global level), a mix of qualitative and quantitative analysis was applied. Quantitative analysis involved social network analysis (SNA) to generate centrality measures for various actors involved in designing REDD+(Wasserman, 1994) (see subsection 5.2.1). The SNA measures were mainly used to understand information diffusion among actors and structure the analysis of actor roles. Qualitative analysis involved an iterative process of retrieving and coding statements from documents and interviews (Marsh and White, 2006, Kohlbacher, 2006) on the roles of actors involved in designing REDD+ (see subsection 5.2.2).

For objective 2, (national level implementation of REDD+), data were analysed qualitatively through coding where statements were categorised into themes related to actor involvement in the national process. For objective 3 (REDD+ interaction with sub-national socioeconomic settings, quantitative analysis was applied to agro-ecological and socioeconomic data from the 47 counties of Kenya to calculate vulnerability indices. GIS (ArcGIS), and statistical correlation tests (Bolboaca and Jäntschi, 2006) were used to compare the design and numbers of REDD+ projects with the vulnerability indices and a range of sub-national socioeconomic indicators (see details in subsections 6.2.1, 6.2.2, 6.2.3).

For objectives 4 and 5 (local level implementation of REDD+), qualitative and quantitative analysis were employed. Qualitative data drawn from FGDs, key informants and stakeholder interviews were coded to draw out themes and illustrative quotes (Hopkins, 2007). Household questionnaire data were analysed using SPSS to generate descriptive statistics. Household questionnaire

data on asset-project interactions were analysed using non-parametric statistical tests were applied in analysing the household data (Green and Salkind, 2010). Specifically, Chi-squared and spearman rank correlation coefficient were used to test for differences between wealth categories and between sites (see details in subsections7.2.6 and 8.2.4).

The finer details of these methods are included in the respective empirical Chapters to which they were applied. Nonetheless, their application had a number of limitations that are discussed in the next section.

4.7. Methodological limitations

In analysing REDD+ design at the global level, sample UNFCCC experts provided views about other organisations involved in the process. This may generate biased information about other actors. However, analysis of a broad range of documents including those associated with actors outside the UNFCCCC process usefully triangulated the interview data. Additionally, information gathered from specific experts was confirmed with other experts in a manner that usefully triangulated information about the other actors.

In analysing REDD+ implementation at the local level, the MCI design was applied to compare data between intervention and control sites. However, information from the control site could only be used to compare project impacts on assets but could not be applied in comparing asset impacts on the project design. This was because households in the control site had not had an experience with a REDD+ project and could not provide a factual account of the influence their assets could have on the project. This partial use of the MCI however does not have significant implications on the aim of this study since qualitative information from the control sites revealed some evidence that were comparable with the intervention site.

4.8. Ethics and positionality

Ethical considerations were crucial in this study because it involved gathering data from diverse sources and cultures. Prior to the fieldwork, ethical approval was obtained from the University Faculty Research Ethics Committee (AREA 11-219). The University ethical provisions guided the fieldwork ethics but certain adjustments had to be made in light of emerging field conditions (Ergun and Erdemir, 2010). By observing certain key ethical issues, the researcher positioned himself strategically within various organisations and the local community in a manner that enabled collection of useful data from various sources. The main ethical issues observed during fieldwork include (1) ensuring voluntary participation and informed consent of the participants (2) protecting personal privileges and anonymity of participants and (3) appreciating the cultural and socio- political contexts of organisations, communities and households from whom data were drawn.

Informed consent was ensured by first discussing the study objectives with every category of research participant. The research objectives and expectations were outlined in the first page of all data collection tools i.e. household questionnaires and interview guides. Interviewees were given time to read and understand the objectives and expectation. In situations where households could not easily read and understand especially in household questionnaire interview, the objectives and expectations were reinforced through verbal explanations using local language at the beginning of each interview session. Participants, were given time to decide whether they were comfortable to participate without any form of inducement. Voluntary participation in the research enabled participants to open up and provide useful information for the research (Ergun and Erdemir, 2010).

Data collected from individual households and community informants were coded using pseudonyms to ensure anonymity of these respondents. For the experts and stakeholders interviewed, consent was obtained as to whether their

name/position or organisations could be used. In cases where participants did not consent to any of these options, general identities e.g. 'expert A' or 'national stakeholder B' were used.

The norms and culture of various organisations and communities from where data were collected were observed. At the UNFCCC, high professionalism was ensured and all interviews were secured by email appointments. Upon securing appointments, the experts were interviewed at their convenient locations, mostly in their offices. Their time schedule was respected and for any uncovered issues, a request for email correspondence was made. Observing these standards helped in gaining the trust of the experts and so it was possible to pursue continuous communication and meetings to discuss emerging research issues even after the interviews. Similar organisational procedures were also observed in gathering data from national departments and stakeholders in Kenya. The Kenyan environment was less structured because the researcher is Kenyan and had worked in the agriculture sector before and thus could easily access most stakeholders and their locations. Further, affiliations with intergovernmental organisations such as NEPAD in Kenya, and the World Agroforestry Centre in Nairobi provided the necessary institutional support that made it possible to access stakeholders.

The local socio-political hierarchy was also well understood and respected (Ergun and Erdemir, 2010). Before beginning the fieldwork, a formal request and arrangements were first finalised with the Kasigau project administrators. As already highlighted in section 4.2.4, the chief and the village elders were the main authorities in the study sites. Therefore at the beginning of fieldwork, the local chief was met first to discuss the intended research. Through community meetings organised as Chief's Barazas (Fleming, 1966), the researcher was introduced to the local community. Chiefs' barazas are a decentralized local administrative forum where governance issues affecting local people are discussed and new development initiatives from the government and NGOs are

announced. They were established by colonial officers as fora for local political bureaucracies who could thus exercise external authority over their clientele (Fleming, 1966). In the Barazas, the Chief introduced the researcher to the public and also to village elders. The village elders helped the researcher in gaining access to and acceptance by various community groups for interviews and discussions.

During interviews and discussion, expectations were sometimes high, especially after being introduced as a student studying in Europe or sometimes 'London'. However, at every point research participants were informed that there would be no payment for participating and that the research was aimed at achieving an academic degree. The researcher also participated in a number of community activities such as land ploughing and local football games. These helped in gaining acceptance and additional insights into the community.

4.9. Conclusion

This Chapter has outlined and discussed the study area and the methods employed. The Chapter has justified the selection Kenya as a case study country for understanding the implementation of global REDD+ rules within national policies and local socioeconomic settings. The Chapter has presented a new multilevel analytical framework (IDAF) within which mixed methods have been applied to acquire and analyse data on designing and implementing REDD+ rules. The Chapter has also provided an overview of data collection methods, citing their relevance, strengths and weaknesses. These methods are discussed in detail under each of the empirical Chapter that follows. The next Chapter presents the first empirical findings for objectives 1 and 2 focusing on REDD+ design at the global level and its implementation at the national level.

Chapter 5

REDD+ global design and implementation at the national level[2]

Abstract

This Chapter examines the process of designing REDD+ at the global level and how resulting rules are implemented at the national level. The Chapter gives attention to the agency of Africa in the global process and draws evidence from Kenya to link the global process to national level implementation. Analysis of policy documents and interviews with UNFCCC experts and government stakeholders were the main methods applied. Results show that multiple State and non-Sate actors are involved in the global process. However, the agency of Africa (African States) is weak partly due economic constrains that impede the continent's technical and institutional input into the global design process. The case of Kenya reveals technical and financial gaps in the national process. The country relies on resource endowed multilateral intermediaries for technical expertise and funds. The support to Kenya mainly emphasises institutional arrangements for carbon delivery

[2]This Chapter is developed from published working papers and a contribution to a book Chapter:

a. Atela JO, Quinn CH and Arhin A. (2015): Where is Africa in the REDD+ debate? Actor typology and representation of Africa in the global REDD+ architecture. *Under Review in International Environmental Agreements, Politics, Law and Economics. Manuscript Number: INEA-D-15-00013*

b. Atela JO, Quinn CH and Minang PA. (2015): Implementing REDD+ at the national level: stakeholder engagement and policy coherences between REDD+ rules and Kenya's sectoral policies. Forest Policy and Economics *FORPOL2049*. Accepted subject to revision.

c. Atela JO. & Quinn, CH. (2014). Exploring the agency of Africa in designing REDD+ and the associated implications for national level institutions. *Centre for Climate Change Economics and Policy Working Paper No.198.*

d. Arhin A. and **Atela JO.** (2014). Carbon Policies in Africa. In Carbon conflicts and forest landscapes in Africa. Ian Scoones and Melissa Leach (Eds), Routledge, pg 43-57.

but reinforces national institutional gaps such as path dependencies where dercisions are monopolised within particular sectors. REDD+ activities are mainstreamed within Kenya's forestry sector with little integration to other key sectors, e.g. lands and agriculture and local communities, because these stakeholders could 'complicate' the delivery of carbon funds. Such stakeholder exclusion creates multiple implementation deficits that are presented and analysed here.

5.1. Introduction

Multiple actors with varying interests are involved in designing REDD+ at the global level (Corbera and Schroeder, 2011). Despite multi-actor interests, effective implementation of the resulting design rules will depend on how much the policy and socioeconomic circumstances of targeted countries are accounted for in the design rules (Corbera and Schroeder, 2011, Schroeder, 2010, Brown and Bird, 2008) (subsection 3.4.4). This is mainly because when a target policy from a particular source e.g. global negotiations is not coherent with the existing policy setting e.g. national policies, the effectiveness of the target policy is negatively affected (vertical interplay) (Young, 2002, Ostrom et al., 1994b) (section 3.54.). As such, the agency of developing countries in designing REDD+ is crucial in shaping effective implementation of the programme within these countries (Brown and Bird, 2008, Brockhaus et al., 2013). Agency in this case refers to the ability of actors to participate and prescribe REDD+ design rules (Biermann et al., 2009, Paavola, 2003) (subsections 3.4.2, 3.4.3 & 3.4.4).

This Chapter explores the process of designing global REDD+ rules and how the resulting rules are implemented at the national level drawing on evidence from Kenya. The specific objectives of the Chapter are: (1) to explore actors and their roles in designing REDD+ rules at the global level (2) to explore the representation

of Africa (African States) in the global REDD+ design process (3) to analyse the participation of sectors and stakeholders related to deforestation in implementing global REDD+ rules at the national level and (4) to analyse the interplay between global REDD+ rules and national sectoral policies on forests, land and agriculture. Document analysis and interviews within the UNFCCC and government departments were the main methods applied. The Chapter is divided into five sections. The next section explains the methods applied in gathering data. Results, discussions and concluding remarks then follow in the subsequent sections.

5.2. Methods

Data were collected during a three month research visit to the UNFCCC in Bonn, Germany (February to May 2013) and during fieldwork in Kenya (June to August 2013). Document analysis, semi-structured interviews and policy analysis were the main data collection methods.

5.2.1. Review of UNFCCC documents

An exploratory review (Thai et al., 2008) of a range of documents (Table 5.1) was first undertaken to identify actors involved in designing the three main REDD+ components: methodology, finances and safeguards (Angelsen, 2008c). Actors included States and non-State organisations and groups (Keeley and Scoones, 2003) who have either made submissions to the Subsidiary Body on Scientific and Technological Advice (SBSTA) or have been conferred particular responsibility through SBSTA or COP recommendations. Actors outside SBSTA and COP institutional settings were excluded because the study focused on an ongoing REDD+ design process. SBSTA is a permanent subsidiary body to the UNFCCC and provides scientific and technological advice to the COP. SBSTA meetings play 'a gate keeper' role for the COP by bringing together actors to decide which actors, approaches and/or data sources are relevant for REDD+ design.

Table 5.1: List of documents reviewed

Document name and year	Documents source	Type of data
Global level documents		
UNFCCC Conference of Parties reports from 2008, 2009, 2010, 2011, 2012, 2013	UNFCCC archives http://unfccc.int/methods/lulucf/items/6917.php	Information on global REDD+ design process
SBSTA reports and recommendations	UNFCCC archives http://unfccc.int/methods/lulucf/items/6917.php	Information on global REDD+ design process
Submissions from Parties and observer organisations	UNFCCC archives http://unfccc.int/methods/lulucf/items/6917.php	Information on global REDD+ design process
IPCCC reports 2001, 2007, 2013	IPCC archives	Information on global REDD+ design process
World Bank and UN-REDD readiness reports (2008,2010, 2012)	Forest Carbon Partnership Facility (FCPF) archives https://www.forestcarbonpartnership.org/	Information on global REDD+ readiness process
National level documents		
Revised REDD Readiness Preparation Proposal for Kenya (2010)	Kenya's Ministry of Environment / FCPF archives https://www.forestcarbonpartnership.org/kenya-0	Information on national REDD+ design process
National Climate Change Action Plan 2013-2017	National Climate Change Secretariat	Information on Kenya's climate change policies
Forest Act 2005	Ministry of Environment	Information on Kenya's forest policies
National Land Policy 2007	Kenya National Land Alliance	Qualitative data on Kenya's land policies
Agricultural Sector Development Strategy (2010-2020)	Ministry of Agriculture	Qualitative data on agro-forestry policies

In-depth content analysis of documents was then undertaken through an iterative content analysis to explore actor roles in designing REDD+ rules at the global level. Iterative content analysis involves retrieving homogeneous and heterogeneous relationships between sentences and words (Marsh and White, 2006, Kohlbacher, 2006). The approach has been applied in a wide range of policy studies e.g. Kalaba et al. (2014); Wallbott (2014); Stringer et al. (2009). In this case, it involved retrieving and categorising statements on the roles of identified actors within the various REDD+ components.

From the in-depth analysis, three main categories of actor roles emerged; information designers (IDs), information receivers (IRs) and information implementers (IIs). IDs are actors who generate, package ideas e.g. specific MVR methodologies for verifying REDD+ projects and use these evidence to inform design rules. IRs are actors who receive or are informed about packaged ideas from other actors and have to be helped in understanding these ideas because they did not generate the ideas themselves. IIs are actors who, through on-ground actions, implement/demonstrate the design options generated by themselves or by other actors.

5.2.2. Expert interviews and non-participant observations

In-depth, semi-structured interviews (Hay, 2000) were undertaken with 12 UNFCCC experts. The interviews triangulated information retrieved from the documents regarding actor roles and networks. The experts were identified through a snowball sampling process (Reed et al., 2009). The snowball process begun with initial purposive sampling of specific experts aligned to the REDD+ design components. Through the initial interviews, additional experts were identified and interviewed. The experts were interviewed on three topics (1) actor typology and connections (2) actor roles and (3) negotiation procedures at the UNFCCC.

In terms of actor typology, experts were asked to indicate the menu of actors involved in each of the REDD+ design components and how the actors are linked to each other. For example, an expert dealing in methodological issues was asked to provide a list of organisations working on REDD+ methodology and other components (where possible). The expert would also confirm the list of actors generated from the document analysis. Within the menu of actors, an expert was then asked about how each actor/organisation links to others and the kind of information exchanged among the actors/organisations.

Actors and their connections retrieved from document analysis and expert interviews were coded into a matrix of actors and their connections. An exploratory social network pattern (SNA) (De Nooy et al., 2011) was then generated using UCINET. The SNA network was used to guide and indicate which actors should be targeted for qualitative analysis of actor roles. Centrality measures derived from the network analysis were considered adequate for guiding the qualitative analysis. Other analytical measures such as network homophily (actor similarity) and density (uniformity of connections) mainly depict speed of information diffusion among actors but were not pursued because focus was given to the level of information flow among actors (Crona and Bodin, 2006, Bodin and Crona, 2009, Hannan, 2005). From the network patterns, degree and betweeness centrality scores for each actor was generated (Wasserman, 1994). Degree centrality depicts the number of connections (to other actors) a particular actor has while betweeness depicts an actor's position as a link between other actors (Wasserman, 1994). Actors with high degree centrality scores potentially possess higher capacity to mobilise other actors than those with low degree centrality scores. Actors with high betweeness centrality potentially broker ideas between disconnected actors who they link together (Wasserman, 1994).

Centrality scores were interpreted to mean the level to which information diffuses to or from particular actors. These scores were however not indicative of how influential an actor is (Bäckstrand, 2006). Evidence shows that highly central actors are sometimes characterised by weak ties and decreasing influence over others (Prell et al., 2009). Therefore, to characterise how various actor connections posit influence on the REDD+ design, the experts were asked about actor roles and their representation in the REDD+ design process. Specific attention was given to African States where REDD+ is targeted for implementation and as the region to which the case study country 'Kenya' belongs. Interview questions and discussions

focussed on matching the centrality scores (both degree and betweeness) against actor roles either as ID_S, IF_S and IR_S.

Actor roles i.e. whether they design (ID), receive (IR) or implement (II) information on REDD+ design rules were used to define agency categories based on earth system governance framework (Dellas et al., 2011) and consultations with the UNFCCC experts. The governance framework mainly defines sources of agency in terms of an actor's ability to generate knowledge and transmit to the design platforms (Dellas et al., 2011) (subsection 3.4.3). Actors were classified as either having weak, moderate or strong agency (Figure 5.1). Actors who do not play a key role in designing REDD+ components but only receive (IR) and implement (II) design options suggested by other actors were categorised as having weak agency (Schroder, 2010). Such actors mostly lack capacity or resources to generate and package information on design options e.g. methodological procedures for accounting carbon thus are limited in exercising agency through expertise (Dellas et al., 2011, Archer, 2003, Gupta and van der Zaag, 2009) (also see subsections 3.4.3 and 3.4.4). By contrast, actors who are able to generate knowledge, design, and implement particular REDD+ options have strong agency. Such actors have the capacity to steer design decisions by generating ideas and testing their 'implementality' in a manner that provide stronger empirical evidence/experience to support their positions in the global process (Pattberg, 2005, Gupta and van der Zaag, 2009). Actors who are able to design options but are limited in terms of implementing the options were classified as having a moderate agency.

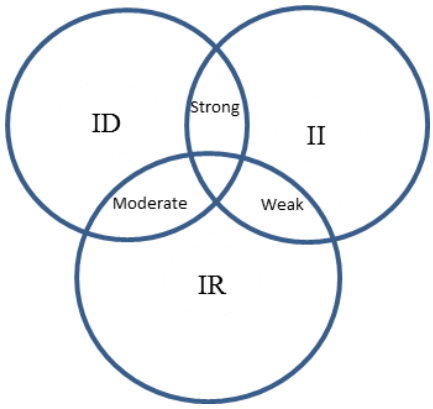

Figure 5.1: Conceptual framing of actor agency based on their roles in REDD+ design process.

The agency measures for African States (developing countries) were further triangulated with interviews focusing on Africa's representation in the UNFCCC negotiations. Experts were asked to explain the negotiation procedures such as rules on numerical and technical representation of actors and how these structure the participation and actors' influence in designing REDD+. Specific focus was given to the representation in the SBSTA meetings and IPCC documentations where REDD+ design decisions are filtered. The level to which existing negotiation coalitions e.g. the Coalition for Rainforest Alliance and the Africa Group of Negotiators (AGN) improve Africa's representation in the global REDD+ design was discussed. Non-participant observation within UNFCCC workshops and seminars provided insights on the process of preparing, organising and administering negotiations on REDD+.

5.2.3. Analysis of national level policies

REDD+ design rule emanating from the global process were analysed against existing national policies. The analysis followed the policy interaction framework outlined by Young (2002) (see subsection 3.5.1). Both vertical and horizontal interactions between REDD+ rules and national policies were analysed. Vertical interaction focused on how the global rules are instituted at the national level. This

involved retrieving and coding texts and statements that link national REDD+ policies e.g. readiness proposals, strategies, assessment documents and plans (Table 5.1) to the global process. The coding was supported with illustrative quotes underpinning key national policy views (Krippendorff, 2004).

Analysis of horizontal interaction focused on how globally/nationally established REDD+ rules interact with national sectoral policies. The sectoral policies analysed include the National Forest Act of 2005, the National Agriculture Sector Development Strategy for 2010-2020 and the National Land Policy. Lands and agricultural sectors were particularly targeted for the analysis due to their role in driving deforestation in Kenya (Ndungu Land Commission, 2004). Through the iterative content analysis, specific policy measures emphasised in the policy documents were retrieved and analysed against each of the REDD+ design rules i.e. additionality, leakage avoidance, permanence, equity and rights. Interactions where specific sectoral measures were supportive of REDD+ rules were classified as positive (+). A negative (-) classification was assigned wherever measures conflicted specific REDD+ design rules.

5.2.4. Interviews with national government stakeholders

Interviews with government stakeholders (n=13) triangulated the analysis of policy documents. The stakeholders were drawn from various State departments including the Kenya Forest Service where the REDD+ National Coordination Office is hosted (n=5), the National REDD+ taskforce (n=3), the Lands Ministry (n=1) and the Agriculture Ministry (n=4). The stakeholders were asked to clarify how global REDD+ design rules are implemented (instituted) at the national level (see subsection 4.6.3 for discussions about stakeholder interviews). The stakeholders also clarified the roles and representation of relevant national sectors and local communities in formulating and implementing REDD+ policies at the

national level. REDD+ Secretariat staff clarified the stages of implementing REDD+ and linkage with the global process. The staff were also asked to indicate how and why other sectors and stakeholders are represented or not represented in the national process.

5.3. Results

Results are presented in four parts corresponding to the chapter objectives.

5.3.1. Typology of actors and their roles in the global REDD+ design

Figure 5.2 shows an exploratory network diagram depicting a typology of actors and their connectedness across the various REDD+ design components: methodology, finance and safeguards. The connections depict that all actors are linked to each other in one way or another.

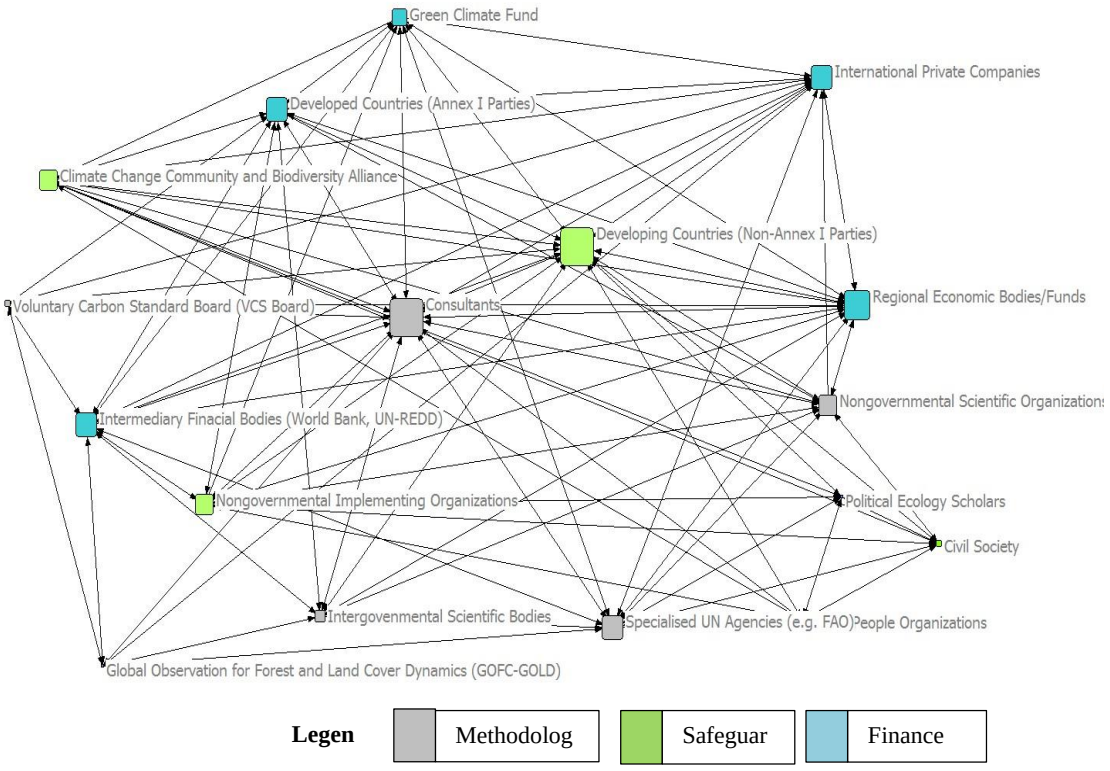

Figure 5.2: Network diagram indicating actor connections across REDD+ design components.

A total of 16 broadly categorised actors were identified. The actors were listed based on their areas of specialisations and roles even though the network diagram indicate that that certain actors contribute to more than one component. Nonetheless, the institutional diversity of the actors is indicative of the global nature of REDD+. Actors from various regions and levels of governance e.g. global, regional, national and local are part of the process. They include States who are Parties to the UNFCCC, global level UN agencies such as the Food and Agricultural Organisation (FAO). There are also intergovernmental scientific bodies such as Centre for International Forestry Research (CIFOR), World Agroforestry Centre (ICRAF) as well as international nongovernmental organisations such as the Worldwide Fund for Nature (WWF) mainly contributing science to the programme's methodological design. International consulting firms, for example German Climate Action, Winrock International Ltd, Climate Care also support methodological design options. The financial component is dominated by international organisations including multilateral intermediaries such as the World Bank; UN-REDD and multilateral private companies interested in carbon business. A range of civil society groups and forest people organisations also exist to represent the interests of local communities in the process.

Figure 5.3 shows respective centrality scores and agency measures of actors based on whether they design (IDs), receive (IRs) or implement (II) REDD+. In terms of centrality scores, there was a positive correlation between degree and betweeness centrality scores of actors ($p<0.05$). This implies that actors with more connections e.g. developing countries (D=14) also acted as links between other actors (B=10.6). However, there was no significant difference in actors' degree centralities ($p>0.1$) even though the betweeness scores were significantly different among actors ($p<0.1$). This implies that all actors are relatively well linked to each other in designing REDD+ but vary in terms of mediating between actors.

The highly central actors in the network included developing countries (D=14; B=10.6) consultants (D=14; B=3.3), multilateral private companies (D=11; B=3.1), multilateral intermediaries (D=10; B=3) and specialised UN agencies (FAO) (D=10; B=8.7). These actors are key sources or targets of REDD+ information and could have relatively more input in the REDD+ design. On average, financial actors had the highest average centrality scores at 6.56 followed by safeguard and methodological actors at 6.22 and 6.15 respectively. All financial actors have degree and betweeness scores of greater than 10 and 2 respectively. This contrasts the safeguard and methodological actors where degree centrality and betweeness scores were mostly less than 10 and 2 respectively. This could mean that the REDD+ financiers have more input into the REDD+ design than methodological and safeguard actors.

As already highlighted, the centrality scores are only indicative of which actors could have more input into the REDD+ design but do not depict the actual actor influence. Qualitative analysis of actor roles in the connections usefully helped to understand the actual influence/agency of actors.

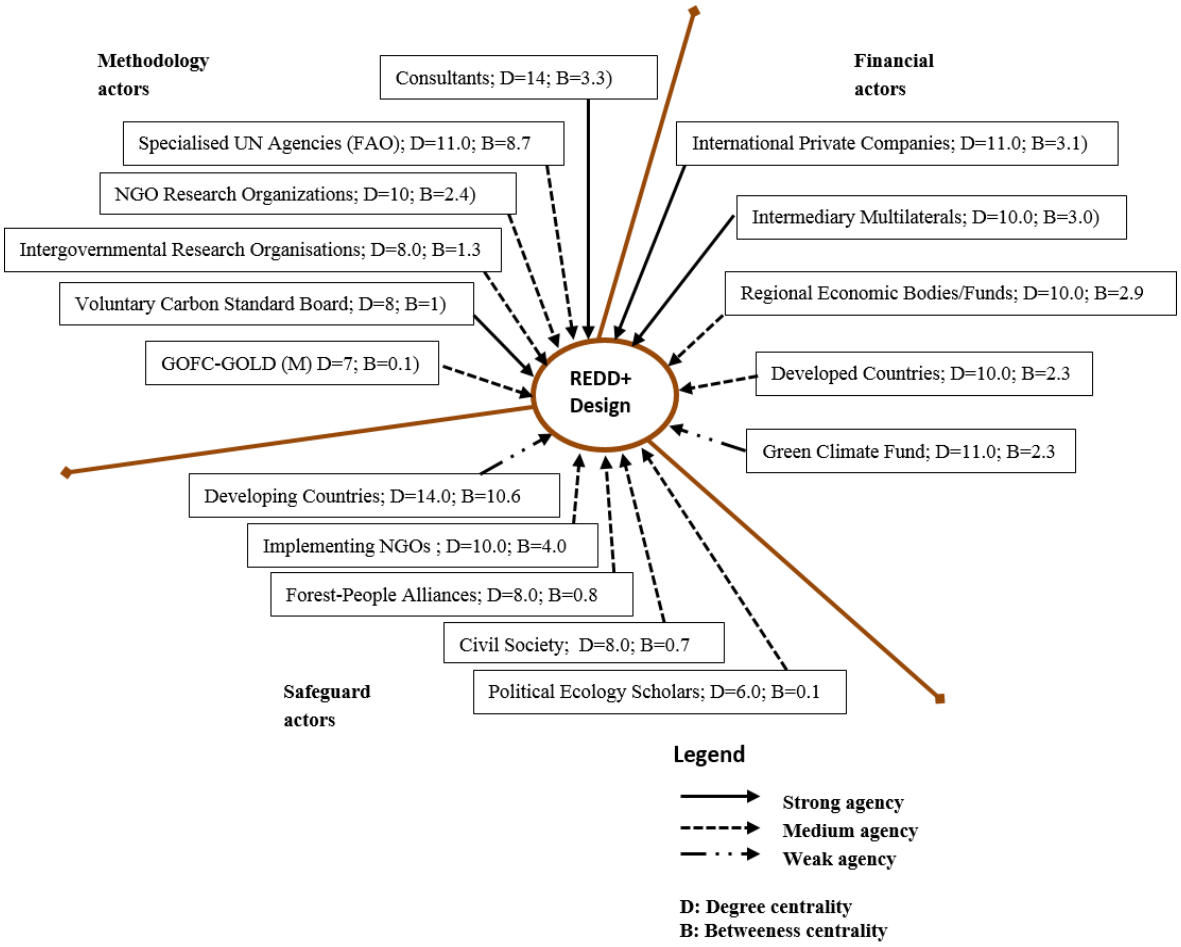

Figure 5.3: REDD+ actors and their agency based on their role in REDD+ design. Developing countries in this case refer to the low income segment of developing countries to which most African countries participating in REDD+ belong.

In terms of agency scores, majority (4 of 6) of methodological actors have moderate agency in REDD+. These actors mainly specialise in research activities to generate knowledge, design models for measuring and monitoring land use changes and carbon stocks among others. They package scientific knowledge on carbon accounting, monitoring, ways of avoiding leakage and emission reversals among other methodological provisions (Table 5.2). The actors transmit the methodological options to the global process through presentations within SBSTA expert sessions designed to address specific methodological issues such as forest

reference levels.[3] They also organise separate side events and sessions to share new research findings and approaches on MVR, including on-going collaborative work with other actors. For example during 18th COP, CIFOR and Global Observation of Forest and Land Cover Dynamics (GOFC-GOLD) organised a side event on REDD+ national forest monitoring and setting reference levels for the MVR.[4] Despite being able to design methodological options, these actors have moderate agency because they do not legally engage in the implementation of these design options.

Consultants and the VCS board are the methodological actors with strong agency. Consultants are hired by various actors across the design components to develop REDD+ methodologies (IDs) and oversee the implementation (II) of demonstration projects within Africa and other developing countries. In this, they have garnered knowledge upon which most developing countries rely on for the global REDD+ negotiations and on-ground demonstrations. International consulting firms e.g. the German Climatic Action, Winrock consulting Ltd, Climate Care and Climate Focus currently support developing countries e.g. Kenya with national REDD+ implementation, greenhouse gas inventory and global negotiation procedures. Africa and other developing countries often submit methodological suggestions to SBSTA but their submissions mostly outline administrative structures for coordinating the externally designed technical information. The VCS board has strong agency because it is comprised of private sector actors that are currently designing and certifying VCS methodologies. The VCS is the main carbon standard upon which more than half of global REDD+ credits are currently verified. Most private multilaterals aligned to the VCS board are also implementing more than 80% of the REDD+ projects globally.

[3] FCCC/SBSTA/2011/INF
[4] https://www.youtube.com/playlist?list=PLZ1FEAFDHOWfkp4eaNRXkoUN4DEJOSF3o

Two out of five financial actors including regional economic bodies and developed countries have moderate agency. These actors design the financial mechanisms (IDs) but disburse the funds. The intermediaries redefine (IDs) the funding conditions and execute the implementation process (II). For example, a host of developed countries e.g. Norway, Australia, UK now channel REDD+ funds to developing countries through the World Bank's FCPF and the United Nations Collaborative programme on REDD (UN-REDD). The intermediaries have strong agency as both IDs and IIs. The World Bank's FCPF and the UN-REDD provide expertise and financial support for national level REDD+ implementation in 48 developing countries (16 from Africa). The intermediaries have hired teams of methodological experts and consultants (e.g. Unique consultants consulting for the World Bank) who draw from the UNFCCC guidelines to design technical details and help in instituting them in developing countries. The intermediaries have established various carbon funds e.g. REDD+ carbon fund and the Biocarbon fund to implement on-ground REDD+ activities. The intermediaries, then present to the global negotiations, experiences from the national and local level implementation as empirical evidence. This takes place either through presentation in expert sessions or through lobbying delegations of actors and countries which they fund. According to a UNFCCC expert, multilateral intermediaries are currently the main sources of empirical evidence for the global REDD+ design process.

Private sector businesses e.g. Althelia, Macquarie-International Finance Corporation, Ned Bank group, Wildlife Works and Terra Global Capital mong others also finance REDD+. They do so either through multilateral intermediaries or directly. In direct funding, these companies develop (IDs) and implement (II) REDD+ methodologies and sub-national demonstration projects in developing countries. For instance, the first REDD+ project 'the Kenya's Kasigau project' to sell credits in the voluntary carbon market is a private initiative 'the Wildlife-Works

Co Ltd. The project has been showcased as an example in the global platforms. The private multilateral companies currently implement over 80% of REDD+ projects globally. These private companies are also the main buyers of carbon credits and are able to control and influence carbon prices for the whole REDD+ portfolio. Ultimately, multilateral companies have strong agency in the REDD+ design process.

'Without money, you can do nothing' [UNFCCC expert, Bonn, April 2013]

In terms of safeguards, most actors including the civil society and forest people organisations have moderate agency. These actors designed, submitted and advocated for most of the safeguard provisions included in the UNFCCC text (Table 5.2).[5] These civil society organisations do not have strong agency because their advocacy is mainly limited to the negotiation process. They have limited mechanisms (resources and legitimacy) to enforce these provisions at the national level implementation like the multilateral intermediaries. A key finding here is that Africa and other developing countries are players in the safeguard component. These countries are expected to implement REDD+ in the context of sustainable development i.e. ensuring community participation and poverty alleviation. The agency of these countries in the global process remains weak. They mainly receive (IRs) and implement (IIs) safeguards designed and advocated for by international civil society bodies. Submissions by African countries on safeguards mainly explain policy structures being put in place and financial support required to address the UNFCCC safeguards.[6]

[5]http://unfccc.int/resource/docs/2014/smsn/ngo/469.pdf

[6] For example the joint submissions made through the Republic of Chad in response to the thirty-eighth SBSTA session

Table 5.2: REDD+ design rules based on COP decisions

Design feature	Description	COP decision
Activities	(1) Avoiding deforestation by for example keeping existing forest intact and addressing key drivers of deforestation (2) Avoiding forest degradation by for example avoiding the conversion of natural forest to plantation forest (3) Conservation of forest carbon stocks by (4) Sustainable forest management by avoinding extraction of premnature trees below 30 years of age (5) Enhancement of forest carbon stocks through increasing idnigenous high cabon value tree spoecies and cover.	Decision 1/CP. 16 Decision 2/CP. 13
Scale	(1) National and subnational forests defined based on national circumstance e.g. 10% canopy cover for Kenya (2) Subnational projects expected to be nested into national systems. (3) Subnational activities to be verified using expert standards.	Decision 2/CP. 13 UNFCCC (2009), Republic of Kenya 2010
MVR	(1) Credible, result based nationally implemented MVR (2) The Monitoring process to apply scientific techniques of remote sensing e.g. FAO approaches within the IPCC's LULUCF guide (3) International verification through internationally accepted standards such as the VCS or team of experts (4) Avoiding leakage- avoiding shifting drivers of deforestation to other areas. National MVR to help avoid leakage (5) Additionality- requires that REDD activities increase carbon storage above the level at which of would occur without the activity. (6) Permanence- measures to ensure that emissions avoided are not reversed through future deforestation	Decision 4/CP.15 Decision 1/CP.16 Decision 12/CP.17 Decision 10/CP.19 Decision 11/CP.19 Decision 13/CP.19 Decision 14/CP.19 Decision 15/CP.19 UNFCCC (2009)
Finace	(1) Result based funding (2) Both market and public sources: can be in form of grants, loans, budgetary support among others. (3) Funds should be managed Principles for REDD+ finances including transparency, accountability, predictability	Decision 4/CP.15 Decision 2/CP. 17 Decision 9/CP. 19 (UNFCCC, 2009). (UNFCCC, 2012)
Safeguards	(1) Community consultation on land and carbon rights. (2) Community consent in line with the UNFCCC safeguards (3) Sustainable development and poverty alleviation (4) Equitable benefit sharing and conflict resolution mechanism (5) Biodiversity conservation	Decision 4/CP15 Decision 1/CP.16 Decision12/CP.17 Decision 12/CP19 FCPF (2012b)

In comparing actor agency measures and respective centrality scores, no significant correlation was observed ($p>0.1$) for both degree and betweeness scores. This is because some actors with high centrality scores e.g. developing countries are mainly recipients of technical and financial support from a variety of actors. Africa's agency measure in the design process was triangulated by examining the continent's representation in joint negotiations platforms.

5.3.2. Representation of Africa in REDD+ design platforms

Representation in established joint climate platforms such as SBSTA, COP and the IPCC allows African States to participate and mould information designed by others to suit their circumstances. This subsection explores Africa's representation in SBSTA sessions and in the IPCC work upon which REDD+ methodology is based.

The SBSTA process involves annual meetings of government experts and observer groups including specialised UN agencies such as FAO and the World Bank, international scientific committees and implementing NGOs. The general agenda of a SBSTA meeting is set by the COP which often asks SBSTA for technical advice on specific REDD+ design components. SBSTA experts collect and synthesise written views from States and observer organisations then presents these for discussion and consensus building at its meetings. The meetings often follow multiple agendas. For example in SBSTA's 30th Session (FCCC/SBSTA/2009/3) there were ten agendas including REDD+ and other climate change issues. Representation in SBSTA negotiations is recognised both in terms of specific country delegates and negotiation coalitions bringing together delegations of several countries.

In terms of delegations, SBSTA has no clear rules on the delegation size representing particular governments or observer organisations. Analysis shows that African countries often have fewer delegates compared to other regions. It is argued that African States lack the economic ability to sponsor as many delegates to SBSTA meetings compared to other States.[7] For instance, in the 30th SBSTA

[7]Interview UNFCCC, Bonn March 2013

meeting that included REDD+ as part of the agenda[8], Brazil and Germany were represented by 20 and 71 delegates respectively, while Kenya and DRC had only two and three delegates respectively participating in the meeting (FCCC/SB/2009/MISC.1). Overall, most African States had less than four delegates and in total, Africa represented less than 2% (about 60 out 4216) of the total SBSTA delegation.[9] The few African delegates present are often unable to participate in all the parallel negotiation sessions. As such, they may be unable to learn and internalise design options packaged by other actors due to physical absence from certain sessions. They may also not interact and lobby in informal side events where useful information e.g. new tested technologies or funds for REDD+ are often showcased. According to UNFCCC staff, because of their low numbers, African delegates have to make trade-offs between attending REDD+ sessions or other sessions on issues such as addressing adaptation and vulnerability that they often consider more important for their contexts. As such, it is no surprise that sometimes these delegates do not even participate in REDD+ sessions.

African representatives also participate in specialised SBSTA expert sessions on specific issues e.g. setting for reference levels for REDD+.[10] However these sessions are brief, spanning only two days, within which several participants have to showcase their experiences on the issues in question.[11] For example, in the 35th expert session, out of 60 experts with none from Africa. In this session, certain decisions made overlooked the specific contextual conditions in Africa. For instance, a decision made in this 35th session that '... technical issues, including

[8]FCCC/SB/2009/MISC.1 Provisional list of participants to the 30th SBSTA Session held in Bonn, June 2009. UNFCCC, available online: http://unfccc.int/resource/docs/2009/sb/eng/misc01.pdf.

[9] Also see: http://cdkn.org/2014/01/opinion-former-agn-chair-reflects-on-representing-a-strong-african-voice-in-climate-negotiations/?loclang=en_gb

[10]FCCC/SBSTA/2011/INF

[11]FCCC/SBSTA/2011/INF

technical adjustments to forest reference emission levels and forest reference levels, should be separated from the policy issues and socioeconomic and development considerations of a country'[12] does not fully resonate with the situation in Africa. Ideally forests serve socioeconomic roles supporting national economy and local livelihoods, thereby influencing reference levels.

In terms of coalitions, results show that the ability of African delegates to bargain for their preferences through negotiation coalitions is complicated by diverse interests within coalitions. The African Union established the Africa Group of Negotiators (AGN) during the 1992 Earth Summit. The AGN aims to pull together African delegates in common negotiation positions. Interviews and documents reveal that the AGN mainly adhere to a common position on issues of financing adaptation but is often in disagreement on issues of REDD+ due to varying regional economic interests. Africa's rainforest countries e.g. in the Congo basin, are committed to REDD+ but those in the Sahel see little economic value in REDD+. The AGN often negotiates with the G77+China which brings together developing nations in climate negotiations. This group is a critical voting block but members often have competing interests informed by their national contexts. Some countries are more interested in agricultural mechanisation and large scale energy mitigation, e.g. China, and this limits commitments to REDD+, especially if REDD+ does not promise adequate economic returns for economic growth. The opinions of smaller African delegations within the group are often overshadowed by the positions of larger economies of Asia (e.g. India, China) and Latin America (e.g. Brazil).

African delegations also get disfranchised by several coalitions pursuing different interests. For instance, Kenya, Congo and South Africa are all members of the Coalition for Rainforest Alliance, which is committed to forest mitigation but they

[12] (FCCC/SBSTA/2011/INF: paragraph 33).

also belong to the G77 whose general position has been that developed countries need to take mitigation responsibility and pay for climate damage. South Africa is also part of the emerging economies including Brazil, India and China (BASIC) whose interests in industrialisation sometimes overshadow the REDD+ agenda. In the mix of interests and multiple negotiation issues, REDD+ as an agenda itself gets overshadowed and is often picked up by non-State actors in side events. The position of the small number of African delegations gets further weakened through the layers of interests and coalitions:

> 'Sometimes negotiating Experts from Africa ask me what the SBSTA outcome will be but I normally tell them…it is [for] you to decide'
>
> [UNFCCC Methodology expert, Bonn May 2013]

In their submissions however, Africa and their developing country counterparts have pursued a common position on the need for developed countries to honour their financial pledges for REDD+ and other climate actions in line with the common and differentiated responsibility outlined in the UNFCCC text. Through the Coalition for Rainforest Alliance, arguments for funds to cover vulnerability, institutional capacity needs have been advanced.[13]

In terms of inclusion in the authorship of technical guidelines, results show that African experts are underrepresented in the IPCC's land use and land use change forestry (LULUCF) publications upon which REDD+ methodology is based. An analysis of the contribution to the IPCC guidelines[14] reveals that out of the 84 authors to the guidelines, only four (less than 5%) were from Africa and these were

[13]FCCC/TP/2012/3 Financing options for the full implementation of resultsbased actions relating to the activities referred to in decision 1/CP.16, paragraph 70, including related modalities and procedures. UNFCCC.

[14]IPCC (2000,2006)

mainly drawn from governmental institutions. Fifty six (56) authors were from USA, Europe, Canada and Australia and the rest from Latin America and Asia. Of the experts drawn from the USA and Europe, the majority (75%) were affiliated to national government departments, 5% were affiliated to international research organisations and the rest to Universities. Asked to comment on the reasons behind such geographical and institutional imbalances in climate change technical processes, a member of UNFCCC staff stated:

> 'The technical contribution of most developing countries to REDD+ is weak as there is little documentation of their circumstances. We got a lot of complaints from developing country Parties to the effect that 'our conditions are not reflected in the IPCC' and my answer was 'your expertise is not reflected in journals'
>
> [UNFCCC staff, Bonn, March 2013]

Overall, the foregoing examples reveal that the agency of Africa in terms of its role and representation in the joint design platforms is weak. The finding about weak agency of Africa is however limited to the global level. It should be noted that African and other developing countries are the ultimate implementers of the REDD+ rules within their jurisdictions and as to whether these countries adhere to the global rules or choose to exercise agency at implementations may add some twist to the agency debates. The next subsection shows how the global REDD+ process plays out at national level implementation based on the Kenyan experience.

5.3.3. From global to national: the FCPF readiness process

Kenya alongside 16 other African countries implements the global REDD+ rules through a readiness programme designed by the World Bank's Forest Carbon Partnership Facility (FCPF). The FCPF is an intermediary fund through which

bilateral and multilateral REDD+ funds are channelled to support REDD+ implementation in developing countries. The fund draws its legitimacy from the 13th and 15th Conference of Parties (COP) to the UNFCCC. These meetings requested developed countries and financial bodies to support REDD+ in developing countries. The FCPF uses its panel of experts and consultants to design UNFCCC guidelines and help developing countries in instituting them into their national systems. The process follows three interlinked steps supported by a grant of US$3.6 million. A country first submits a readiness idea note (R-PIN) which is an initial intent to participate in the FCPF process subject to the World Bank's standard conditions. Upon acceptance, a country then prepares a Readiness Proposal (R-P) outlining strategies for executing the global REDD+ design nationally. The R-P is backstopped and evaluated by FCPF experts and consultants' after which a country qualifies to execute results-based REDD+ actions through the FCPF Carbon Fund (FCF). Each step is approved by the World Bank as the fund's delivery partner, subject to standard criteria aimed at establishing results based MVR systems for delivering credible carbon credits.

The MVR system encompasses technical design provisions including usage of remote sensing to acquire and interpret, monitor and report carbon information at national scale and in the context of IPCC guidelines. Carbon is particularly crucial for the funders of the readiness process who include profit seeking private sector investors targeting a post-Kyoto compliance market as well as developed countries expecting to meet their mitigation commitments. The fund's documents therefore state that '…the aim of the FCPF Carbon Fund is to pay for Emission Reductions (ERs) from REDD+ programs and deliver them to the Carbon Fund (Tranche) Participants'[15] and that '...there would be no systematic evaluation of non -carbon

[15] FCPF (2013: 3)

values under the Carbon Fund'.[16] In terms of social aspects of REDD+, the readiness conditions follow on from the World Bank's safeguards 'Strategic Environmental and Social Assessment (SESA)'. As discussed in the next subsection, the readiness process interplays with national processes and influences stakeholder engagement (vertical interplay).

5.3.4. Implementing REDD+ at the national level (Kenya) through the FCPF readiness process

The FCPF process supports REDD+ implemntation at the national level. Experts representing Kenya in the international REDD+ talks emphasised that national institutions are not fully conversant with global REDD+ requirements such as MVR systems and do not have funds to create such systems. As such the FCPF fills the gap by providing expertise and funding for moving ahead with REDD+. However, the process has to adhere to the terms and conditions of FCPF process that emphasise efficient systems for delivering of carbon:

> "One major problem with REDD+ implementation in Kenya is lack of enough capacity in the forestry sector because most of our people are not fully engaged in the framing of REDD+ at the global level. We also do not have budgetary allocations for developing carbon systems. We therefore have to depend on the technical and financial support from the World Bank. We also benefit from their trainings on negotiations and how to advocate for our views at the UNFCCC"
>
> [Government staff, Department of Forestry Nairobi, August 2013]

[16] FCPF (2012a:13)

To meet the carbon requirement, the forestry sector with the help of consultants leads the prerapration of the R-P document. In the document, it is explained that the forestry sector has the legal mandate and experience in formulating forest strategies for Kenya over the years and this experience is crucial for developing efficieit MVR system for delivery of carbon as required by the donors. Interviews confirmed this view, adding that the forestry sector represents the country in REDD+ processes and understands the requirements. The sector can deliver MVR strategies within the stipulated timelines. This would effectively minimise institutional complexities for delivering carbon funds, they argue.

> "This work of carbon requires good coordination. Donors expect good systems that can produce carbon. It is about delivery of carbon because that is what will attract funds so to avoid competition and conflicts that can affect the carbon work, the Kenya Forest Service is steering the process. Other sectors will be involved in the implementation where necessary"
>
> [Government staff, Department of Forestry Nairobi, July 2013]

While the experience of the forestry sector is critical in developing anational MVR system for delivering carbon, the justification that this could minimise institutional complexities could be intpreted to mean than including other sectors could make institutions too complex for the delivery of carbon. As such other sectors such as agriculture lands that are significantly linked to deforestation were underepreseted in the taskforce charged with developing and operationalizing the country's R-P. The Kenya Forest Serrvice (KFS) and international consultants led the establishment of the taskforce. The taskforce had 40 members assigned to various technical working goups (TWGs) on policy, methodology and consultation. Out of

the 40 taskforce members, more than half were from the forestry sector (13) and consulting companies (eight). These forestry actors and consultants dominated trhe technical working group (TWG) on policy which was tasked with overall management, coordination, and formulation of national REDD+ strategies (Table 5.3). The agriculture sector was represented by only one person while the there was no representation from the lands sector (Table 5.3).

Table 5.3: Role of various stakeholders involved in the Kenya's REDD+ process. Source: modified from the Revised R-P for Kenya (2010).

Sector/Stakeholder	No of Rep.	Main role in the readiness process	Main role in operationalizing the REDD+ policies/strategies
Ministry of Forestry (State Department of Forestry)	13	P, C, M	- Overall coordination, - implementation, - monitoring and - Financial management
Ministry of Environment and Mineral Resources (State Department of Environment)	2	C	- Conflict resolution through National Environment Management Authority
Ministry of Agriculture (State Department of Agriculture)	1	C	- NC
Ministry of dryland areas	1	C	- NC
Ministry of Finance	1	C	- National conduit for international REDD+ finance
Ministry of water and irrigation	1	P	- NC
Ministry of Energy	1	C	- NC
Bilateral Partners	2	C	- NC
International NGOs	7	P,C,M	- Implement subnational projects
National NGOs	1	C	- Implement subnational projects
National Universities	1	M	- Generate remote sensing tools
Consultants:	8	P,C,M	- Backstop technical processes
Intergovernmental organizations (IPAC, FAO, UNDP)	3	P	- Funding
Private sector	0	None (only Consulted)	- Implementing subnational projects
Local communities		None (only Consulted)	- NC

Key: P = Policy/ strategy formulation, C=Consultation, M=Developing methodological elements e.g. ways of developing reference levels and capacity needs for such, NC=Not Clear.

The taskforce members were separated into three technical working groups (TWG) each handling roles on policy, consultation and methodology. The input of the one representative from agriculture is minimal and restricted to the less influential

consultation group. The consultation group only collects views from other stakeholders such as local communities, through workshops and reports these to the policy group for final write-ups and actions.

In the R-P however, it is acknowledged that despite the experience of the forestry sector, there is lack of capacity within the sector to implement MVR systems for REDD+. Interviews revealed that most of the forestry staff are not conversant with particular remote sensing techniques expected to be applied in monitoring carbon, especially how associated data can be acquired and scaled up from local to national level. It is expected that the readiness process through consultants and FCPF experts will continuously help build the capacity of forestry staff to implement the country's MVR system. Enquiries about expertise from other sectors such as the lands which has been applying remote sensing tools in land mapping reveal that these sectors have little understanding of REDD+ requirements because they are often not part of Kenyan delegations to international REDD+ meetings both at the UNFCCC and FCPF. This implies that the fewer delegation sizes at the global level contains inclusion of other sectoral experts into REDD+ talks and in so doing creates poor legitimacy of REDD+ in other sectors and also limits opportunities to harness cross-sectoral expertise for effective REDD+ implementation.

Other non-State stakeholders such as local communities and the private sector are unrepresented in the national taskforce. However, they were consulted through regional workshops. For local communities, the extent to which such workshops meaningfully gather their views may be of concern. The targeted regions (8 provinces) are geographically expansive and are inhabited by close to 5 million persons with diverse concerns and linkages to forests and these may not be captured by a one off regional workshop. Stakeholders working in the national REDD+ office appreciate the need to fully engage the local communities in the national

process but acknowledge that difficulties exist in harmonising REDD+ technical requirements and local community knowledge:

> "The community is an important stakeholder in the REDD+ process. They are consulted through regional workshops. They provide important information but this information has to be re-worked by professionals to meet the results-based requirements for the national REDD+ policies"
>
> [Member of Consultation Working Group, August, 2013]

Whilst not represented in the national taskforce, the private sector is expected to play a key role in operationalising on-the-ground actions through sub-national projects. The R-P also states that the operationalization of actions will draw expertise from all relevant sectors. The operationalization scheme presented in (Figure 1) does not however clarify how this will happen given that most coordination and technical functions, including recruiting technical taskforces, are vested in the National Coordination Office (NCO) within forestry sector. The operationalization plan is also unclear about the role of the local communities even though Kenya's Forest Act legally recognises Community Forest Associations (CFA) as the devolved unit through which local communities could structurally engage in forest management initiatives such as REDD+. Whilst the plan establishes local conservancy officers under the NCO, it is unclear how these conservancies would work with the CFAs.

The plan does however include a National Steering Committee (NSC) comprised of Permanent Secretaries from various ministries. The NSC is expected to coordinate sectoral interests and stakeholder engagement. This committee is headed by the forestry Permanent Secretary and again completely excludes representation

from lands and agriculture sectors.[17] Further, the committee's role is largely ceremonial e.g. approving plans and looking for donors. It does not make any influential inter-sectorial decisions because details, key plans and activities are all prepared by the forestry sector (Figure 5.4).

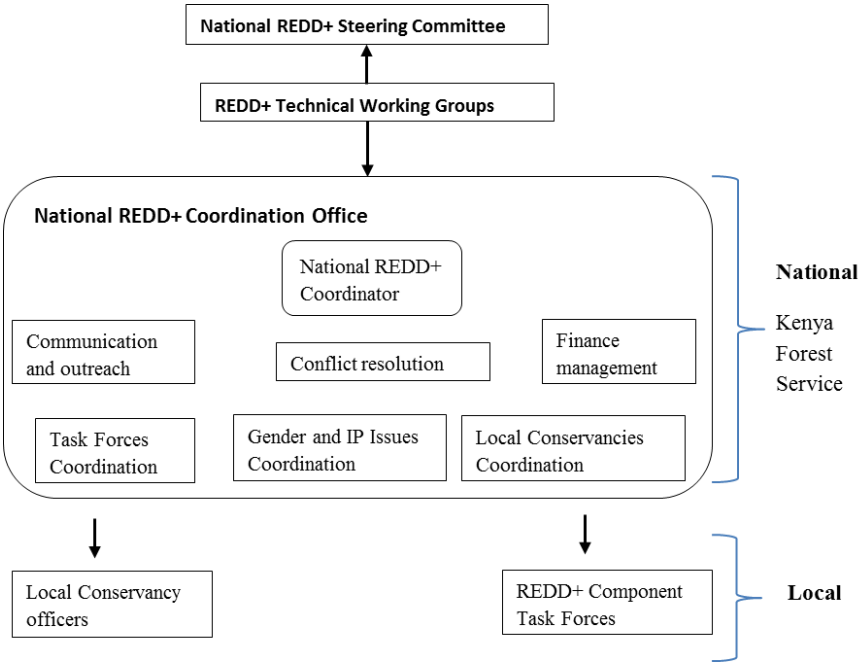

Figure 5.4: National REDD+ implementation framework proposed in the Kenya's R-P.

Given the lack of adequate sectoral and stakeholder engagement in the formulation and operationalization of REDD+ in Kenya, the vertical interplay between the FCPF processes is mainly negative. This is more so because the process involves measures that emphasise strict carbon delivery and this plays into national institutional gaps. Such negative interplays may also be exacerbated when the REDD+ rules interact with policies/socioeconomic circumstances of the underrepresented sectors/stakeholders.

[17]See Republic of Kenya (2010b) for the list of sectors included in the implementation plan

5.3.5. Interplay between REDD+ rules with national sectoral policies

This section first provides a brief description of sectorial policies on forests, agriculture and land followed by analysis of how REDD+ interplays with these policies (Table 5.4).

5.3.5.1. The National Forest Act (FA)

The Forest Act of 2005 was enacted as a means to encourage participatory forest management in Kenya. The Act legalises diverse forest management options including leasehold, public, and commercial forest management. The Act entrenches community participation in forest management options. Part IV, sections 45–48, of the Act specifically legalises the establishment of Community Forest Associations (CFA). These associations are constituted by groups of local people with clear interests and plans to manage forests in their areas. However, this Act does not include a legal basis for how external programmes such as REDD+ should engage local communities. It lays emphasis on how the local communities could manage or protect forests but not how they can benefit from, partner with or be protected from external programmes. Experts in the Forestry department argue that the Act was enacted when the country had not begun active engagement in the REDD+ process. However, it can be argued that prior externally funded reforestation programmes that existed before REDD+ could have informed the legislation. Moreover, the Act does not elaborate how the state will logistically and technically support CFAs. Kenya's REDD readiness plan heavily draws from the Forest Act.

Out of the 10 measures identified in the Act, most eight (80%) were mutually supportive to REDD+ rules especially MVR and financial rules (Table 5.4). The positive measures mainly emphasise reforestation/afforestation and avoidance of forest degradation and these are mutually supportive of carbon additionality by

increasing carbon capture and sink capacity as required by REDD+. The diverse forest management measures (e.g. commercial and leasehold regimes) are supportive to REDD+ projects initiated by the private sector as part of capital investments (Table 4). A key measure in the Act is the legalisation of CFAs as a means through community members can engage in forest management initiatives such as REDD+. This is crucial for REDD+ safeguards which emphasise community consultations, consent and rights in REDD+. However, the lack of clear guidelines on how these CFAs should engage in REDD+ could expose these communities to exploitation by non-State actors expected to implement REDD+ in various localities. The Act also envisages enhancement of indigenous forests which could be useful in addressing concerns about biodiversity protection as required by the REDD+ safeguards. Measures on reforestation and expansion of area under forest could support carbon requirements such as additionality. A major drawback in the Act, which potentially creates negative interplay, is that it lacks explicit provisions for cross-sectoral consultations that could help curb underlying drivers of deforestation outside the forestry sector e.g. resettlement and agricultural mechanisation in the agriculture and lands sectors respectively.

5.3.5.2. The National Agriculture Sector Development Strategy (NASDS)

Kenya's Agricultural Sector Development Strategy (ASDS) for 2010 – 2020 focuses on enhancing economic development via agriculture. It draws lessons from earlier strategies such as the Economic Recovery Strategy (ERS) and the Strategy for Revitalizing Agriculture (SRA). The ASDS brings together 20 ministerial portfolios relevant to agriculture and these are expected to support the implementation of the ASDS. The ASDS aligns its thematic focus with Kenya's vision 2030 'the country's industrialization blueprint' and the Comprehensive Africa Agriculture Development Programme (CAADP). CAADP is a compact, established by the AU member states in 2003, and is aimed at spurring agricultural

productivity by about 6% by the year 2015 through annual 10% budgetary allocation to agriculture. Such investments in CAADP are expected to achieve economic returns alongside food security subject to successful implementation. To achieve its goals, the strategy aims to support agricultural mechanisation as a way of enhancing agricultural productivity for economic development and alleviation of hunger. Mechanisation measures proposed include fertilizer use, input subsidies and machinery deployments.

Out of 12 measures identified, half (50%) are supportive to REDD+ rules while the other half negatively interplay the rules. The mutually supportive measures are those related to sustainable land management, agroforestry and conservation agriculture which are mainly crucial in storing carbon thus enhancing additionality. However, the overarching measure in the strategy i.e. agricultural mechanisation to achieve a 6% increase in agricultural productivity negatively interplays with REDD+ rules. Mechanisation activities such as fertilizer use and deployment of machinery are agents of GHGs emissions[18] thus could create leakage and threaten additionality. Kenya's national climate change action plan indicates that agricultural mechanisation contributes 40% Kenya's GHGs, the most if compared to other sectors. Agricultural mechanisation for commercial purposes is also singled out as one of the underlying drivers of deforestation especially through agricultural extensification into forested land.[19] Such practices could trigger rampant deforestation and reverse any emissions reduced through REDD+ thus compromising the permanence requirement under RED+. Even though the ASDS has provisions for inter-ministerial consultations, these consultations are targeted at supporting commercialization and mechanisation agendas that could achieve the ASDS's central goals.

[18] IPCC, (2007)
[19]Ndungu Land Commission (2004)

5.3.5.3. The National Land Policy (NLP)

The National Land Policy encompasses the land reforms that were enshrined in Chapter Five of Kenya's constitution (Republic of Kenya 2010). The reforms emphasise the principles of equity, productivity and sustainability in land deals. To achieve these principles, institutional provisions in land governance have been proposed. At the national level, an independent arm of the State 'the National Land Commission' exercises powers that were initially vested in the Ministry of Lands. The commission has powers to allocate (development control) and acquire land (compulsory acquisition) in the interests of the public. The commission is arguably independent from State institutions that reportedly misused powers and mismanaged the country's land tenure system leading to the loss of public land and forests. However, there have been efforts from the mainstream Land's Ministry to retain power to allocate public land.[20]

The tussle between the lands authorities shows that centralisation regimes could compromise the gains these reforms could provide to REDD+. Out of the eight measures identified in the NLP, one half (four) (62%) negatively interplay REDD+ design rules (Table 5.4). Key policies in the NLP such as resettlement, centralised decisions on land and lack of cross-sectoral consultations are key drivers of deforestation. Resettlement in gazetted forests land is a major direct threat to Kenya's forests and this thrives in instances where land allocation decisions are vested in the Minister with little provision for cross-sectoral consultations. Discrete decisions such as resettlement were the key drivers of forest losses in Kenya and their persistence in the current policy regimes posit greater risks for reversing emission under REDD+ and a threat to permanence especially when such decisions

[20]National Press: http://www.youtube.com/watch?v=nd8aJWgM7zU).

are made for political convenience. Overall, the foregoing policy interplay could have varied implications for on-the-ground implementation of a REDD+ project.

Table 5.4: Interplay between Kenya's national policies and REDD+ design rules as well as drivers of deforestation

Policy	Specific activities proposed in the policy and relevant to forests and REDD+	Interplay with REDD+ rules	Interplay with DD	
			AF	AE
NFA	Intensified afforestation	Additionality (+)	0	+
	Agroforestry	Leakage avoidance (+)	0	+
	Alternative energy sources	Leakage avoidance (+)	0	+
	Public and commercial forest management	Finance (+)	0	0
	Sustainable forest management	Additionality/Safeguards (+)	-/+	0
	Decentralized community entity	Safeguards (+)	0	+
	Increase in indigenous forest	Safeguards (+)	-/+	-/+
	Payment for ecosystem services	Finance (+)	0	0
	Minister as the overall decision making authority	Permanence (-)	0	+
	No mechanism for cross-sectorial consultations	Permanence (-)	-	-
NASDS	Agroforestry	Additionality/reduced leakage (+)	0	+
	Agricultural intensification	Additionality (+)	0	+
	Conservation agriculture	Leakage avoidance (-)	0	+
	Value addition to agricultural products	Additionality (-/+)	0	+
	Sustainable land management	Safeguards (+)	0	+
	Enhancing extension services	Leakage avoidance (+)	0	+
	Efficient irrigation and water harvesting	Safeguard (+)	0	+
	Climate change information to farmers	Additionality (-)	0	+
	Agricultural mechanization	Permanence (-)	-	-
	Minister as the overall decision making authority	Permanence (-)	-	-
	No mechanism for cross-sectorial consultations	Permanence (-)	-	-
	No legally decentralized community entity	Safeguards (-)	-	-
NLP	Conservation of land based natural resources	Safeguards/ Additionality (+)	0	+
	Strengthening land rights	Safeguards (+)	0	+
	Public, private and communal land rights	Safeguards (-/+)	0	+
	Transfer rights e.g. freehold and leasehold	Permanence (-)	-/+	-/+
	Compensation through resettlement	Permanence (-)	-	-
	Minister as the overall decision making authority	Permanence (-)	-	-
	Existence of decentralized community entity	Safeguards (+)	0	0
	No mechanism for cross-sectorial consultations	Permanence (-) -	-	-

Key: NFA=National Forest Act, NLP= National Land Policy, NASDS= National Agricultural Sector Development Strategy DD=Drivers of Deforestation AF= Allocation of gazetted Forests land, AE= Agricultural Extensification (+) = Positive interplay, (-) = Negative interplay (0) = Not clear.

5.4. Discussion

5.4.1. Agency of Africa in global REDD+

Various actors play varying roles in designing REDD+. Results here show that although African countries are targeted for REDD+ their agency in designing various REDD+ components is weak. These countries receive ideas from many actors intending to support, collaborate or test technologies with them. This could explain why these countries have the highest centrality scores yet their agency is weak. Quantitative network measures were mainly useful in visualising the quantity of information diffused to and from actors involved in designing REDD+ but qualitative aspects of the networks in the policy process provided insights on actor influence over decisions. (Crona and Bodin, 2006).

The weak agency of African countries partly results from their inability to generate and transmit scientific information needed for technical decisions. This could be explained by a number of factors. Africa's economic constraints limits governments' investments in research that could help develop inbuilt technical capacity to inform REDD+. Priority in resource allocation is given to development and pressing livelihood matters while investment in research is marginal e.g. only 0.6% share of world gross expenditure on research and development (GERD) comes from Africa, compared to Asia's and Europe's 30.5% and 27.2% respectively (Teng-Zeng, 2009). Other studies also report this weak technical agency of Africa in climate regimes (Najam et al., 2003, Nhamo, 2011, Makina, 2013). These studies recommend technology transfer as part of the solution.

Technology transfer is acknowledged in the UNFCCC text (UNFCCC, 1992). This can partly take place through globally established negotiation forums and joint scientific platforms where actors showcase and learn new approaches (Makina, 2013). However, this Chapter reveals that Africa does not make any meaningful

contribution to knowledge exchange in these forums because they are represented by fewer delegates (in the negotiations) and authors (in the IPCC land use reports) compared to other regions. Larger delegations from other regions often get their preferences into decisions due to more voting power and diverse expertise able to interpret and critique information and lobby across multiple sessions and side events during negotiations (Makina, 2013, Minang, 2009, UNfairplay, 2011). Conversely, the smaller delegations from Africa compromise the continent's ability to bargain for appropriate interventions that suit their circumstances or question others' suggestions to enhance their own understanding. While various REDD+ technologies are not alien to Africa's circumstances because they have been developed and tested in Africa either through international scientific bodies or other non-African experts, inbuilt capacity within governments is necessary to effectively and sustainably implement such techniques.

Even though economic constraints are commonly blamed to be responsible for Africa's lack of expertise and subsequent underrepresentation in the climate regimes, this Chapter further finds that interest in REDD+ and other climate funds also contribute to the weak agency. The belief that climate change results from developed countries, as championed by negotiation coalitions and embedded in the wider political economy, casts Africa as 'a victim' eligible for help rather than as a source of technological solutions. Funding for sustainable development is the main issue Africa has pursued collectively both in REDD+ and in other climate debates (Najam et al., 2003, Nhamo, 2011, Frost, 2001). This Chapter has not investigated the role political economy plays in REDD+ design in a detailed manner but the possibility that Africa's financial interests in climate regimes could undermine its own technical interests in REDD+, needs further research attention.

The story about Africa's weak agency in climate regimes may not be new. In the context of REDD+ though, it is a key concern because the programme is

specifically expected to be implemented and coordinated by African governments. Weak agency has implications for REDD+ implementation at the national and local levels.

5.4.2. Implications for national level implementation

The national REDD+ process in Kenya receives technical and financial support from the World Bank's FCPF. This support is crucial because it mobilises funds for REDD+ without which interest in REDD+ could wane, especially in the context of alternative land uses (Clements, 2010, Rosendal and Andresen, 2011). Findings however reveal that theweak agency and underperesentation this support plays into national institutional gaps to create a negative vertical interplay in instituting REDD+ rules into the national system.

Key stakeholders linked to deforestation (both national sectors, local communities and the private sector) are not adequately engaged in the national REDD+ process. Poor stakeholder engagements have been reported in REDD+ readiness processes in other developing countries e.g. Cameroon, Indonesia, Peru (Minang et al., 2014b) and Brazil (Brockhaus et al., 2013). This Chapter adds to these debates by revealing not only the causes but also the implementation deficits that poor stakeholder engagement could create for REDD+.

In terms of the causes, this study reveals that implemntataion deficits results both from the weak agency/underrepresentation at the global level as well as existing national institutuional gaps. Weak agency at the global level creates dependence on donor expertise and funds. While the fiunsds usefully supports the implemntataion process, efforts to meet associated donor conditions- especially delivery of carbon-results in poor stakeholder engagement due to a perception that many stakeholders could make institutions too complex to deliver carbon. In this, the preparation of Kenya's R-P mainly depended on convenient path of engaging the experience of

the forestry sector while the other stakeholders were mainly consulted through workshops rather than in-dpeth engagaments and feasibility analysis that could have unpacked the underlying role of other stakeholders in driving deforestation. This impeded the setting institutional settings for effective implementation. This fidning corroborates with ern has been raised in studies that dependence on external support to implement REDD+ causes a mad rush for REDD+ funds that could compromise institutional arrangements necessary for credible emission reduction through REDD+ (Dkamela, 2010, Brown and Bird, 2008). Evidence in this study reveals negative interplay between REDD+ rules and sectoral policy measures responsible for Kenya's deforestation as discussed in section 5.4.3.

The weak agency also creates implementation deficits through limiting spaces for harnessing expertise for national implemntataion. Smaller delegations to REDD+ talks limits participations of experts from other sectors in intrernational REDD+ talks whwther at the UNFCCC or at the FCPF meetings. As such, delegations to international REDD+ talks are dominated by the forestry exerts. This limits the legitmacy and understanding of REDD+ within sectors outside the forestry sector and subsequently limits the possibility of drawing expertise from other sectors and attending to drivers of deforestation that lie outside the forestry sector. For instance, the fact that Kenya's land sector has been excluded from implementing national REDD+ limits the sector's ability to contribute its expertise on land mapping techniques to the national MVR system. The MVR system instead relies on international consultants.

While the weak agency at the global level partly contribute to implemntataion deficits, other cauases sare inherent within the institutional gaps of African countries. In the case of Kenya, the claim that the forestry sector is best suited to handle REDD+ is a manifestation of path dependency whereby sectors have, overtime, monopolised specific resource decisions linked to their respective

mandates (Shannon, 2003, Phelps et al., 2010). Path dependency can be a good thing if it can bring about positive experiences for REDD+ (Shelby and Morgan, 1996). However, failure by sector-driven ICDPs to address deforestation (Blom et al., 2010, Brown and Bird, 2008, Minang and van Noordwijk, 2013) casts doubts on whether such experiences could effectively handle REDD+ in isolation. In the context of limited funding from the national budget, path dependency has also created competition for climate mitigation and adaptation funds among Kenya's sectors (Maina et al., 2013). The monopoly of REDD+ by the forestry sector could as well be interpreted as an attempt to guard REDD+ funds from other sectors.

5.4.3. Coherences between REDD+ rules and sectoral pollicies

Findings reveal that most forest policies are coherent with REDD+ rules but this coherence is affected by lack implementation of the forest policies. Lack of policy implementation is one of the greatest challenges in natural resource governance (Leventon and Antypas, 2012). While Kenya's Forest Act legalises decentralised forest management to CFAs, the operation of these CFAs is not supported by national institutional settings. Mogoi et al. (2012) have raised a similar concern by claiming that Kenya's CFAs may not make meaningful engagement in forest management because access to decision-making, revenue streams, and overall resource control rights are vested in the central government via the Kenya Forestry Service. Therefore, for decentralisation to support REDD+, ensuring that local communities are supported to form CFAs and given rights to revenue and decision making are prerequisites.

Findings additionally reveal negative interplay between REDD+ rules and agricultural policies targeting mechanisation for economic development. Such negative interplay has been reported in Zambia (Kalaba et al., 2014) and other African countries and this affects effectiveness of the REDD+ policies (Young,

2002, Gehring and Oberthür, 2009). In Kenya, mechanisation practices are agents of GHGs emissions contributing 40% of Kenya's GHGs (Republic of Kenya, 2013). Mechanisation practices are also synonymous with agricultural extensification into forest land (Ndungu Land Commission, 2004). Agriculture is the main source of Kenya's economic development contributing 25% to Kenya's GDP and almost entirely supports livelihoods in rural areas. This justifies the need for such agricultural mechanisation. In the context of this need however, it is necessary recognise trade-offs and invest in mutually supportive links between forest protection/emission reduction, food security and economic development. Findings reveal that agroforestry offers this option. Agroforestry practices, if supported by REDD+, could replenish land productivity and supply households with forest goods such as firewood and poles and these would minimise leakage in situations where forest access is restricted for REDD+ (Minang et al., 2014a). In recent times, agroforestry alongside other measures such as drought tolerate crops, zero tillage has been integrated as part of climate smart agriculture aimed at achieving triple wins 'mitigation, adaptation and food security (Mbow et al., 2014). Supporting such climate smart agricultural technologies is an entry point towards mutually enhancing coherence between REDD+ and agricultural policies.

Findings also reveal that certain policies in the land sector e.g. resettlement are linked to underlying drivers of deforestation thus negatively interplay with REDD+. In Kenya, the lands sector has the authority to allocate land for development or public use. The Kenyan experience however reveals that lands authorities have utilised this provision to allocate gazetted forests (sometimes irregularly) to private developers or electoral populations resulting in massive forest losses (Ndungu Land Commission, 2004). Such allocations have also degraded Kenyan forests as indigenous forest areas allocated to private developers are converted to fast growing plantation forests or crops (e.g. tea) to meet the

timber and economic demands. This ultimately is not coherent with REDD+ safeguard that inhibit forest conversions because such result in loss of biodiversity (appendix 1/CP.1 6).

5.4.3. Implications for local communities

Findings show that the local community is underrepresented in national REDD. The communities are underrepresented because they are simply consulted through one off workshops and are not clearly integrated into the implementation plan. This represents a negative interplay in the process manifested in terms of disrespect of community participation rights. Underrepresentation of local communities in national REDD+ processes has been attributed to poorly decentralised forest management and continued monopoly of forests by the government (Brown et al., 2011, Chhatre et al., 2012, Minang et al., 2014b, Cerbu et al., 2011). The Kenyan case however reveals that despite decentralising forest management to CFAs through the Forest Act of 2005 (Republic of Kenya, 2005), the local community is still not involved, apparently because they lack skills needed for the formulation of carbon requirements. This is a manifestation of path dependency where centralised regimes monopolise resource management decisions. As such, path dependencies may scuttle any gains in resource decentralisation and challenges the notion that decentralisation automatically translates into effective community participation in environmental decision making (Mathur et al., 2013, Martin and Lemon, 2001). In the context of REDD+, exclusion of local communities could negate States' commitments to safeguarding participation rights of local communities even though the REDD+ safeguards (appendix 1/COP. 16) and the United Nations Declaration on the Rights of Indigenous People (UNDRIP, 2008) expects States to do so.

Poor participation of local communities is a recipe for elite capture of REDD+ benefits (Schroeder, 2010). On one hand, credible carbon generation is crucial for climate mitigation and is a source of the much needed REDD+ funding (Bernard et al., 2014). The carbon agenda in the Kenyan case and elsewhere however does not clarify benefit sharing with regard to local forest-based livelihoods. In the absence clear benefit sharing, local livelihoods may be restricted by the commoditisation of carbon for funds to the benefit of the government (Ghazoul et al., 2010, Phelps et al., 2010b, Barnsley, 2009). The FCPF social safeguards (SESA) are not clear on benefit sharing yet the UNFCCC safeguards expect benefit sharing to be clarified. This exposes weaknesses in the UNFCCC systems especially the framework's lack of enforcement mechanism for safeguards that are crucial for climatically vulnerable poor.

5.5. Conclusion

This Chapter has analysed the process of designing REDD+ at the global level and how this process interplays with national REDD+ implementation. The global analysis shows that Africa's agency in designing REDD+ is weak and this creates technical and funding capacity for the national process. Even though the World Bank's FCPF usefully supports the national process, this support emphasises delivery of carbon in a manner that reinforces national institutional gaps such as path dependencies and sectoral competition for climate funds to create multiple implementation deficits and policy conflicts. These policy deficits may affect the implementation of REDD+, especially in the context of the diverse socioeconomic circumstances of Kenya. The next Chapter investigates how the REDD+ design analysed in the present Chapter interact with Kenya's socioeconomic settings.

Chapter 6

REDD+ design interaction with sub-national socioeconomic settings [21]

Abstract

This Chapter examines the designs and spatial targeting of REDD+ projects in Kenya in the context of varying socioeconomic settings. A vulnerability index map for Kenya was first developed from long-term socioeconomic (crop yields, literacy rates and poverty rates) and climate (rainfall) data drawn from the 47 counties of Kenya. The distribution and designs of REDD+ projects were mapped on the vulnerability map. Correlation tests were performed and experts consulted to clarify the linkage between project design and socioeconomic developments. Results show that most projects are designed and managed by international private and consulting companies. The State held a less than 5% stake in the demonstration projects. The projects are however designed with strict carbon standards that are mainly feasible within relatively richer and less vulnerable communities. The socioeconomic settings of poorer communities especially where dryland forests are

[21] This Chapter is developed from a published journal article, two working papers and two book Chapters:

a. Atela JO., Quinn CH. & Minang PA. (2014). Are REDD+ projects pro-poor in their spatial targeting? Evidence from Kenya. Applied Geography 52: 14–24
b. Atela, JO. (2012). The Politics of Agricultural Carbon Finance: The Case of the Kenya Agricultural Carbon Project, STEPS Working Paper 49, Brighton: STEPS Centre
c. Wambugu S., Chomba S. and Atela J. (2014). Institutional arrangements for climate smart landscapes. In climate-smart landscapes: multifunctionality in practice, Minang, P van Noordwijk, M., Freeman, O. E., Mbow, C., de Leeuw, J., & Catacutan, D. (Eds.) Nairobi, Kenya: World Agroforestry Centre (ICRAF), pg 257-273.
d. Atela, JO. (2014). Carbon in Africa's agricultural landscapes: A Kenyan case; In carbon conflicts and forest landscapes in Africa. Ian Scoones and Melissa Leach (Eds), Routledge, pg 79-93 [Online link]

hosted, are considered unfavourable to the delivery of carbon funds. This Chapter provides a basis for understanding how a global REDD+ design practically interacts with local settings.

6.1. Introduction

The previous Chapter has shown that some REDD+ requirements negatively interact with national policy settings. However, some studies (subsection 3.5.3, 3.5.4 & 3.5.5) argue that REDD+ could positively interact with existing socioeconomic settings because it is pro-poor by targeting developing countries and also that resulting carbon funds could support livelihoods and development (section 3.5.5). The simplified standards and diversified funds within which REDD+ operates, potentially enable project investments within poor communities when compared to the CDM (Bond et al., 2009, Diaz et al., 2011) (subsection 3.5.3). However, there is little evidence on how REDD+ design interacts with socioeconomic settings within developing countries.

This Chapter draws evidence from Kenya to analyse how globally designed REDD+ projects interact with sub-national socioeconomic circumstances. The specific objectives of the Chapter are (1) to develop a sub-national climatic vulnerability index map for Kenya (2) to evaluate the design of REDD+ projects and their spatial locations across the vulnerability map (3) to assess the linkages between REDD+ projects design and sub-national socioeconomic development (4) to analyse how the linkages between REDD+ projects and socioeconomic development relate to global and national processes.

6.2. Methods

6.2.1. Developing a vulnerability index map for Kenya

This Chapter first created a quantitative vulnerability index in order to map relative sub-national socioeconomic settings of Kenya. Sub-national vulnerability studies across Africa; Kenya (Eriksen & O'Brien, 2007), Ghana, (Antwi-Agyei et al., 2012) Malawi (Malcomb et al., 2014), show that the relative vulnerability of communities within a country is a measure of their relative socioeconomic circumstances, incorporating both ecological and social aspects of development/livelihoods. Similarly, the SLF part of the IDAF contextualises vulnerability as an indicator of sustainable livelihoods/development in the context of shocks (section 3.6).

Various approaches to vulnerability indexing have been documented in literature. The key ones include the variable assessment and indicator approach (Gbetibouo et al., 2010, Füssel and Klein, 2006). The variable assessment applies generic and rather holistic simulations to point out areas of greater vulnerability (Ericksen et al., 2011). The variable approach is however broad-scaled and excludes specific contextual factors that usefully influence vulnerability at lower scales e.g. local levels (Luers, 2005).

The indicator approach applies a set of proxy quantitative indicators to describe vulnerability index of a particular household, community or region (Eriksen and Kelly, 2007, Luers et al., 2003). Given that this Chapter aimed to compare relative sub-national vulnerability indices against REDD+ design, the indicator approach was preferred because it is applicable at various scales. The multi-scale applicability of the indicator approach also makes it informative to policies because of its potential to unpack contextual factors influencing vulnerability (Leichenko and O'Brien, 2002). The approach has been applied in many countries in sub-

Sahara Africa including Ghana (Antwi-Agyei et al., 2012), South Africa (Gbetibouo et al., 2010) and in these studies, the approach has proved to be feasible in the context of limited detailed data within sub-Sahara Africa. Based on the indicator approach, the IPCC (2001a) conceptualisation of vulnerability as a function of exposure, sensitivity and adaptive capacity was applied to derive vulnerability indices for each of the 47 counties of Kenya. Proxy socioeconomic indicators (literacy and poverty), an agricultural yield indicator (maize yields) and climate indicators (rainfall/temperature) were used to calculate and aggregate the various components of vulnerability into a composite index of vulnerability for each of the 47 counties. The steps followed were as follows:

Exposure index: the Chapter refers to Füssel and Klein (2006) to define exposure as the degree to which agricultural productivity is exposed to climatic changes. Exposure indices were first calculated for both rainfall and temperature data. I obtained 41 year (1970 - 2010) monthly rainfall and temperature data for the 47 counties from the Kenya Meteorological Department in Nairobi (Kenya Meteorological Department, 2012). From the data, a 30-year (1971-2000) average rainfall for the maize growing period was assigned as a standard reference against which yearly rainfall variations were compared (Simelton et al., 2009). The standard 30-year was calculated for the maize growing period in Kenya occurring between March – November each year and this was inclusive of both short and long rainy seasons. The actual amount of rainfall observed during the growing periods for each year was divided by the 30-year standard average to calculate the exposure index (see equation (1). A temperature based exposure index was also calculated using the same procedure (see equation (2) as illustrated in Hawkins et al. (2013).

Exposure index_prep = sum of the critical growing period/mean of the standard 30 year rainfall for the critical period……..(1)

Exposure index_temp = sum of the critical growing period/mean of the standard 30 year temperature for the critical period……..(2)

Correlation tests were performed to compare the significance of temperature and rainfall exposure indices to changes in crop yields. The most significant indicator was used in the vulnerability index.

Sensitivity index: the Chapter referred to Eriksen et al. (2005) to define sensitivity as the degree to which agricultural productivity (maize yield) is affected either adversely or beneficially by rainfall or temperature variability (exposure). Changes in maize yields were used to represent agricultural sensitivity to rainfall perturbations. Maize is the staple food grown in all 47 counties of Kenya and is also a source of income and employment for most Kenyans involved in rain-fed farming (Nkako. M et al., 2005, Atela et al., 2012, Kenya National Beureau of statistics, 2011). The focus on maize also allowed for the calculation of sensitivity indices for all 47 counties and this would not be possible with other crops that are only cultivated in specific counties.

Yearly maize yield data (in tons/ha) for a period of 36 years (1975- 2010) was obtained from the Kenya's State Department of Agriculture, Project Monitoring Unit. An extensive review of yearly agricultural reports for each of the Kenyan counties was undertaken to validate the data and fill in missing yield values. The yields were first detrended to remove any changes attributable to non-climatic factors such as technological development (Lobell et al., 2007). Detrending was achieved through simple calculation of linear trends in the yields (Easterling et al., 1996). Linear trends provide better balance between yield prediction and simplicity (Chatfield, 1996). In this detrending, the observed yield was plotted against the respective years in a time series. A linear trend was fitted on the plot, and the equation of this linear trend was used to calculate the expected yields. Resulting differences in the observed and expected yields were interpreted as residuals attributable to technology. The ratio of expected to observed yields represented the sensitivity index (Simelton et al., 2009; equation (3).

Sensitivity index = expected yield (tons/ha)/actual yield (tons/ha) ……(3)

Adaptive capacity: this Chapter refers to Adger (2003) to define adaptive capacity as the ability of a community/ a system to moderate the effects of rainfall/temperature perturbations (exposure index) on crop yields (sensitivity index). Adaptive capacity is determined by the five categories of livelihood assets (natural, financial, human, social and physical assets) making up the sustainable livelihood framework (Gbetibouo et al., 2010). Using indicators from all the five livelihood asset categories to create an adaptive capacity index makes a study more comprehensive (Challinor et al., 2007). However, fewer indicators can usefully reduce complexity and large errors associated with parameterizations (Challinor et al., 2007).

Due to a lack of long term socioeconomic data for the 47 counties of Kenya, the adaptive capacity index was calculated from poverty and literacy rates. Poverty and literacy rates are recommended as adequate indicators for adaptive capacity in situations where data is limited (Simelton et al., 2009). County poverty and literacy data were available for two years; 2005/2006 Kenya National Household Budget Survey (Kenya National Beureau of Statistics, 2007) and the 2009 national population and household census (Republic of Kenya, 2009). The population census is a regular ten-year exercise and often gathers population income and literacy data while the household budget surveys assesses all household assets but mainly when funds are available making it difficult to have consistent temporal socioeconomic data. Additional socioeconomic data were available from the 2005/2006 household budget survey but could not be included in the index because the data was mainly for a single year (2006). Such point data could compromise the temporal perspective of adaptive capacity.

Adaptive capacity index = (Literacy rate/100) + (100 - poverty rate)/100).....(4)

Overall vulnerability for each of the 47 counties of Kenya was calculated using equation (5). Statistical Package for Social Sciences (SPSS) was used to perform hierarchical clustering of the counties into 'low' 'medium' and 'high' vulnerability. Hierarchical clustering allows data to be classified without pre-determining the number of clusters. Discriminate analysis was performed to validate and correct the clusters accordingly. Using ArcGIS, the vulnerability clusters were overlaid on the Kenya-county map to generate a vulnerability map for Kenya.

Overall vulnerability = Exposure index + Sensitivity index – Adaptive Capacity index … (5)

6.2.2. REDD+ project inventory and locations on the vulnerability map

An inventory of REDD+ projects in Kenya was undertaken (Table 6.1).

Table 6.1: Project attributes considered in the REDD-project inventory and corresponding data sources.

Project attribute	Data source
a. Project type and existence	- Global databases: CIFOR's global REDD map (http://www.forestclimatechange.org/redd-map/) - REDD inventory report: Ecosystem market place state of forestry carbon report 2013. - Field visits to selected project sites in Kenya
b. Project geographical location	- Project design document - Online google earth application
c. Forest type	- Project design documents - Vegetation map of Kenya
d. Project validation standards	- Project design document
e. Project design objectives	- Project design document
f. Project stakeholders	- Project design document - Interview with project staff

Projects operating under various standards including the VCS, Climate Community and Biodiversity Standard (CCBS), Plan vivo, and the Chicago Climate Exchange

were considered in the inventory. As clarified in the methods (section 4.2.1), both forestry and agro-forestry projects were included in the inventory with the understanding that all these projects posit lessons for national REDD+. Existing and upcoming (pipeline) projects were considered in the inventory and were usefully indicative of the spatial flow of carbon investments currently and in the future. The projects' spatial location and types were overlaid on the vulnerability map.

6.2.3. Linking REDD+ to socioeconomic development factors

Given the insignificant number of projects in each county, it was not possible to directly compare the county-socioeconomic characteristics with project numbers. Therefore, a causal relationship was assumed. The assumption here was that socioeconomic indicators that showed significance to vulnerability indices were interpreted as factors influencing the spatial attractiveness or unattractiveness to REDD+ projects. This causal assumption was assessed validated through expert consultations. Pearson correlation was performed between 16 socioeconomic indicators, whose selection was informed by the scoping study (section 4.4).

Data on the indicators were obtained from the 2005/2006 National Household Budget Survey of (Kenya National Beureau of Statistics, 2007). The indicator values were standardised into percentage (0-100) to achieve normalised weights (Gbetibouo et al., 2010). A research visit to the UNFCCC in Bonn Germany (section 5.2) allowed for interviews with UNFCCC experts, particularly to clarify the observed spatial distribution of REDD+ projects and the relationship between certain socioeconomic indicators and project locations. National REDD+ staff (n=2) and staff of the Kasigau Corridor REDD+ project and the Kenya Agricultural Carbon project (n=8) were also consulted to verify how the socioeconomic

indicators link to project design and national policies. The next section presents results.

6.3. Results

6.3.1. Vulnerability index map for Kenya

The vulnerability indices were calculated from long-term precipitation (exposure), crop yield (sensitivity) and socioeconomic data (adaptive capacity). Correlation coefficients showed that precipitation changes within the maize growing period accounted for 54.8% ($p<0.05$) of changes in maize yields (sensitivity indices), higher than the temperature coefficient of 43.2% ($p<0.05$). Counties with vulnerability indices in the range of 0.500 – 1.130 ($\mu = 0.766$), were classified as low-vulnerability. Those in the range of 1.130 – 2.141 ($\mu = 1.615$) and 2.141 – 2.782 ($\mu = 2.429$) were classified as medium and high-vulnerability respectively (Figure 6.1).

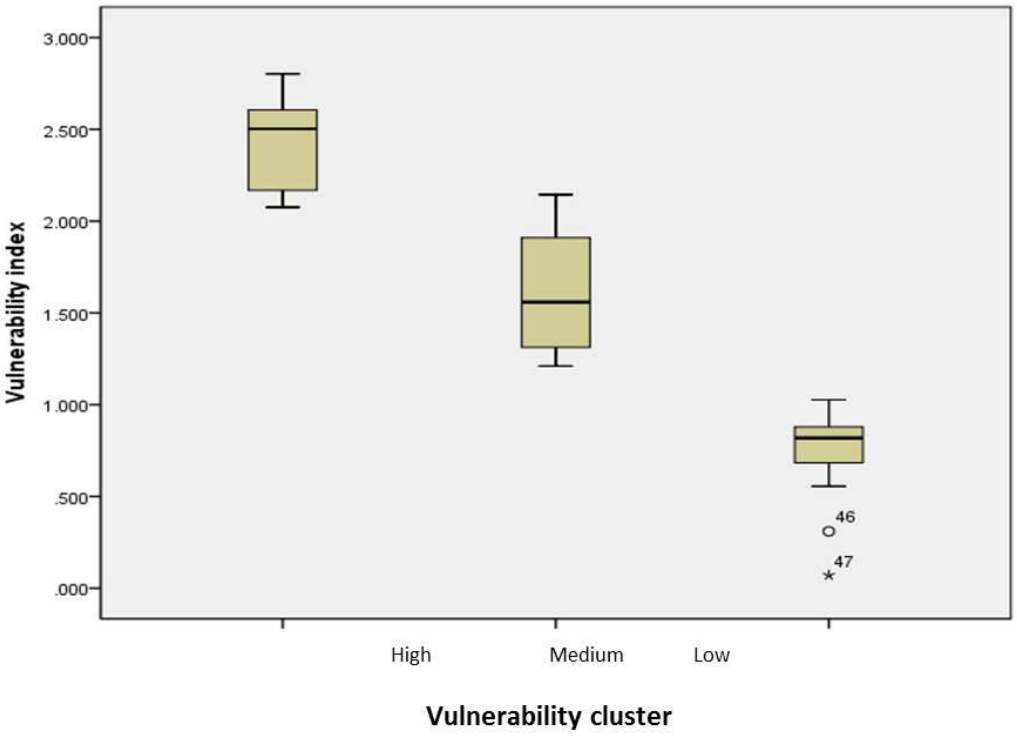

Figure 6.1: Vulnerability clusters for the 47 counties of Kenya. Two counties, Meru (46) and Nairobi (47) were outliers.

The significance of precipitation to yield sensitivity nonetheless varied across the high (69.8%), medium (52.1%) and low (48.4%) vulnerability clusters. The variation in precipitation (exposure index) was not significantly different between the clusters ($p=0.06$) even though the cluster sensitivities were significantly different ($p<0.05$). County adaptive capacity indices were highly significant to changes in maize sensitivity at 0.768; $p<0.01$, and to the vulnerability indices at -0.887; $p<0.001$.

The vulnerability indices show that 8 of the 47 counties (17.02%) were clustered as high, 11 counties (23.41%) as medium and 28 counties (59.57%) as low vulnerability (Figure 6.2). North Eastern region had the highest proportion (100%) of counties in the high-vulnerability category while Central, Nairobi and Nyanza regions had no county in the high-vulnerability cluster. Two counties (Marsabit and Isiolo) constituting 25% of the counties in the Eastern region were clustered under high-vulnerability while Samburu and Turukana counties constituting 14.3% of the counties in Rift valley were clustered under high-vulnerability. One county in the Coast province (Tana River) was clustered under high-vulnerability.

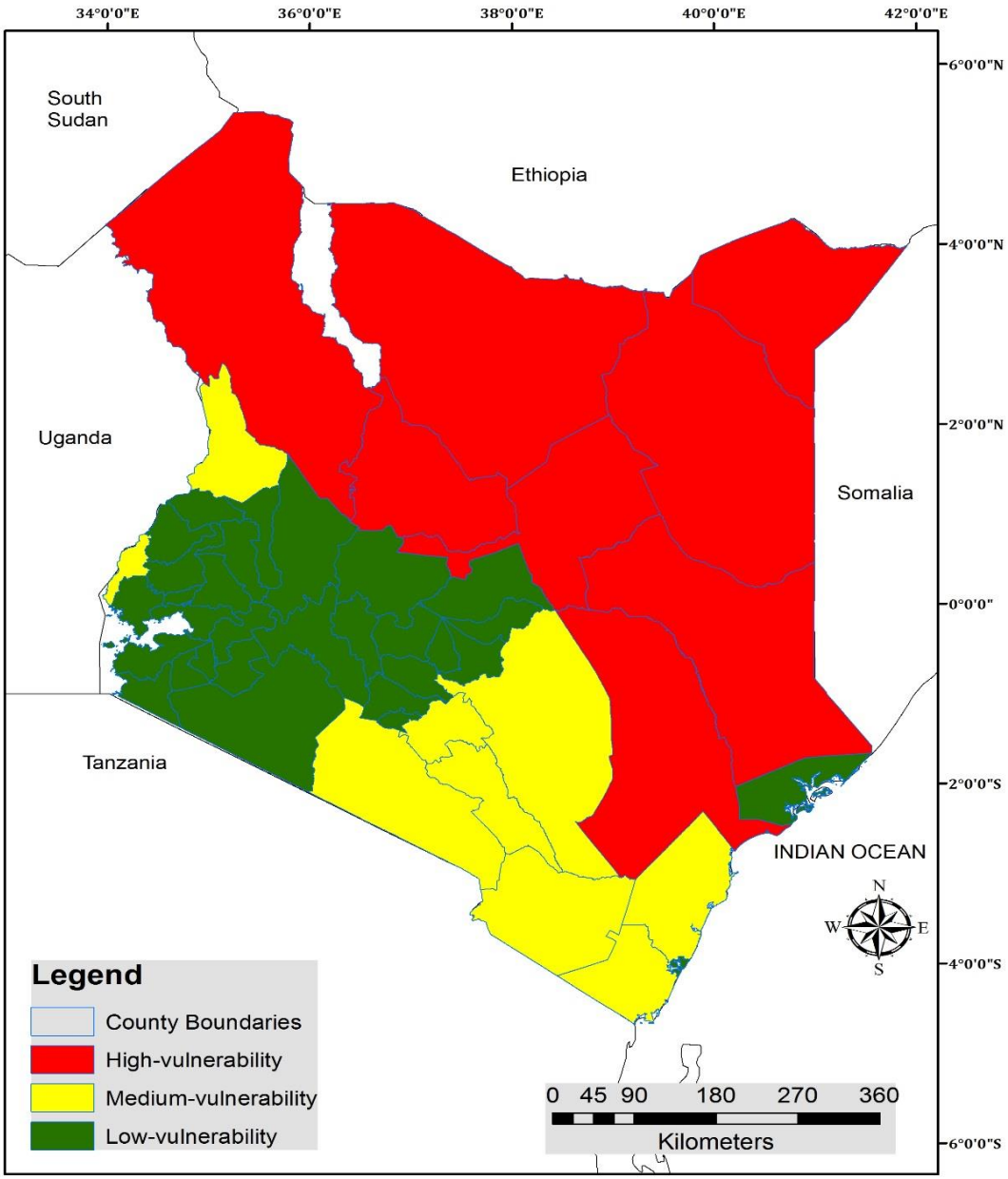

Figure 6.2: Vulnerability index map for Kenya

6.3.2. Locating REDD+ projects on the vulnerability and poverty map for Kenya

A total of 15 projects were inventoried, 10 (66.7%) REDD+ agroforestry and 5 (33.3%) REDD+_ pure forestry projects. The majority of the projects (86.7%) were

located in counties with low-vulnerability indices while the rest were found in medium-vulnerability counties (Figure 6.3). No projects were found in high-vulnerability counties. All the REDD+ _agroforestry projects were located in low-vulnerability counties while 3 (60%) and 2 (40%) of the REDD+ pure forestry projects were located in the low and medium vulnerabilities respectively.

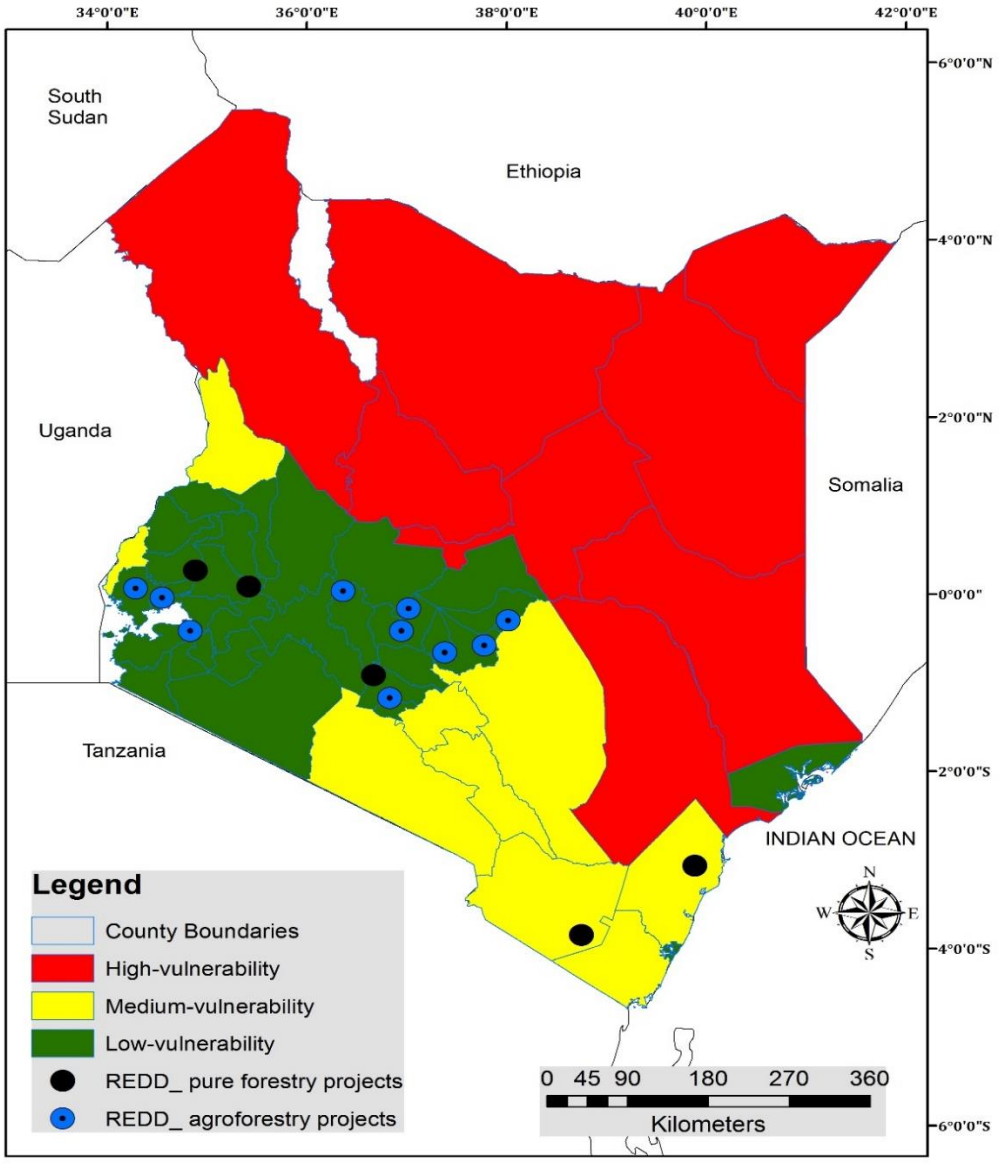

Figure 6.3: Spatial locations of REDD projects within the vulnerability index map for Kenya

When the REDD projects are overlaid on the Kenya's poverty map constructed based on percent households living below US$1.25, similar spatial trend is replicated (Figure 6.4). Most projects are located in areas of low poverty i.e 0-35% of households living below 1.25 per day while most areas of high poverty rates had no projects.

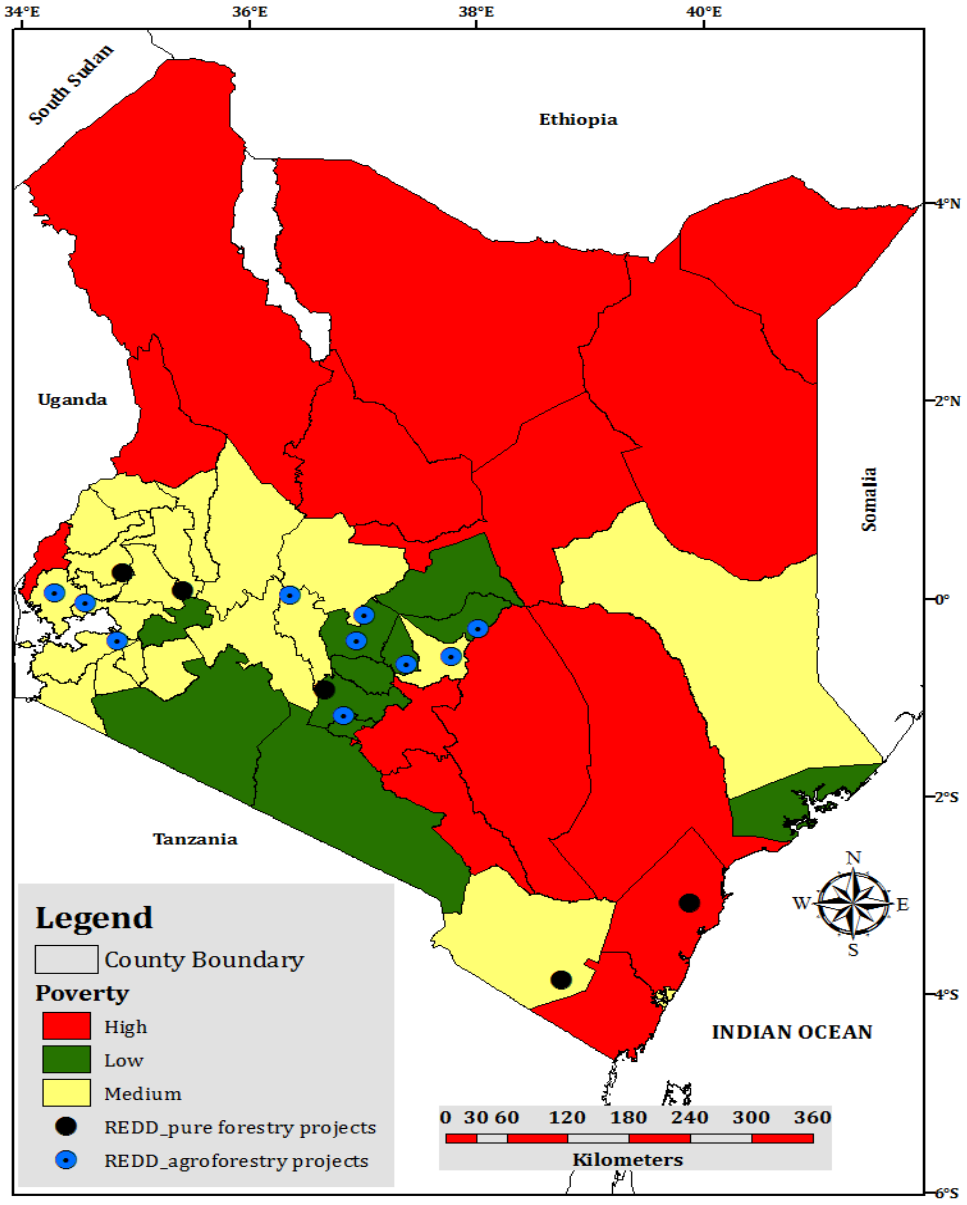

Figure 6.4: Spatial localtion of REDD+ projects across poverty indices of the 47 Kenyan countries. The low poverty poverty are tcounties with 0-35% of households

living below 1.25US$ per day, medium 36-60% of households living below 1.25US$ per day while high are those counties with >60% households under 1.25US$ per day.

Most of the low-vulnerability and low-poverty areas such as the mountainous areas and the rift valley parts of Kenya has higher carbon biomass compared to poorer and high-vulnerability areas. Most projects are hosted in these high carbon areas (Figure 6.5). However, some of these high-vulnerability/high poverty areas in the North and coastal areas have patches of high carbon stocks equivalent to those in the low-vulnerability/poverty areas.

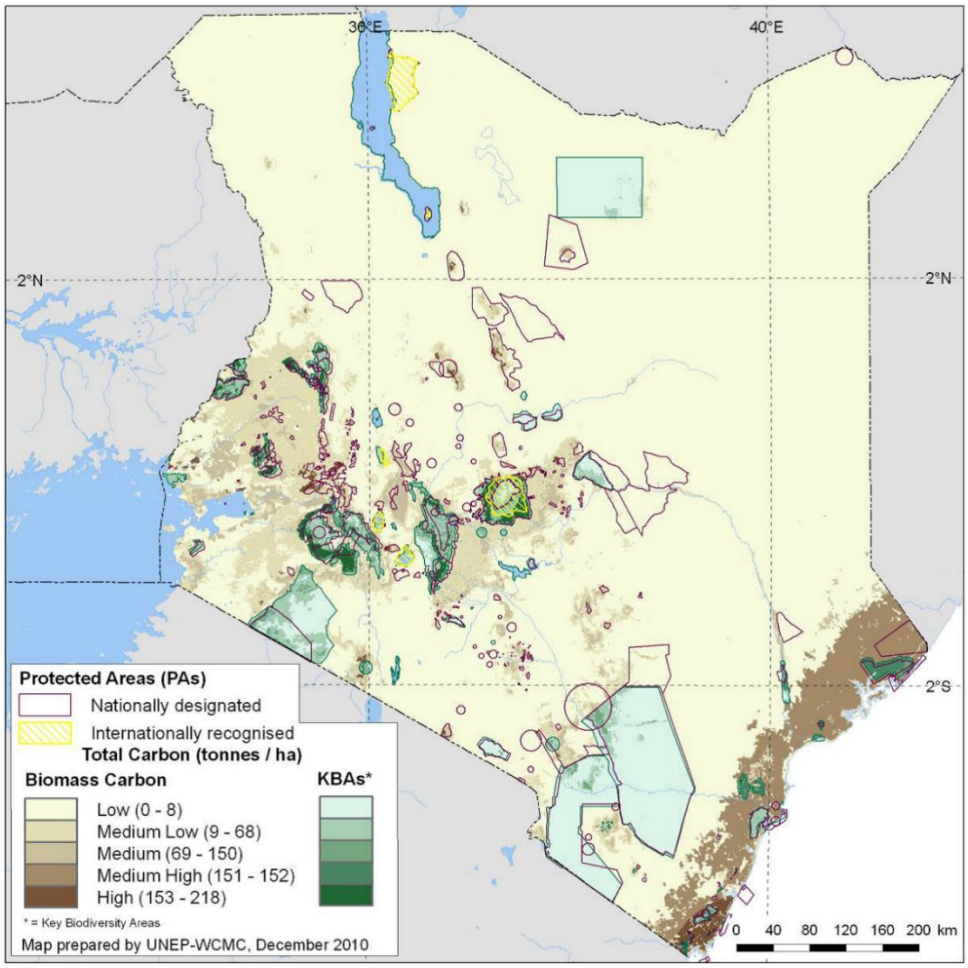

Figure 6.5: Distribution of carbon biomass across various parts of Kenya

Source: UNEP and WCMC (2010)

6.3.3. Evaluation of project design and actors

In terms of project design standard, the majority of the projects (66.7%) operate under the VCS standard even though only 3 (30%) of the VCS projects had received VCS approval. There was also no significant difference in project standards in relation to project type. Reforestation, emission reduction and sustainable livelihoods were cited in all the projects' documents as the main project objectives (Figure 6.6). A Wilcoxon matched pairs signed test subjecting counts of projects' objectives against project type revealed that the objectives of both REDD+_ pure forestry and REDD+_ agroforestry were statistically similar on emission reduction ($p<0.23$), sustainable livelihoods ($p<0.23$) and reforestation ($p<0.23$). However, improved agricultural productivity was explicit for REDD+_ agroforestry projects ($p<0.05$) while biodiversity protection was explicit for REDD+ _ pure forestry projects ($p<0.05$).

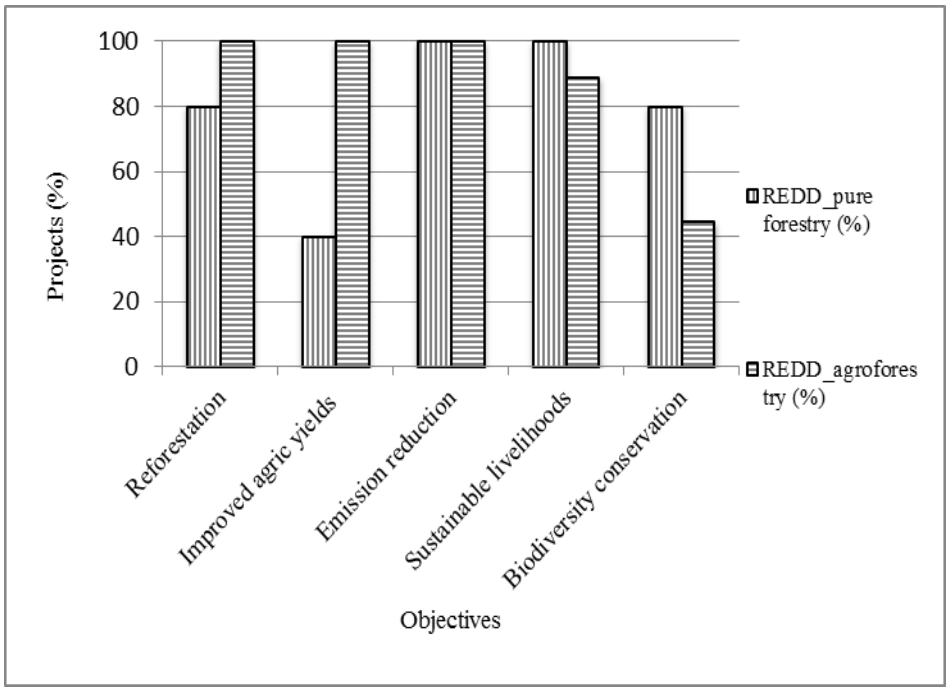

Figure 6.6: Objectives of the various types of REDD projects in Kenya as stated in the projects respective design documents.

In terms of the forest/ tree types being conserved for carbon, the majority of projects (73.3%) aim to protect or conserve humid forests/trees, all of which occur in the low-vulnerability cluster. Only one project (6.3%) aims to conserve dryland forest and this occurs in the medium-vulnerability cluster. Two projects, the Kenya smallholder coffee project (low-vulnerability area) and tree flights (medium-vulnerability) have established/protect perennial cash crops of coffee and cashew nuts plantations respectively (Figure 6.7). The number of projects targeting humid forests was significantly higher than those targeting other forest types ($p<0.01$).

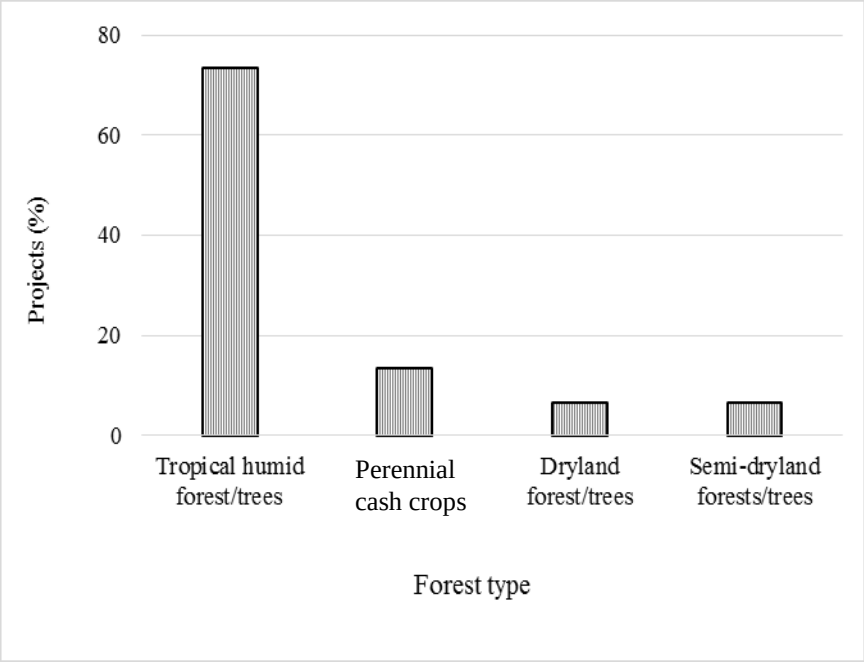

Figure 6.7: Forest/tree type protected/conserved by the REDD projects in Kenya

In terms of project stakeholders the international community, including international NGOs/consulting companies, international private companies and multilateral funding agencies, are the proponents/funders for over 75% of the projects (Figure 6.8). Local communities, national governments and national NGOs

are proponents or funders of less than 20% of either REDD+ _agroforestry or REDD+_ pure forestry projects.

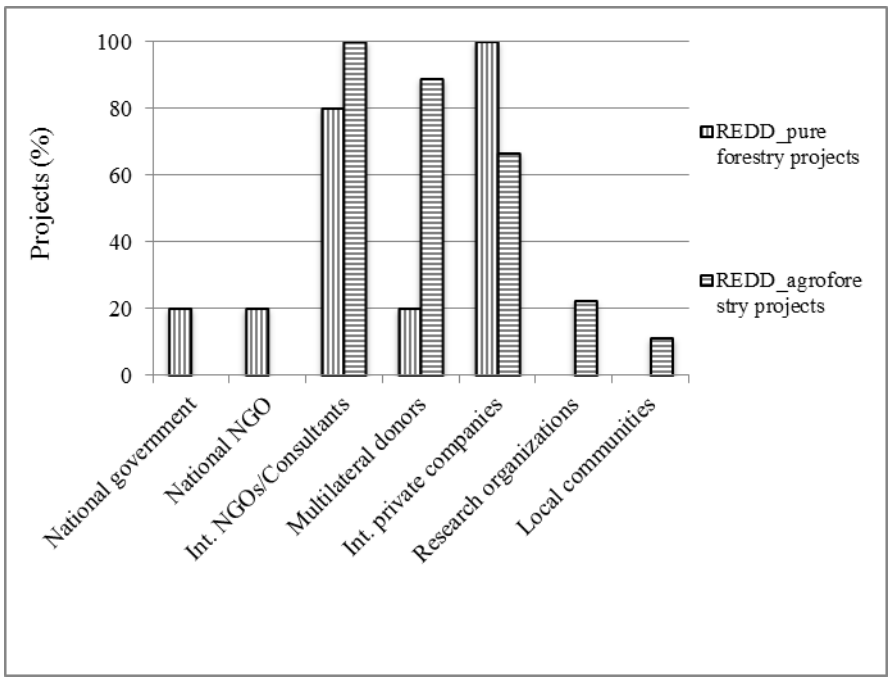

Figure 6.8: Stakeholders involved in the various types of REDD projects in Kenya

6.3.4. Linking projects to relative sub-national socioeconomic development

Forest cover, land ownership, water access and market access had the greatest significant influence on vulnerability and project locations (Table 6.2). Low-vulnerability counties, with more projects, had a greater proportion of their lands under forest cover. Most households in low-vulnerability counties also had land title deeds ($p<0.01$). Employment and literacy rates were the main human assets that had significant implications for vulnerability and projects' location. Infrastructure/physical capital and particularly access to water, access to market, access to roads and access to post offices had a significant ($p<0.01$) influence on vulnerability and project locations.

Table 6.2: Correlation co-efficient between socioeconomic indicators against vulnerability indices and the corresponding causal relation to the number of REDD projects. In the final column of the table, any socioeconomic indicator which reduces vulnerability is interpreted as favourable to REDD projects and this is based on observed predominance of the projects in low-vulnerability areas.

Asset base	Indicator (%)	Coefficient	Significance to REDD projects
Natural	Agricultural land holding (acres)	.181	.181
	Proportion of area under forest	-.728**	.728**
Financial	Proportion of household with non-farm income sources	-0.226	.226
Human	Proportion of households with employment	-.346*	.346*
	Unemployment index	-.014	.014
Physical	Proportion of household accessing public primary school at >5km (bad)	.199*	-.199*
	Proportion of households taking >1hr to access water (bad)	.475**	-.475**
	Proportion of household accessing health facility at >5km (bad)	.367*	-.367*
	Proportion of household with access to daily market at >5km	.476**	-.476**
	Proportion of household accessing tarmac/asphalt road at >5km	.354*	.-354*
	Proportion of household with access to a post office at > 5km	.403**	-.403**
	Proportion of household with land titles	-.552**	.552**
Social	Proportion of household totally affected by shocks	.436**	-.436**
	Population density	-.369*	.369*
	Percent contribution to national poverty	.243	-.243
	Proportion of household feeling unsafe	.063	-.063

Pearson correlation test *significant at .05 **significant at .01

Interviews at the UNFCCC experts revealed that even though REDD+ policy identifies poverty alleviation and emission reductions as key criteria for allocating REDD+ funds, additional factors such as donor and proponent interests often take precedence in locating resulting projects. Most demonstration projects are currently

being implemented and funded by private for-profit and consulting companies and so delivering carbon to secure funds is crucial for these companies. UNFCCC staff argue that some socioeconomic features such as secure land tenure may reduce transaction costs for most profit seeking project proponents. Accordingly, the interests of the private sector in locating REDD+ funds remain superior currently due to their de-facto financial power. The UNFCCC has directed a variety of REDD+ support funds to developing countries in a bid to promote regional equality in REDD+ investments. However, it is the responsibility of respective States to put in place measures to ensure equity in the flow of REDD+ funds/projects at sub-national level, argued a UNFCCC staff.

6.3.5. Projects' linkage to national institutions

Interviews further revealed that the State has little involvement in the projects because REDD+ rules are still under preparation at the national level (see Chapter 5). Therefore, on-going activities mostly get approved by global standards that are beyond the government's influence and this, according to national REDD+ staff, limits governments' engagement in the demonstration projects or their ability to assess the projects in a detailed manner. It is, however, hoped that on-going support from FCPF and associated consultants would enable the government to engage in actual project implementation. Interviews further indicate that the FCPF processes through which Kenya implements REDD+ policies have some provisions for local safeguards and community participation but have no provision for sub-national equity in the distribution of REDD+ investments. As such, Kenya's REDD+ plan mainly emphasise the significance of REDD+ funds in protecting areas endowed with patches of humid forests and most of these are in low-vulnerability counties. A recently prepared climate plan (see Chapter 4) however attempts to re-focus REDD+ activities in dryland areas inhabited mostly by poor communities.

Nonetheless, specific projects revealed that supportive local socioeconomic factors can allow projects to operate in a cost-effective manner but can also reshuffle the opportunity costs for projects. As such, most of the current REDD+ project developers prefer suitable and favourable institutional and market conditions that can safeguard their investments and help them adhere to global performance standards for delivering carbon.

6.4. Discussion

6.4.1. Contextualizing the vulnerability index map

This Chapter links the design and distribution of REDD+ projects to Kenya's socioeconomic settings. The vulnerability indices are calculated to reflect the relative socioeconomic status of various communities in the context of climate change. The vulnerability index map for Kenya was developed based on the IPCC conceptualisation of vulnerability as a function of exposure, sensitivity and adaptive capacity. Exposure and sensitivity indices were calculated from reasonably long term precipitation, and maize yield data respectively. However, in calculating the adaptive capacity index, only two socioeconomic indicators were applied due to data limitations. The resulting adaptive capacity index was nonetheless significantly correlated to changes in maize yields implying the indicators considered have significant influence over sensitivity of crop yields to rainfall perturbations.

Vulnerability here has thus reflects relative poverty of counties from both socioeconomic and ecological (climate) prospective and should be interpreted in relative rather than absolute terms. Ideally, about 80% of the vulnerability indices can be explained by adaptive capacity indices constructed based on poverty rates. As such, vulnerability indices were synonymous with the poverty situations of various counties (see section 6.2.1). The poverty map indicate that the high

vulnerable areas are associated with high poverty rates with over 60% of the households living below US$ 1.25 a day. Due to these data limitations, the resulting vulnerability index map should be interpreted in relative rather than absolute terms and has been used here to understand the socioeconomic choices of globally designed REDD+ projects.

6.4.2. Linking projects actors to socioeconomic development

This study reveals that private sector actors dominating the current REDD+ demonstrations, prefer initiating projects in low-vulnerability counties perceived to be favourable for better carbon returns and investment security. While the global process expects REDD+ activities to be implemented through the government, over 75% of projects are currently funded and managed through international private and consulting companies that aim to make profits out of the projects. Globally, private (for-profit) companies reportedly dominate forestry offsets, producing about 84% of offsets annually (Stanley-Peters et al., 2013). These private sector actors draw legitimacy from decision 1/COP. 16 (UNFCCC, 2010) which considers a variety of funding possibilities for REDD+ including public, private and market based funds. Experts and literature (Thompson et al., 2011, Vatn and Vedeld, 2013) confirm that private investors are often keen on delivering carbon funding and reducing financial risks and performance failures associated with relatively high-vulnerability areas. Even though this business interest was not explicit in the project design documents reviewed, it is arguably crucial in locating REDD+ demonstration. A number socioeconomic indicators discussed below could explain why the REDD+ proponents prefer to locate REDD+ projects in low-vulnerability areas.

6.4.3. Linking project activities to socioeconomic development

Humid forest cover (natural capital), access to water (physical capital) and ownership of individual title deeds (social capital) all significantly determine vulnerability and associated implementation of REDD+ projects. Forest cover directly relates to carbon stock density and the quantities of carbon credit deliverable for payment. This is also reflected in the Kenya's carbon map which indicates that low-vulnerable and rcher areas with humid forests are generally endowed with higher carbon stocks. Most projects proponents may therefore prefer to generate higher revenues by locating activities in areas with higher forest cover. Studies on the spatial targeting of REDD+ in Tanzania (2010) and East Kalimantan Indonesia (Asner, 2009), revealed that forest carbon stock is a priority criteria in allocating REDD+ projects. It is also argued that higher forest carbon stocks potentially increases efficiency in REDD+ because such areas can enhance other ecosystem services that support local livelihoods (Engel et al., 2009). Forest carbon stock is also dependent on forest types. Forests in Kenya range from tropical humid forests to dryland savannah forests and are all recognized under REDD+ (Gibbs et al., 2007).

However, more than three-quarters of the inventoried projects in this Chapter seek to protect patches of tropical humid forests/trees occurring in low-vulnerability areas of Mt Kenya, Rift valley and western highlands with little focus on the wider dryland ecosystems that constitute over 75% of Kenya's vegetation cover. Only one project, 'the Kasigau Corridor REDD+ project', targeted a dryland ecosystem in the Taita-Taveta County (medium-vulnerability). Dryland ecosystems/forests reportedly store low amounts of carbon stocks (0.05–0.7 t//ha/year) compared to the tropical humid forests that sequester 5.9 t C/ha/year (Gibbz, et al., 2007). Therefore, investing in dryland ecosystems may not generate the revenues demanded by project proponents. Hwowever the Kenyan carbon map revel that

some of the areas i.e. towards notrth also contain equivalent amount of carbon biomass as in the hyumid areas but do not have any project. This perhaps indicate that poor areas with mitigation potential, may be locked out of REDD+ investments.

Land tenure in REDD+ has attracted mixed academic and political opinions about what tenure system may work well for the programme. In this Chapter, areas where more households own land titles also hosted more REDD+ projects. It has been argued that informal rights to land, as found in high-vulnerability areas, may not enable legally enforceable and credible commitments to delivering carbon offsets (Gutman, 2003). Informal land rights are perceived to be unfavourable in projects where community members themselves are the service providers, argues Gutman (2003). The debate about land tenure, however, remains elusive in light of contextual suitability and existing local systems. For instance, while secure land tenure has largely been interpreted to mean private/individualised ownership (Chhatre et al., 2012), the Kasigau project (REDD+_ pure forestry) has shown apparent success through communal land tenure systems which provide a framework for community participation, simplified negotiations and more inclusive benefit sharing (Atela, 2013) (also see chapters 7 and 8). Another example is the Kenya Agricultural Carbon Project (REDD+ _agroforestry) in western Kenya, which generates carbon from individual household fields where communal use of this land is common practice (Atela, 2012). This raises conflicts over whether farmers should allow free grazing of land during the dry season or instead conserve residues for carbon sequestration and individual benefit. Such a mix of land and resource tenure arrangements may be overlooked as the commoditisation of carbon creates incentives to privatise and individualise land, potentially locking out landless, tenant farmers and even women and youth (with no traditional land inheritance rights) from access and ownership of land resources. The debate on

land tenure in REDD+ should thus not be confined to individualised titles but should be broadened to reflect the contextual suitability of different tenure systems.

Access to water is also crucial for the implementation of REDD+ projects. Areas with good access to water resources hosted more projects. Areas experiencing water/rainfall scarcity may not be able support projects' objective of reforestation for carbon (Zomer et al., 2006). Water scarcity can be a challenge to REDD+ projects both in terms of generating carbon credits and participation time in carbon activities. For example, the Kenya Agricultural Carbon Project works with groups of farmers comprising mainly women, and during dry periods the women have to spend more time searching for water instead of implementing sustainable land management practices for carbon. In the Kasigau case where water scarcity is severe, the project has allocated part of the carbon revenues to communal water projects. This has created a favourable perception of the project mainly because the local people perceive it to be more sensitive to local vulnerabilities compared to unrewarding State initiatives such as national Parks (see details in Chapter 8). The Kasigau situation shows that if projects are located in vulnerable areas, with mitigation potential, impacts may be more explicit for local people compared to high potential areas with better economic alternatives relative to REDD+. This means that pro-poor targeting for REDD+ could spur greater synergies between mitigation and adaptation.

In terms of market access, low-vulnerability counties seem to have closer proximity to Kenya's economic hubs such as Nairobi, Nakuru, Kisumu, Eldoret and Kakamega and are able to access better markets for their agricultural produce at better prices. This effectively translates into better income, reduced poverty and reduced overexploitation of natural resources including forests and soil nutrients.

6.5. Conclusion

This Chapter assessed the interaction between globally designed REDD+ projects and the socioeconomic settings of Kenya. The Chapter reveals that the majority of projects target developed areas where socioeconomic conditions are favourable for delivering carbon funding. Yet the UNFCCC debates on REDD+ have, over time, coined a generic notion that REDD+ is pro-poor simply because it targets developing countries. The Kenyan case shows that beyond the 'developing country' tag, interest in carbon funds ensues. This interest conflicts the pro-poor notion of a 'global REDD+' potentially denying poor communities, with mitigation potential, a chance to participate and benefit from REDD+. The Chapter has discussed various ways in which socioeconomic factors may impede or promote REDD+ activities. The next chapter investigates how a globally linked REDD+ project practically interact with socioeconomic factors, represented as 'livelihood assets', at the local level.

Chapter 7

Implementing REDD+ at the local level[22]

Abstract

This Chapter examines the implementation of REDD+ at the local level. It focuses on the interaction between REDD+ design and local livelihood assets and national institutions. Evidence is drawn from the first internationally accredited REDD+ demonstration project in Africa, the Kasigau Corridor project. Interviews and focus group discussions were the main methods applied. Results show that while the project is globally standardised to deliver carbon, the local livelihood setting pushes the project to consider livelihood issues beyond carbon. Assets, especially those identified by the poor, had more impact on the project's ability to protect forests compared to the middle and high-wealth groups. Pro-poor strategies that re-distribute carbon revenues between project proponents and the landless poor can reduce pressure on the forests, enable inclusive participation and simultaneous achievement of conservation and development goals. The project's effort to be pro-

[22]This Chapter is based on one journal article revised and resubmitted, one published book Chapter (in press) and two published working papers:

a. Atela JO, Quinn, CH., Minang PA., Duguma LA 2014 Implementing REDD+ at the local level: assessing the key enablers for credible mitigation and sustainable livelihood outcomes. *Journal of Environmental Management:* Paper accepted subject to revisions [Revisions submitted; JEMA-D-14-0920R1]
b. Atela JO (2014). Implementing REDD+: evidence from Kenya; In Carbon conflicts and forest landscapes in Africa. Ian Scoones and Melissa Leach (Eds) Routledge, pg 108-123 [Online link]
c. Atela JO, Quinn, CH., Minang PA., Duguma LA. (2014) Assessing the key enablers for REDD+ to achieve credible mitigation and sustainable livelihood outcomes at the local level: evidence from Kenya. *SRI Working paper No 72* [Online link]
d. Atela, JO. (2013). Governing REDD+: global framings versus practical evidence from the Kasigau Corridor REDD+ Project, Kenya, *STEPS Working Paper 55*, Brighton: STEPS Centre. [Online link]

poor is impeded by national institutional gaps, strict carbon standards that limit trade-offs between carbon and livelihoods and fluctuating carbon prices that constrain funds required for project operations and local livelihoods. Supporting pro-poor assets is necessary but these require enabling national and global institutional conditions.

7.1. Introduction

The previous Chapter has shown how various socioeconomic factors could influence REDD+ implementation. The practical interaction between REDD+ and the socioeconomic factors however takes place during on-the-ground implementation at the local level where forests are hosted. Implementing policies such as REDD+ remains a key challenge in environmental governance (subsection 3.5.2). Debates on implementing REDD+ (subsections 3.5.3, 3.5.4, 3.5.5) acknowledge that REDD+ design rules, when put to practice, are likely to face new challenges that test their feasibility in the local context. The local setting constitutes a host of livelihood activities and assets linked to forests, intervention histories, vulnerabilities and perceptions as well as State or non-State resource management regimes. These settings can contribute to fostering support and/or creating barriers to local-level implementation of global REDD+ (Mbow et al., 2014, Mustalahti et al., 2012, Sills et al., 2009). Projects may reshuffle assets (project-impact) in a manner that either benefits or harms local communities (Peskett and Brockhaus, 2008). It is therefore important to understand how global designs are adapted into the local context.

This Chapter investigates how a globally linked REDD+ project 'Kasigau Corridor Project' in Kenya interacts with its local setting. The Chapter examines how local communities and their assets are engaged in implementing the project and how this engagement shapes forest protection and livelihood benefits. The specific

objectives of the Chapter are (1) to evaluate how a globally linked REDD+ project engages the local community in its activities (2) to identify the livelihood assets that significantly influence the project's ability to protect forests (3) to analyse project impacts on livelihood assets and forest conservation (4) to assess ways in which the local community can contribute to REDD+ design and implementation (5) to analyse the role of national policies in the project's implementation.

7.2. Description of the Kasigau project

Section 4.3 provided a general description of the project context including a map indicating the project areas (Figure 4.2). Here, specific details about the project features (e.g. scale, participants, and carbon sales etc.) are presented. The Kasigau project is a subnational REDD+ initiative aimed at avoiding emissions by conserving a dryland forest constituting private ranches (50–2500 members per ranch) and community land that spans 500,000 acres and is part of a corridor linking Tsavo East and Tsavo West National Parks, the two largest wildlife protection areas in Kenya. The project developer is a United States based private-multilateral-for profit company, Wildlife Works. The project has worked with the local community since 2006 to conserve the dryland forests alongside other eco-tourism initiatives.

The project directly works with approximately 1500 households from five villages of Taita-Taveta county. The five villages cover 10,015 sq. km representing about 59% of the total area covered by the Taita-Taveta county-the 12th largest county of the 47 counties of Kenya (Republic of Kenya, 2009). The spatial extent of the dryland forest of 2023 sq. km is about 25% of the five villages and 11.9% of the county. Protection of the forests for carbon and community engagement in the conservation activities and benefit sharing are the key project activities. By the time of this research (2013), the project had sold 1.6 million tones on CO_2 generated until 2011. Out of this, about 1373 tons were from communal hills and the rest from

group ranches. The credits were sold to a host of private sector compnies including athelia, Barcalys Bank, Nedbank, PUMA Ltd among others in the voluntary market at an average of US $ 6 per tonne.[23]

7.3. Methods

A range of participatory data collection methods were applied in the context of a Matched Control Intervention research design. The MCI involved data collection from communities in the project area and those outside project area (control) (Jagger et al., 2010) (subsection 4.3.2).

7.3.1. Analysis of project design documents

Analysis of project documents and general consultation with project staff were first undertaken to evaluate the project's activities in terms of forest protection for carbon, community participation and benefit sharing. The documents were analysed through a combination of exploratory analysis and iterative content analysis (see discussions on document review in subsection 4.6.1). The exploratory analysis aimed to understand the general project activities and background. The iterative approach was useful in retrieving and categorising specific project design aspects relevant to the study objectives. Statements on project standards, linkage to global, national and local organisations, as well as community engagement modalities were retrieved and their links to the global design established.

7.3.2. Household questionnaire

A household questionnaire (appendix 2) was used to interview 100 households. The household interviews were targeted to assess how local livelihood assets influence

[23] Project documents and interviews with project's liason staff , September 2013

project activities (asset-impact) and the corresponding impact of the project on these local assets (project-impact). Stratified random samples of households were drawn equally from the intervention and control sites. To obtain a realistic account of project-asset interactions, intervention households were randomly selected from a list of members belonging to a community based organisation (CBO), the Marungu Hills Conservancy, through which the REDD+ project engages community members and disseminates benefits (see subsection 7.3.1). Control households were randomly sampled from Mraru and Tausa ranch groups, which work closely with conservation projects in the area. The intervention and control samples represented 20.1 % (50 of 280 registered households) and 19.4 % (50 of 285 registered households) of the sampling frame respectively.

The sample size was considered adequate in light of low understanding of carbon issues among individual households thus more time was needed to explain questions and retrieve quality information from the households. The sample was also complemented with several discussions (see 7.2.3) and open interviews (n=107) undertaken for the scoping study (see section 4.4). Village elders in each location assisted in categorising all households in the target groups (CBO and ranch groups) into low, middle and high wealth status, given their deeper understanding of individual household's assets (Bolin and Tassa, 2012). Household land holdings, crop yields, livestock numbers and educational capabilities were used to define the wealth categories (see details on wealth ranking in subsection 4.6.5). Of the 50 households in each location, 24 low-wealth, 16 middle-wealth and 10 high-wealth households were interviewed.

Households were interviewed using questionnaires composed of open and closed questions. Questions for the intervention and control households were matched. The first part of the questionnaire involved a general introduction to the research objectives and expectations. In this introduction, the respondent was also assured

of confidentiality of the information he/she gave (Gray, 2009). The second part inquired about the households' demography. The third part of the questionnaire utilised qualitative and quantitative techniques to detail respondents' livelihood assets and how they access and use these in different seasons. The fourth part inquired about project's interaction with household livelihood assets. Twelve (12) indicators were used to represent each of the five livelihood assets (Table 7.1). The indicators were selected from the scoping study (Atela, 2013) and analysis of project-socioeconomic interactions in Chapter 6 of this thesis.

Table 7.1: Asset indicators used in assessing the project-livelihood interactions

Asset Category	Asset indicator
Social	Forest access rules
	Household associations
	Land ownership
Natural	Land size
	Land productivity
	Forest use(s)
Financial	Economic activities
	Income level
Human	Education level
	Employment status
Physical	Water access
	Market access

Respondents were asked to state and explain the positive and/or negative impact of each asset indicator on the project's ability to protect forests (asset-impact). In a similar way, the respondents detailed the impacts of forest protection procedures on the asset indicators (project impact). While considerable overlap between the asset-impact and project-impact was noted, structuring inquiries in this way improved objectivity and clarity in describing project-asset interactions.

In assessing the asset-impact and project-impact for each of the asset indicators, an impact measure of +1 was assigned to any impact a respondent thought was positive

and -1 to any adverse impact. If positive and negative impacts on a particular asset indicator were of equal measure to a respondent, an impact factor of 0 (no overall effect) was assigned. The impact factor scores were then averaged for each asset indicator and wealth categories for quantitative analysis while qualitative responses were used to understand the scores. Household data from the control site were only used in the project-impact analysis where site comparisons were quantitatively possible, but were excluded from the asset-impact analysis because respondents did not have any experience with the project. Certain opinions of the control group about asset-impact were however qualitatively highlighted while making specific comparisons with intervention sites.

The asset-impact scores show the impacts of household assets on the project but do not reveal the relative strengths of the assets in influencing the project's activities. Within the fourth part of the questionnaire, respondents were asked to rank the three top assets with more influence on the project activities and why. Three levels of ranking minimised the difficulties respondents could face with multiple ranks. A rank of 1 yielded 3 points for an asset indicator, while a rank of 3 yielded 1 point for an indicator. Average ranking scores was calculated for each asset indicator. In part five of the questionnaires, respondents were asked about the ways they thought they could contribute to the REDD+ project and the roles they thought they could play in designing and implementing REDD+, given their experience with the Kasigau project. Respondents were also asked about their future expectations of the project and actions they could take in case their expectations are not met. The household questionnaire was triangulated with focus group discussions.

7.3.3. Focus group discussions

Six FGDs, three in each site, were executed to triangulate the results of the household questionnaire and additionally construct a communal livelihood calendar

and discuss project dynamics in the context of the calendar. The FGD participants were purposefully selected and included village elders (n=12), land owners (n=11) and representatives of women, men and youth groups in the community (n=15). Village elders and community resource persons constructed community livelihood calendars (Ronkoli, 2006) overlaid with key livelihood assets as well as project activities. The village elders further clarified project interactions with gender and traditions that were not clearly articulated in the household interviews. Information from household questionnaires indicated that land tenure was a major factor for the project and so land owners (n=11) drawn from ranch shareholders, individual owners and community land trustees discussed land ownership. Results on the interactions between household assets and project as well as asset ranking were presented to the representatives of community groups who verified the interactions between the project and livelihood assets and further discussed and voted on the asset rankings. The discussions and debates about asset ranking were particularly useful in explaining why certain assets are more crucial for the project than others (Sithole, 2002).

7.3.4. Stakeholder interviews

Semi-structured interviews were carried out with 14 stakeholders at the project/local level. These were in addition to the ones undertaken with national stakeholders (see subsection 5.2.4). The stakeholders interviewed included project staff (n=6), leaders of local CBOs (n=4), local administrative authorities-Chiefs (n=2) and field staff of ICDPs working in the Kasigau area (n=2). The project/local level stakeholders were selected through a mix of purposive and snowball sampling techniques as discussed in subsection 4.6.3. Project staff working on various project components clarified the project's work and interactions with local assets, project linkages with national institutions (the State) and global REDD+, as well as policy

and practical challenges the project experiences. Leaders of CBOs and Chiefs were engaged in interviews about community engagement in project work, local institutional sett-up and how these local institutions interact with the project's work. National level stakeholders drawn from forestry, environment and agriculture departments that were interviewed about national level implementation (subsection 5.2.4) clarified the role of the State in the Kasigau REDD+ project as well.

7.3.5. Observations

Participant observations were also employed during various community activities such as women group farming activities. The researcher took part in such activities and asked probing questions about livelihoods and influence on the REDD+ project. Non-participant observation was used in two community meetings, one where the community was making decisions on how to invest a share of the carbon money from the communal hills, and another consisting of ranchers and trustees for the communal carbon fund. These observations were crucial for understanding how the community perceives project activities and how equitable decision making is in relation to benefit sharing (also see subsection 4.7.8).

7.3.6. Data analysis

Household questionnaire data were analysed using SPSS to generate descriptive statistics. In comparing project-impact, the quantitative project-impact score for the control group was pre-assigned on a null basis or 'no-effect' scale (0) to remove confounding factors from the site comparisons, given the possibility of wider livelihood changes driven by the State or other projects. Since most data here were not continuous, non-parametric statistical tests of Chi-squared and spearman rank correlation coefficient were applied (Green and Salkind, 2010). Chi-squared was applied to test for significant differences in the impact scores between wealth

categories and between sites. Spearman rank correlation coefficient was used to correlate the impact scores of various wealth categories. Qualitative data drawn from FGDs, key informants and stakeholder interviews were coded to draw out themes and illustrative quotes (Hopkins, 2007).

7.4. Results

This section presents the results of the Chapter in accordance with the objectives outlined in section 7.1. Results of the first three objectives are first presented especially analysing the design and activities of the case project. The last two objectives are then presented and these mainly focus on how local assets impact of project activities and the role of the State in the project work.

7.4.1. Project design

Project activities, institutions involved and community participation modalities are illustrated in Figure 7.1. The project operates under global standards of VCS and the Climate Community and Biodiversity Standard (CCBS). The two standards are technically different but have complementary procedures and requirements. The VCS particularly emphasises emissions reductions and does not require projects to produce additional environmental or social benefits. The monitoring and verification procedures under the VCS largely borrow from the CDM. Specific VCS procedures/methodologies can be developed and applied for a specific project, with approval from the VCS board. Under the VCS standard, the Kasigau project is not restricted to engage the community in a particular way. By contrast, the CCBS aims to ensure project designs that provide robust benefits to the local community. The social and economic wellbeing of communities is central in the CCBS and here communities are required to provide input to the project design, express their expectations and raise concerns about potential negative impacts of

the project. The project is expected to develop conflict resolution procedures and enhance capacity of the local community on REDD+ activities and benefits. The CCBS, however, does not verify emissions reduced but allows for verification through alternative standards like the VCS.

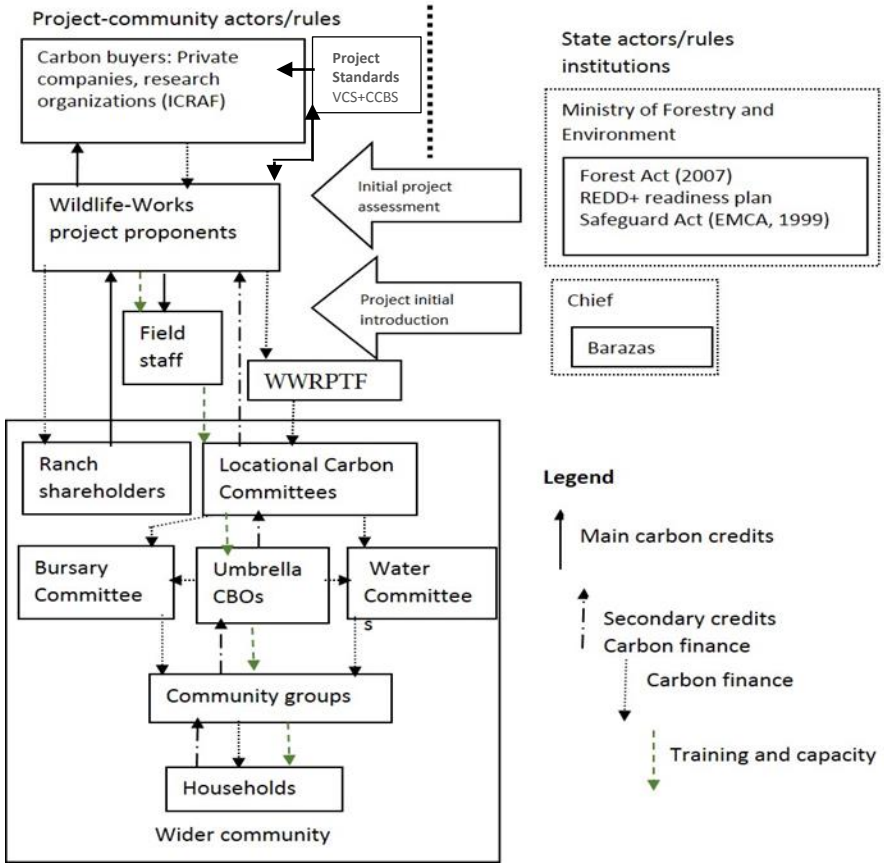

Figure 7.1: Flow of activities between the project, state and local communities; Source : developed from project documents and staff consultations.

The project targets to reduce emissions of 49,300,000 tons of carbon (Wildlife-Works 2011) and adhere to the community engagement requirements (appendix 1/CP16). The project sells carbon credits to international private companies such as Puma (EU and USA), Alliance Panapa Bank and most recently Barclays Bank (UK). These carbon buyers paly critical role in influencing carbon prices etting

carbon prices through negotiations and even the volumes of CO_2 that they are able to purchase. The project had already sold credits generated between 2006 and 2011 and was still stocking credits from 2012 at the time of this research.

7.4.2. Local context within which the project is implemented

The main households' assets in both the intervention and control sites included communal hills, ranches, on-farm forests and trees, household associations and livestock, and these occurred in varying abundance and ownership claims depending on wealth categories (Table 7.1). Low-wealth households at the intervention site laid claim to communal hills as their forest resource, while the high-wealth households owned shares in the ranches. A livelihood calendar for the community (Appendix 2) revealed that households apply livelihood assets concurrently or in substitutes to form livelihood strategies and to respond to livelihood shocks such as drought or deaths. Farming is practiced across both dry and wet seasons but the wet season is more crucial for the productivity of crops and animal feed. As such, most low-wealth households who practice rain-fed agriculture as their main livelihood may pursue casual labour, food for work or charcoal burning in the communal hills as seasonal coping strategies (Table 7.2).

Table 7.2: Main livelihood assets owned by different households belonging to different wealth groups. Chi squared test was used to test for the significant differences in asset composition between different wealth categories.

Asset category		Main/dominant asset composition by wealth (Intervention- Marungu)			Main/dominant asset composition by wealth (Control- Mbololo)		
		Low (n=24)	Middle (n=16)	High (n=10)	Low (n=24)	Middle (n=16)	High (n=10)
Social	Age	21-71	21-71	21-71	26-78	26-78	26-78*
	Gender of h. head (majority)	Female	Female	Male*	Female	Male	Female
	Household size (mean)	7	6	6	6	5	4*
	Main livelihood activity (majority)	Farming	Business	Business*	Farming	Farming	Business
	Main shocks (majority)	Drought	Drought	Death*	Drought	Drought	Death*
	Main coping strategy (majority)	Food for work	Remittance	Business*	Casual labour	Casual labour	Remittance*
	Causes of crop failure (majority)	Drought	Drought	Drought	Drought	Drought	Drought
	Number of associations (mean)	0	1	2*	1	1	2*
	Association scope (level)	Local	Local	Sub-national	Local	Local	Sub national
Natural	Forest type owned	Communal hill	Communal hill	Ranches	None	Ranches	Ranches
	Land size (acres)	1-2	1-4	4-10*	1-2	2-4	4-8*
	Land acquisition (majority)	Inheritance	Inheritance	Inheritance	Inheritance	Inheritance	Inheritance
	Proof of land ownership (majority)	Elders' consent	Allot. letter	Allot. Letter*	Allot. letter	Title deed	Title deed*
	Crop yields (mean bags/acre)	2.01	2.13	2	2.52	2.81	2.78
	Yield consumption period (mean months)	3	3	6*	2	3	5*
	Main forest uses (majority)	Fuel wood	Fuel wood	Cultural*	Fuel wood	Fuel wood	Cultural*
Financial	Number of secondary income sources (mean)	0	1	2*	0	1	2*
	Main Expenditure (majority)	Food	Food	Food	Food	Food	Food
	Number of cows (mean)	1	1	4	1	1	3*
	Number of goats (mean)	2	4	7*	2	2	5*
	Number of hens (mean)	2	5	18*	3	20	20*
Human	Education level (majority)	Primary	Primary	Secondary*	Primary	Primary	Secondary*
	Main employment type (majority)	Casual	Casual	Permanent*	Casual	Casual	Permanent*
Physical	Water access distance (km)	2-5	1-2	1-2*	2-5	1-2	1-2*
	Market value to the households (majority)	Buying	Buying	Selling*	Buying	Buying	Both
	Distance to the nearby road (km)	1-2	1-2	1-2	1-2	1-2	1-2

*significance between wealth categories at 0.05

7.4.3. Community engagement: project introduction

The project proposer has worked with the local community since 1998. As such, the task of introducing the project to the community and getting its acceptance was not subject to complex negotiations. The REDD+ safeguards highlight FPIC in terms of ensuring consultation and consent from (mainly) the local communities who are the custodians of land and forests. The common approach to safeguards established by intermediaries is however more explicit and explains that REDD+ investors or governments must negotiate with local communities and indigenous peoples prior to the development and establishment of REDD+ activities on their customary lands. In this, the local community retains the right to agree to the project or not once they have a full and accurate understanding of project's intentions and implications.

The REDD+ initiative was made known to the community through local contact persons, including the area chief and leaders of various CBOs. Given their elitist positions in the community, introducing new project through these contact persons has been deployed in many parts of Kenya as a way of legitimising such new projects among many community members.[24] The contact persons specifically assisted in organising public gatherings such as Chiefs' Barazas within which these contact people informed the community about the project. Barazas have historically been used as conduits for flows of resources and new development ideas from central government, and thus would always attract the interest of many in the community who would hope to be engaged and benefit from any new initiative.

7.4.4. Community engagement: implementing project activities

Group ranches registered as private companies are the primary sources of carbon generating 75% of all carbon credits. However, most shareholders to the ranching companies/groups reside outside the local community with only about 5% of the shares held by the locals. Most local community members, however, participate in the

[24] Atela (2012) and Place et al.(2006)

project via organized umbrella CBOs through which the community commit their communal land, participate in capacity building and forest protection activities and bargain for benefits. Within the CBOs, community members have elected Locational Carbon Committees (LCCs) that directly represent community interest in the project. By committing their lands to the project and granting conservation rights to the project, the local community and ranch shareholders transferred carbon rights to the project proponents in accordance with free prior and informed consent procedures outlined in the project standards and global REDD+ safeguards. A key feature of the easement agreement is the flexibility involved i.e. the community and ranch shareholders can ratify their commitments to the project at any time. While this could threaten the project's sustainability, this threat is minimal because both ranches and communal lands have regulations that only allow for collective land use decisions rather than individualised decisions.

Other than transfer of carbon rights, committing land to the project also meant that the local community is restricted from accessing and using forests for livelihoods e.g. livestock grazing, charcoal burning, firewood collection. These forest uses were common before the project but their restriction allows for replenishment of payable carbon stocks. In collaboration with project extension, the CBOs and their respective LCCs coordinate trainings needed for the community to implement forest protection activities initiated by the project e.g. eco-charcoal factory, greenhouse tree nurseries, recruitment of community forest wardens. These activities employ members of the local community thereby providing alternative income to charcoal burning in the protected forest lands.

In return, the local community is entitled to all the carbon revenue resulting from communal forest and additionally, benefits from one third share of carbon revenue from the ranches. The community share of carbon revenue is invested in a host of livelihood projects through an established trust fund 'Wildlife Works REDD+ Project Trust Fund (WWRPTF)'. The one third community share is part of benefit sharing mechanism in which the other two thirds are equally divided between ranching

companies and project operations. The community through the CBOs decides on the livelihood projects to be supported through the WWRPTF. However their decisions have to be filtered through various institutions including the LCC and its sub-committees on water or bursary, approval by the project proponents and assessment by relevant State agencies e.g. water board (Figure 7.2). Overall, the local institutional structures usefully coordinate community participation in the project but also exclude the opinions of some community members especially those not part of any group or CBO yet the project's ability to protect forest depends on all community members whose livelihood assets link to forests in one way or another.

7.4.5. Impacts of household assets on project activities (asset-impact)

Household assets influenced project activities (asset-impact) in different ways (Table 7.3) and depending on wealth category (Figure 7.2).

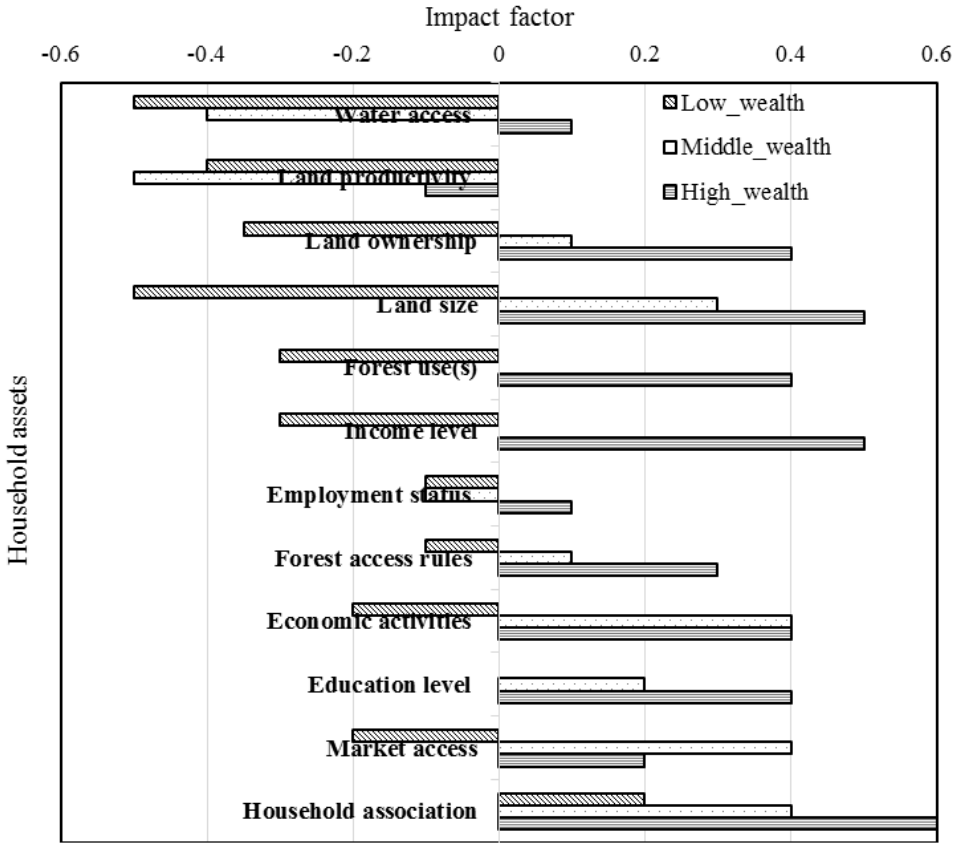

Figure 7.2: Impact factor of assets on the project differentiated by household wealth status

Low-wealth households generally perceived that most of their assets – mainly water access and land ownership, productivity and size – negatively impacted on the protection of forests. Low-wealth respondents felt that their poor access to water resources and unreliable rainfall negatively affected their main livelihood activity of farming, and this raised pressure on the protected ranches and community hills (Table 7.3). Most of these low-wealth households also lacked legitimate titles to land, and at the beginning of the project they feared that the project would take over the communal lands to which they lay claim. Household membership to an association was the only low-wealth asset perceived to be positively influencing the project.

Table 7.3: Qualitative impacts of high high-rank assets on the project; [Negative impact (-) No impact (0) Positive impact (+1)]

Asset	**Main impacts of the assets on the project**		
	Low-wealth	Middle-wealth	High-wealth
Water access	(-) Unreliable rainfall/water sources; reduced land productivity and increased pressure on forest/tree resources	(-) More time spent in searching for water instead of tree planting	(-) Unreliable rainfall/water sources; carbon related trees drying up (+) Water scarcity enables good water business
Land ownership	(+) Communal land benefits all (-) No title deed; fear of project and rich people acquiring titles of the communal land	(-) Competing land value such as sale of the land to a higher bidder	(+) Have land title deeds thus commitment to plant trees for carbon credits (-) Availability of title deed- conversion of land to non-carbon land uses
Land productivity	(-) Decline in productivity; pressure on forest/tree resources to fill the production gap	(-) Decline in productivity; more time in non-farm activities instead of farm/land carbon related activities	(-) Decline in productivity; reduced residue volume for livestock resulting in forest based grazing
Economic opportunities	(+) Declining economic activities increase the household willingness to be part of the project (-) Charcoal/firewood gathering as economic activity increases pressure on tree/forest resources	(+) Farming as an economic activity enhances on-farm conservation activities for carbon	(+) Household with stable/diversified economic activities reduces charcoaling within the protected forest for REDD+

Most middle-wealth respondents felt that their land size and economic activities influenced the project activities positively. The middle-wealth group felt that pursuing farming as an economic activity within their relatively large land holdings enabled them to undertake agroforestry practices that reduced pressure on protected forests. This group, however, felt that decreasing land productivity might make them change land uses to non-agricultural ones such as construction of shops and rentals houses or sell land to developers who might not have a conservation agenda, and this would affect the project's emission reduction targets (Table 7.3).

The asset-impact scores from the high-wealth households were mostly positive for land ownership. Most high-wealth households receive carbon revenues from their shares in the ranches and are motivated to commit part of their larger landholdings to on-farm forests for carbon.

Overall, water access, land productivity and land ownership had the highest negative scores while membership to an association had the highest positive score (Table 7.4).

Table 7.4: Overall impacts of household assets (asset-impacts) on the protection of forests (ranches and communal forests) for reducing emissions under the Kasigau REDD+ project

Asset Category	Asset indicator	Overall
Social	Forest access rules	0.02
	Household association	0.38
	Land ownership	-0.28*
Natural	Land size	-0.1*
	Land productivity	-0.3
	Forest use(s)	-0.1*
Financial	Economic activities	0.04
	Income level	-0.1
Human	Education level	0.1
	Employment status	-0.1
Physical	Water access	-0.5*
	Market access	0.1*
Aggregate		-0.1

* significance between wealth categories at 0.05

The ranking of the relative influence of assets on the protection of forests for emission reduction shows that water access, land ownership, economic activities and land productivity are high-rank assets compared to others (Figure 7.3). These high-rank assets were mainly rated to have negative impact on the project work. These assets play crucial roles in diversifying communal livelihoods within the livelihood calendar. The calendar shows that the poor, in times of drought, sometimes pursue eco-charcoaling activities involving charcoal making from fallen leaves and logs as an alternative to charcoal burning; others pursue casual labour on neighbours' farms and sometimes food for work initiated by a world vision project. The food for work and eco-charcoaling options are largely seasonal and not open to a majority of the poor, who still sometimes opt to illegally burn charcoal and sell firewood from the protected forests. However, land owners and group representatives argued that including the communal land as part of the project has allowed the community to negotiate for better alternatives for forest dependent households, especially during dry seasons, reasonably reducing the potential for elite capture of project activities and benefits. Drawing on the project interaction with the livelihood calendar, enhancing water access and recognising a mix of land ownership were identified as the strategic enablers for the project's ability to protect forests. Other assets such as economic opportunities and land productivity depend more on these strategic assets.

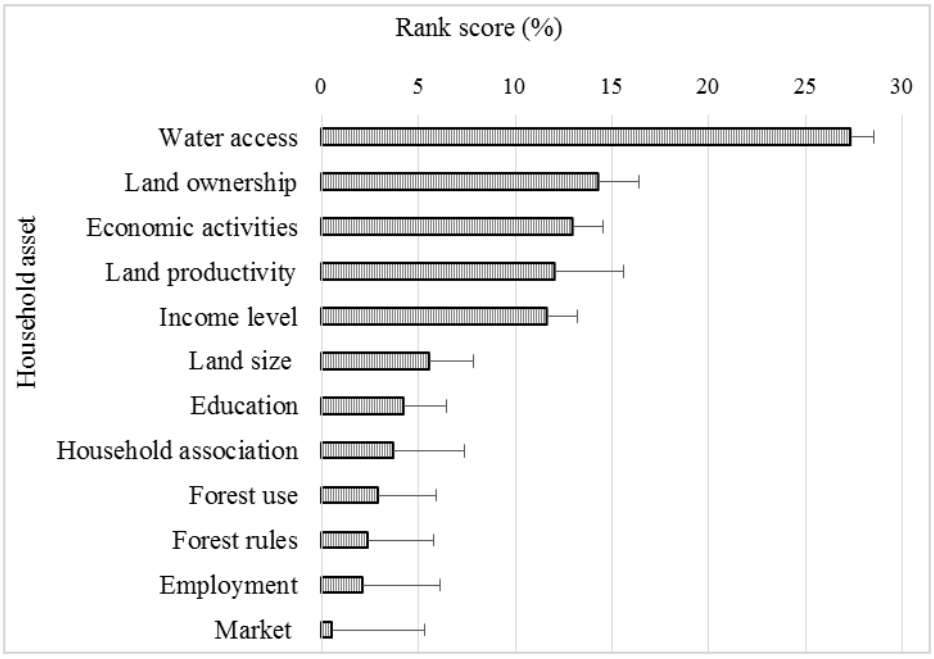

Figure 7.3: Ranking of the household assets in terms of their influence on the project's activities.

7.4.6. Project impact on household assets (project-impact)

The project-impact scores on the various assets and the associated explanations are contained in Figure 7.4 and Table 7.5 respectively. Figure 7.4 shows that the low-wealth respondents perceived that the project has impacted on most of their assets more positively compared to the middle and high-wealth respondents. The project impact scores show that the project has impacted positively on most of the low-wealth households' assets (Figure 7.4), even though these assets mostly impacted on the project negatively (see Figure 7.2 above). Low-wealth were positive about planned livelihood projects especially water projects (Figure 7.5) that would improve their access to water, education and food productivity. Additionally, over 50% of the communal share of carbon money is allocated to bursary scheme that is specifically targeted at needy students from poorer households (Table 7.5).

The low-wealth households perceived that incorporating their communal land as part of the project improved their bargaining power for project benefits and enabled them to benefit from carbon revenues which they would otherwise forego with their smaller land sizes (Table 7.5). This contradicts the perception of the high-wealth respondents,

who felt that the project's emphasis on and recognition of communal ownership hinders the sub-division of land into individual parcels or shares as in the ranches.

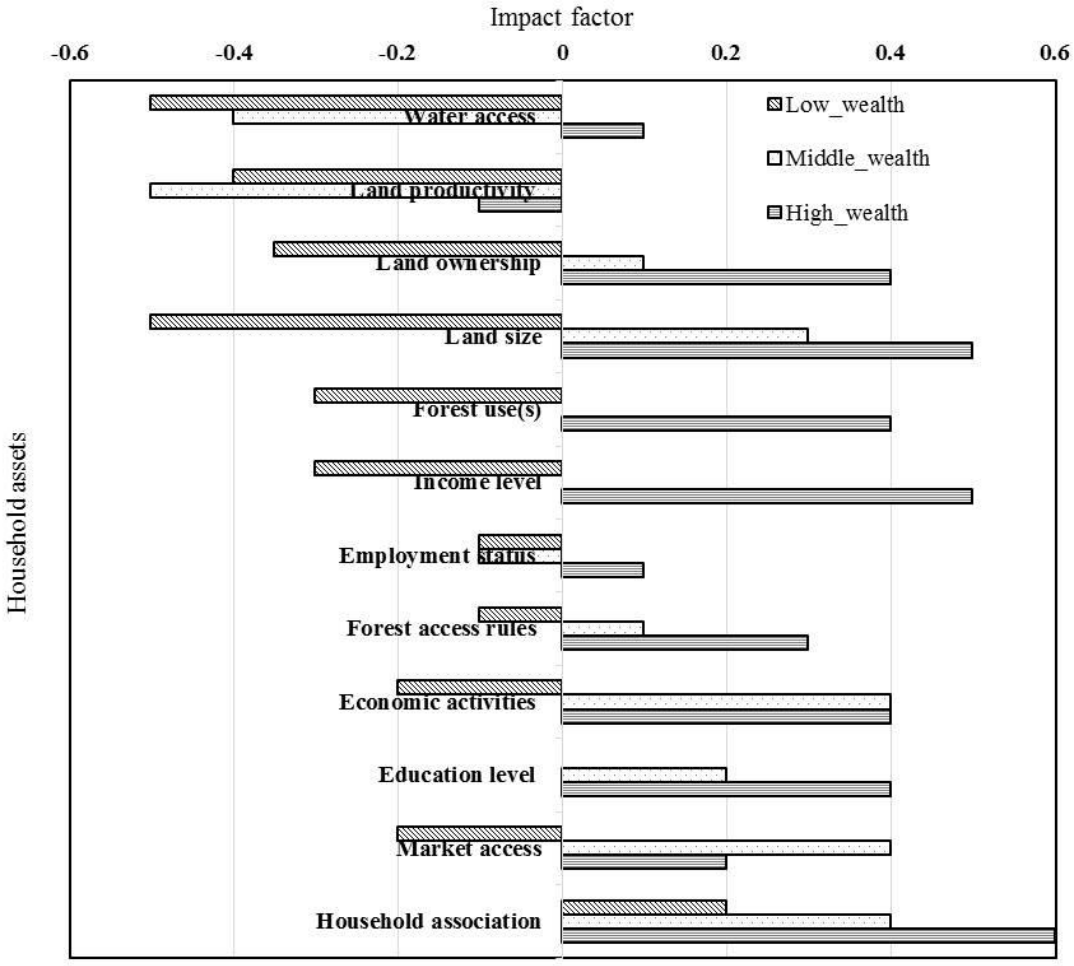

Figure 7.4: Impact of project activities on household assets. Positive ipact fact implies positive average impact while negative impact factor implies negative average impact of project activities.

Group representatives, however, emphasised that the project benefits have not adequately matched community expectations or the opportunity costs of protecting the communal forest, and so they expect the project to initiate more alternatives such as irrigated horticulture and poultry projects, among others. Livelihood expectations including water supply, food relief and alternative economic activities dominate community views during meetings aimed at disseminating the project's intentions, according to the area chief.

Figure 7.5: A sign post indicating a planned communal water project to be supported by the Kasigau REDD+ project in Marungu village, Taita-Taveta county.

According to project staff, expectations of dramatic livelihood improvement remain a challenge for the project. This is exacerbated by fluctuating carbon prices and buyers. The project has only sold credits generated until 2011 but was still sourcing for buyers to purchase stocks generated since 2012. During interviews, local people lay more emphasis on how the project helps them address livelihood needs. They would always refer to the funds supporting community projects as 'carbon money', although the concept behind carbon credits and offsets remains opaque to them. Pressured on livelihood expectations, the project is sometimes forced to allow community members to draw firewood from and graze animals in the forest especially during dry seasons and according to project staff, this is a major source of loss of carbon credits.

The overall project-impact was higher on other assets such as education, employment and membership to a local association (Table 7.6). The project impact was significant compared to the control and the significance was high for the low-wealth ($p<0.01$; 0.756) compared to middle wealth ($p<0.01$; 0.686) and high-wealth ($p<0.05$; 0.538). At the control site, households, group representatives and village elders reinforced the view that a REDD+ project may revert ownership and benefits from the state owned Mbololo forests to the community. They claimed that the forested hills currently

benefit only a few State officers and business people involved in corruption and illegal logging. The control households, especially the middle-wealth ones, further expressed fears that the project may restrict livestock grazing areas, thereby affecting their economic opportunities.

Table 7.5: Impacts of high high-rank livelihood assets on the project; [Negative impact (-) No impact (0) Positive impact (+1)

Asset	Main perceived and actual impacts at the intervention site (Marungu)				Main expected impacts at the control site (Mbololo)		
	Low-wealth	Middle-wealth	High-wealth	*Actual impact*	Low-wealth	Middle-wealth	High-wealth
Water access	(+)Expected construction of water projects	(+)Expected construction of water projects	(+) Protected water sources	*Ksh 3,331,551 (US$39,195) committed to community water projects*	(+) Project to fund water projects and protect forest for rains	(+) Project to fund water projects	(+) Project to fund water projects and protect current catchment
Land ownership	(+) Strengthens communal land ownership and benefits	(0)No effect	(-)Hinders sub-division of communal land to individual households	*Communal land recognized*	(+) Change of ownership of State land to communal land	(+) Strengthen communal land ownership and benefits	No effect
Land productivity	(+)Expect rains to increase and increased yields (-) Increased number of elephants destroying crops		(+) Expect access to irrigation from the project funded water projects	*25,000 seedlings planted in farmers' fields*	(+) increase in rainfall and water access for better yields (-) protection against elephants destroying crops		(+) Increased yield from project-initiated irrigation facilities
Economic opportunities	(+)Diversified economic activities from project staff and visitors (-)Restricted charcoal production/firewood collection for sale	(+)Diversified economic activities from project staff and visitors (-) Restricted grazing in ranches	(+)Diversified economic activities from project staff and visitors	*Business and employment opportunities increased (Not quantified)* *Grazing in 400,000 acres ranches prohibited*	(+) Diversified economic opportunities (-) Restricted charcoaling	(-) Restricted grazing in ranches (+) Sale of tree seedlings and carbon credits	(+)Sale of carbon credits from on-farm trees (+) Business opportunities from project staff
Education	(+)Educational bursaries and school construction	(+)Educational bursaries	(0)No effect – it only targets poor families	*Ksh 5,174,244 (US$60,873) committed to educate 271 secondary school students and55 college and university students and construct two schools*	(+) Bursaries and school facilities		(+)Bursaries and school facilities (-) Children dropping out of school for project jobs
Employment	(+) Community members employed by the project	(+) Community members employed by the project	(+) Community members employed by the project	*13 staff at the local CBO, 200 casual employees and 100 permanent employees within project activities*	(+) Project to offer jobs	(+) Project to offer jobs	(+) Project to offer self-employment opportunities such as businesses
Household associations	*(+) Marungu Hills Conservancy and associated groups supported with administrative and activity funds*				(+) Increased activity for local groups		
Forest cover	(+)25,000 seedlings supplied to households	(+)25,000 seedlings supplied to households	(+)25,000 seedlings supplied to households	*2,500 acres of communal hills and over 400,000 acres of dry-land forest conserved*	(+) increased forest protected area	(+) Increased on-farm forest cover	(+) Increased on-farm forest cover

Table 7.6: Wilcoxon matched pairs signed test for differences between project impacts (intervention) and expected impacts (control)

Household asset	Low-wealth	Middle-wealth	High-wealth	Overall (Mean ± SE)
Water access	0.42**	0.08	0.14	0.18**±0.07
Land ownership	0.08	-0.08	-0.29	-0.05±0.10
Economic opportunities	0.21*	0.23	0.57*	0.25*±0.10
Land productivity	0.17*	0.40**	0.00	0.09* ±0.08
Income level	-0.08	0.30**	0.43**	0.11±0.11
Land size	-0.04	-0.08	0.00	-0.05±0.03
Education	0.42**	0.69**	0.21*	0.55**±0.08
Local associations	0.38*	0.15	0.57**	0.34** ±0.09
Forest use	-0.04*	-0.15	0.29	0.05±0.11
Forest access rules	-0.13	0.23*	0.00	0.18* ±0.10
On-farm forest/tree cover	-0.08	0.00	0.29*	0.00*±0.09
Employment status	0.54**	0.23	0.43	0.43**±0.08
Market access	0.17	0.38**	0.57**	0.30* ±0.08
Overall significance in relation to control	**0.756****	**0.686****	**0.538***	

*0.05 significance **p=0.01 significance in relation to control

Majority of community members (about 70%) mainly drawn from the low-wealth said they were happy with the project. Some 28% of those interviewed, mainly from high-wealth households were unhappy with the project (Figure 7.6).

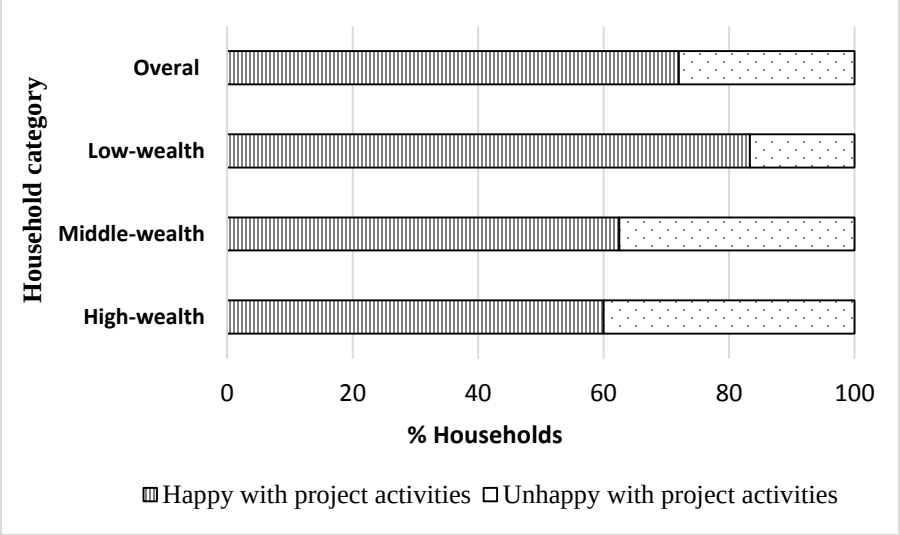

Figure 7.6: Households' overall perception about the project's activities

7.4.7. Potential community roles in the project

Figure 7.6 presents ways in which the community think they should be engaged in the project compared to the UNFCCC provisions from which the project draws its design.

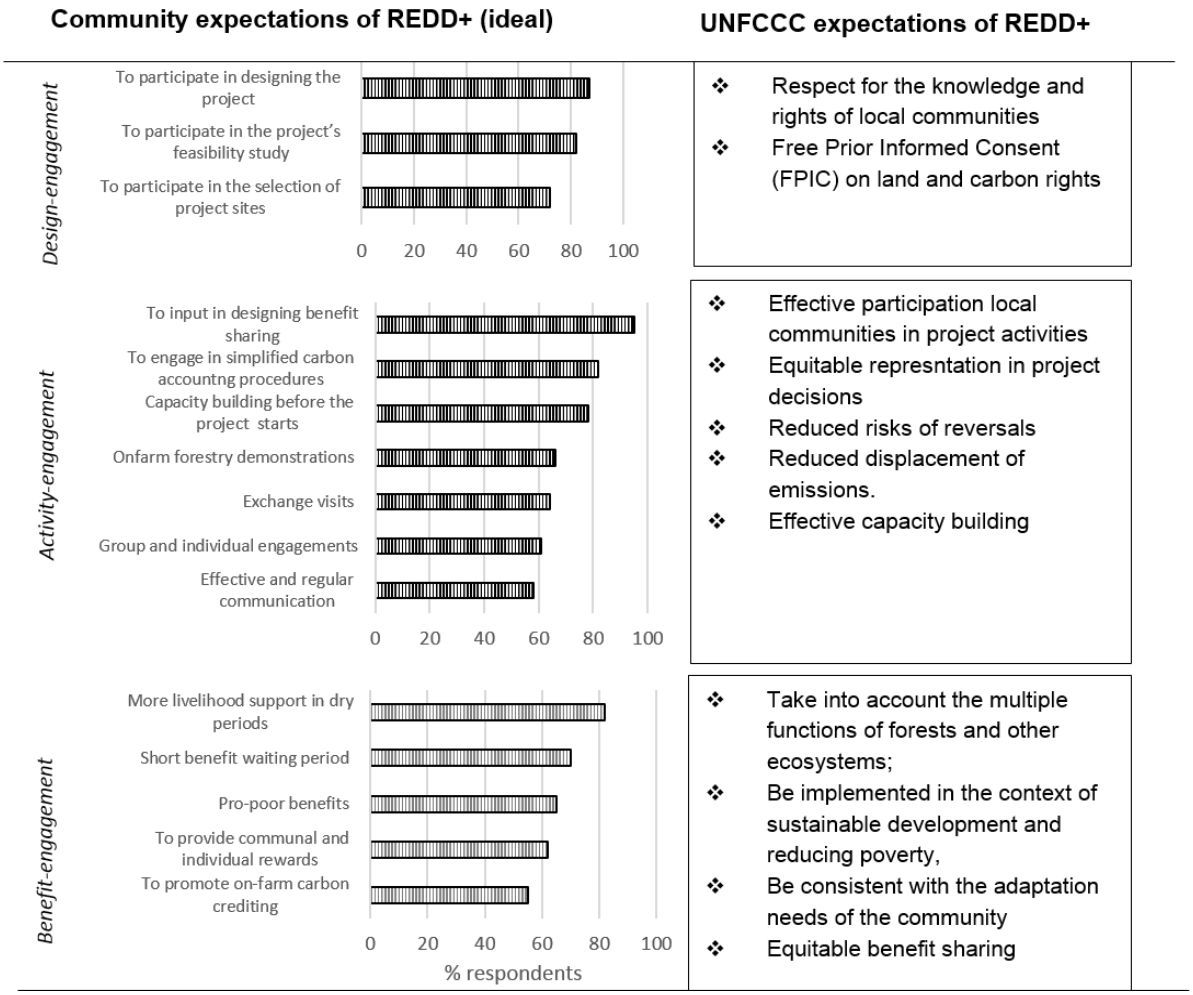

Figure 7.7: Ways in which the community think they can contribute to REDD+

In terms of design-engagement, the community members expect to be part of project design, feasibility studies and also to participate in site selection processes (Figure 7.6). The UNFCCC is however unclear and ambiguous on the role of local communities in designing REDD+ projects. In terms of activity-engagement, the

UNFCCC favours participation during project implementation but the community felt that capacity building should start before the project implementation process. In terms of benefit-engagement, the community expects shorter benefit waiting periods and seasonally oriented benefits while the UNFCCC expectations emphasise on institutional aspects such as equity and representation, with little clarity on temporal leverage for community livelihoods.

7.4.8. State engagement in the project

The engagement of the State in the ongoing demonstration projects is minimal because national REDD+ policies are still under preparation. As such, even though the State, through the National Environment Management Authority (NEMA), initially assessed the Kasigau project for its environmental and social impacts, interviews reveal that this could not be adequately performed because there is little capacity within the government to understand the global standards upon which the project operates. Further, the Ministry of Environment that is charged with these assessments is not conversant with issues of REDD+ given their poor representation in the national REDD+ process (Chapter 5).

Ideally, the State institutions are expected to support and enforce enablers of REDD+. However, project staff and community members blamed bureaucracy within the State institutions e.g. water board, lands registrar for delays in assessing and approving livelihood projects funded through the carbon revenue. Discussions revealed that laxity within State institutions to support local enablers of a REDD+ project is linked to resource centralisation regimes in which benefits from, and management decisions of the area's wildlife resources, have historically been channelled to the central government with no share to the community. This centralisation of benefits manifests in the control community (Mbololo) who think that a REDD+ project could help to re-distribute, in their favour, benefits from State

owned Mbololo forest. The area's Forest Officer however asserts that REDD+ funds that would result from the hills would be channelled to the central government through the Kenya Forest Service (KFS) and as outlined in the Kenya's R-P.

Project's implementation is further complicated by sectoral fragmentation with regards to national level REDD+ process. Exclusion of key sectors in national REDD+ reduces legitimacy of REDD+ within the excluded sectors. Certain decisions made through the excluded sectors e.g. lands do not support the key REDD+ enablers. For instance, the Kasigau project partly draws its success from collective tenure systems (communal and group ranches) which have enabled inclusive participation and benefit sharing as well as simplified negotiations with the local community to commit their lands to the project. However, the lands authority plans to issue individual title deeds to ranch shareholders meaning a single ranch-land could be subdivided into individual ownerships of up to 50-2,500 pieces. This means the REDD+ project will have to convince over 2,500 individuals to commit their parcels of land to the project a situation that could be complex and costly and perhaps a recipe for emission reversals in the context of diverse individual interests in land use.

7.5. Discussion

7.5.1. Project interaction with local assets

This study aimed to analyse and discuss REDD+ implementation at the local level specifically focusing on how a particular project interact with local livelihood assets and State-based institutions. The study context comprises a diversity of wealth-structured livelihoods that revolve around water access, land ownership, land productivity and economic opportunities, but from which the project protects a dryland forest for carbon credits and livelihoods. From this diversity of assets,

water access and land ownership were identified as the most strategic assets for the project due to their role in agricultural livelihoods and economic opportunities for the poor, who posit a greater threat to protected forests.

The above finding corroborates with studies that indicate that water scarcity linked to drought is the greatest form of vulnerability for forest ecosystems especially those in arid and semi-arid areas because poor community members often invade forests for coping with agricultural failures (FAO 2010, Nkem et al., 2012). Various lands including private/group ranches, communal lands host the forests targeted for carbon. At the same time, the lands provide crucial livelihood resources to different groups within the project area. Recognising the diversity of rights to access and benefits from these lands enhances inclusion of various groups in the REDD+ activities and benefits. This promotes collective commitment to REDD+ thereby reducing pressure on forests compared to individualized ownership. The Kasigau project experience with diverse and collective land tenure contrasts studies that have viewed enabling tenure system for REDD+ mainly in terms of titled private/individualised ownership (Chhatre et al., 2012).

Supporting water access and diverse land tenure promotes pro-poor and equitable participation and benefit sharing for REDD+. Equity and pro-poor approaches have been emphasised as crucial for effective REDD+ implementation (Boyd 2007; Smith and Scherr, 2003) (see section 3.5.6). In the Kaigau project, 'The poorer segment of the community perceived that the project had impacted positively on most of their livelihood assets. For instance, water is specifically critical for poorer households who have to walk long distances to access water compared to richer households with water sources, e.g. boreholes and tap water, within their homesteads. Due to the dry conditions of the area, the richer households often sell water at higher prices, which is sometimes not affordable by poorer households. As such, communal projects, freely accessible by the poor, are likely to improve the

relative welfare of the poor compared to the richer households. Additionally allocating a majority share (over 50%) of the communal share of carbon money to education bursaries targeted specifically at needy students from poorer households is crucial in building the capabilities of poor households to pursue different livelihood opportunities and to dissuade them from encroaching forests. Such pro-poor targeting enables the poor to benefit more than the non-poor.

Additionally, allocating majority share (over 50%) of the communal share of carbon money to the education bursaries targeted specifically at needy students from poorer households is crucial in building the capabilities of these poor ones to pursue different livelihood opportunities and are dissuaded from encroaching forests (Mohammed, 2011). Such pro-poor targeting enable the poor to benefit more than non-poor (Gross-camp et al., 2012). Also reshuffling and setting up various local institutions to improve representation subject to the needs of local communities resulted in a perception that the project is transparent and consultative (also see chapter 8). Ribot (2011) views such institutional choices as crucial in allowing projects to work with democratic institutions (Ribot, 2011, Maraseni et al., 2014, Corbera et al., 2009). Appropriate and inclusive local institutional arrangements that capture the views of the poor are critical for supporting pro-poor needs (Martin et al., 2010).

The institutional reshuffling also require that the global design procedures be reshuffled in particular ways to fit the local setting. For instance, global design standards e.g. the VCS mainly emphasise carbon delivery yet the Kasigau experience reveals that local livelihood needs are critical for delivering carbon. As such, benefit sharing with regards to livelihoods represents a key area where global REDD+ design interplays with local assets to influence implementation. Even though most carbon results from ranches owned by relatively richer land owners, redistributing carbon revenue equally with the poor plays out as crucial approach

in the project's implementation. This redistribution is not clarified in the carbon standards (e.g. VCS) and REDD+ safeguards from which the project draws its design. However, from the Kasigau experience, this benefit redistribution significantly reduced pressure on the dryland forests and minimised leakage by injecting more support to alternative livelihoods that keep people (especially the poor) off protected forests.

From a broader perspective, benefit redistribution as in the Kasigau case, is crucial considering that the State and other private groups control most tropical forests (Lyster, 2011). Local communities own only 18-25% of tropical forests (Bluffstone et al., 2013). Payments based on ownership could generate relatively low benefits to the poor in light of the burden they bear from climate change. Payments based on property rights could also create spaces for powerful actors to acquire communal land and further marginalize the poor (Lemaitre, 2011). For instance, some rich households in the Kasigau area view the project as an impediment to the subdivision of communal land into purchasable individual pieces which they could use their wealth to acquire at the expense of the poor.

Despite the largely pro-poor elements observed in the project's work, other findings showed that certain institutional structures e,g. CBO membership aimed at achieving efficiency, lock out some poorer community members unable to meet the conditions. This indicates that there would often be trade-offs between pro-poor strategies and institutional setting for building efficiency in REDD+ implementation. The pro-poor approaches and equitable benefit redistribution are conditioned by other national and global factors.

7.5.2. Role of State and global rules in project-asset interactions

Results revealed that State institutions and global carbon conditions are key in REDD+ implementation locally. The case of Kasigau specifically reveals that gaps within these broader policy settings remain the key impediments to effective

implementation of the Kasigau project. The State is the legitimate representative of a country to the global REDD+ process and is expected to support REDD+ activities in line with their climate commitments. However, this study reveals that bureaucracy and sectoral fragmentation within State agencies and poor linkage with private sector currently threatens the project's work. The shortcomings from the State are attributable to national institutional gaps especially path dependencies where REDD+ decisions have been monopolized by the forestry sector to the exclusion of other relevant sectors (Atela and Quinn, 2014) (Chapter 5). This limits legitimacy of REDD+ agenda across sectors. As such, the water sector which is not represented in the national REDD+ taskforce may not appreciate the need for water in a REDD+ project. Similarly, the lands sector where authorities do not understand what REDD+ is all about may not think they are harming a REDD+ project by making discrete decisions on land subdivision.

Sectoral fragmentation is an impediment to successful forest protection, in many developing countries (Brockhaus et al., 2013, Minang et al., 2014). However for any meaningful emission reduction to be achieved under REDD+, reforming national institutions to embrace sectoral integration is required. This is crucial because findings here indicate that certain enablers of REDD+ such as legalising tenure regimes and approving livelihood projects depend on State institutions and are beyond the institutional scope of sub-national private projects. While these private projects dominate current and future REDD+ portfolio and have the resources to support local implementation, their potential to do so require political goodwill and support from the State.

The global institutions mainly constrain the project implementation via carbon standards and conditions. Equitable and pro-poor strategies in the project's implementation are constrained by strict carbon requirements that limit trade-offs between forest livelihoods and forest protection. Tension between carbon and

livelihoods has been a concern in many studies e.g. Leach & Scoones (2013); Pokorny et al. (2013) but in this study, this tension manifest as the key source of certain negative impacts community members associate the project with. Such perceived negative impacts include restricted livelihood activities such as grazing, firewood collection and charcoal burning all meant to secure carbon. While the project has attempted to provide alternative pro-poor livelihood support funded via an equal share of carbon funds, this 'equitable' share has not met community expectations in light of the opportunity costs imposed by restricted forest access and use. This is further exacerbated by fluctuating carbon prices and diminishing carbon buyers in the global carbon market. As such, while a plethora of literature (Jindal, 2010; Corbera et al., 2007; Asquith et al., 2002; Luttrell et al., 2012) and REDD+ safeguards support equitable benefit sharing and pro-poor approach as key REDD+ enablers, this study shows that even if projects were to do so, broader factors such as national institutional gaps and global carbon-based conditions e.g. prices and buyers could still create implementation deficits.

In the context of policy implementation, the constraints emanating from the national and global processes support assertion in Leventon and Antypas (2012) that multilevel policy implementation deficits often result from higher levels of governance. This justifies why emerging debates on REDD+ implementation should seek to unpack multilevel design and implementation of REDD+ to holistically identify sources of implementation deficits.

7.6. Conclusion

This Chapter aimed to analyse and discuss REDD+ implementation at the local level focusing on the role of local livelihood assets and State institutions in a REDD+ project implementation. The study shows that while enabling assets align with livelihood interests of various wealth groups especially the poor, these assets

are conditioned by processes outside the local context. Locally, water access and integrated land tenure are key assets for REDD+ implementation due to their close links with livelihoods and their knock-on effects on other assets that are equally crucial for a REDD+ project. The water-land ownership nexus constitutes an important part of the landscape for REDD+ projects, driving pro-poor livelihoods and economic opportunities and thereby influencing the direction of deforestation. Communal approaches to engagement and redistribution of carbon revenue in favour of pro-poor livelihoods are key strategies that can improve local participation, collective commitment to and acceptance of the REDD+ project. Achieving these enabling conditions depend on the State institutions that legitimize actions and global carbon conditions that influence available funds to support the pro-poor livelihoods and project operations. Therefore, equitable benefit redistribution and pro-poor livelihood support are necessary conditions for local REDD+ implementation but not sufficient unless national institutions are reformed to embrace sectoral integration and global REDD+ standards harmonised with local expectations.

Other than local livelihood assets, ICDPs which have undertaken conservation and development activities in the localities targeted for REDD+ also posit some influence for REDD+ implementation.

Chapter 8

Implementing REDD+ at the local level: lessons from integrated conservation and development projects [25]

Abstract

There are diverse lessons that subnational projects designed to reduce emissions from deforestation and forest degradation (REDD+) should learn from integrated conservation and development projects (ICDPs) working in developing country settings. This Chapter develops and applies a lesson learning framework to identify and analyse lessons that the Kasigau REDD+ project learns from a governmental ICDP (national park) and a nongovernmental ICDP (World Vision) that have been implemented in Taita-Taveta county, Kenya. Fieldwork and document reviews revealed 24 lessons drawn from both positive and negative ICDP experiences. At the design level, the REDD+ project maintained the commonly critiqued top-down intervening approach as used by the ICDPs, by excluding community input into its globally-linked design. At the implementation level, the REDD+ project promoted better community representation in project decisions and benefit sharing when compared to the ICDPs. A landscape approach, democratic institutional choices and pro-poor benefit sharing were the key interventions that enabled the REDD+ project to improve on the ICDP experiences. The usefulness of the ICDP

[25]This Chapter is based on one journal article under review and one published working paper by;

a. Atela, J., Quinn, C., Minang, P. & Duguma, L. (2014) Implementing REDD+ in the context of Integrated Conservation and Development Projects: Leveraging empirical lessons. Land Use Policy 49, 329-340.
b. Atela JO., Quinn C., Minang, A and Duguma L. (2014) Nesting REDD+ into Integrated Conservation and Development Projects: what empirical lessons can be drawn? SRI WP No. 68; CCCEP WP No. 182. [Online link]

experiences was however weakened by a lack of lesson sharing between projects. The REDD+ project relied mainly on the local community to communicate their ICDP experiences, but this led to partial implementation deficits because it promoted local participation interests over global mitigation goals. Further, community-driven lesson learning appeared to disconnect the project from State institutions. The community had negative perceptions of State involvement but at the same time the State is the legal custodian of most assets (such as land) required for REDD+ implementation. ICDP lessons are therefore necessary for effective REDD+ implementation but can only be useful if the process of adopting lessons is cognisant of relevant stakeholders such as the State.

8.1. Introduction

The previous Chapter revealed that the local socioeconomic setting (livelihood assets) has a significant influence on implementing a globally designed REDD+ project. The local setting is however diverse. The setting is not only made up of livelihood assets but also comprises a layered history of conservation and development interventions (ICDPs) with potential implications for REDD+. ICDPs are conservation and development initiatives that aim to achieve forest and biodiversity conservation alongside socioeconomic development in developing countries (Agrawal et al., 2008, Brandon and Wells, 2009). In their many years of work, the ICDPs have engaged local settings in different ways establishing varied participation and benefit sharing approaches that could influence the way REDD+ is perceived, judged or accepted (Minang and Van-Noordwijk, 2013) (subsection 3.5.6). As such, studies have pointed out that ICDPs, could provide diverse lessons for adapting REDD+ to the local context

(Agrawal and Angelsen, 2009, Blom et al., 2010). However, there is little empirical evidence on how ongoing REDD+ projects draw lessons from ICDPs or are

affected by experiences communities have had with these ICDPs. This Chapter examines the implementation lessons the Kasigau Corridor REDD+ project draws from ICDPs operating in the same area. The Chapter aims to provide evidence on the lessons that Kenya's National Park- a governmental National Park and World Vision- a nongovernmental project provide for REDD+ and analyse the process through which these lessons are adopted or corrected by the REDD+ project.

8.2. Description of case projects

A description of the design and activities of the ICDP projects compared to those of REDD+ are presented in Table 8.1. The Kasigau REDD+ project has been described in the previous Chapter (Chapter 7). Here focus is given to the ICDP projects. The Tsavo national park and World Vision projects were selected as suitable ICDPs with potential lessons for REDD+. The projects' differentiated institutional alignment to the State and a non-State actor is useful for comparing intervention approaches. The projects have also worked with the local community for many years supporting conservation and livelihood agendas that overlap with the implementation goals of REDD+. The National Park overlaps with the REDD+ project area over about 24,000 sq. km and comprises Tsavo East (2°S, 38°E) and Tsavo West (2°S, 37° E), two of the biggest wildlife protection areas in Kenya. The Kenyan government, through the Kenya Wildlife Service (KWS), is the proponent of the park and has deployed game wardens to guard against illegal intrusion and mediate community-wildlife interactions. The park engages the local community based on legislative provisions in the 2004 and 2007 wildlife Amendment Acts (Republic of Kenya, 2004, Republic of Kenya, 2007b). The provisions expect the community to report encroachment cases and in return, benefit from employment opportunities, compensation and development from national budgetary allocations. Parks in many developing countries are managed by governments (Peluso, 1993)

who are also expected to coordinate national REDD+ so lessons generated from this analysis could be widely applied in various contexts.

Table 8.1: Design comparisons between the REDD+ and ICDP projects

Design components	Kasigau Corridor REDD+ project	Governmental National park	Nongovernmental World vision
Primary objectives	Global climate change mitigation and adaptation, addressing issues of leakage, reversals and displacement of emissions	Wildlife/Biodiversity conservancy towards national development and cultural heritage.	Charity programme focusing on sustainable rural livelihoods/child wellbeing with an ultimate target of achieving the Millennium Development Goals.
Funds and conditions	International market funds lobbied through multilateral and bi-lateral actors. The funds are available on performance in delivering credible and verifiable emissions through an international standard (VCS).	Upfront funding provided from the public/state-budget. Funds not necessarily tied to outputs. Outputs are verified using internal procedures.	Upfront funds provided by Aid agencies. Output is subject to internally designed procedures and funds are not conditional on performance
Community engagement in project design	Indirectly informed through prior work by the project proponents.	No engagement	Feasibility study carried out to identify needy households
Community engagement in project implementation	Protected area with community consultation on land and carbon rights and consent. Subject to UNFCCC safeguards and UN-declarations on the rights of indigenous people.	Protected areas with the community expected to protect wildlife in kind subject to state regulations.	Integrated Program Areas (IPAs) with individualised support to mainly poor households and engagement in conservation as a source of income
Benefits and benefit sharing procedures	Equitable benefit sharing and recognition of the rights of the community, sustainable co-benefits for adaptation and does not result in leakage	Compensation for human/wildlife conflicts, development allocation from central government	Pro-poor household asset benefits to communities

The World Vision project is implemented by World Vision, a Christian nongovernmental organisation operating internationally in over 100 countries. The World Vision project has been operating in the Kasigau area since 1999. The project engages individual households, groups and organisations (schools, churches, hospitals) in conservation and livelihood activities such as food for conservation, water supply projects, soil and water management, and tree planting. Unlike the REDD+ project and the national parks which have clearly delineated conservancies, the World Vision project spreads activities across households, groups and organisations occurring within an Integrated Programme Area. Given its presence in many developing countries, and that of other NGOs carrying out similar work, lessons from World Vision will be applicable across various contexts adopting REDD+.

8.3. Methods

8.3.1. Lesson learning framework for analysis

This Chapter develops a lesson learning framework drawing on the policy implementation concept (Figure 8.1). Within the framework, policy implementation is defined as translating documented policy decisions into practice through on-the-ground activities to achieve desired implementation outcomes (Leventon and Antypas, 2012). In the context of REDD+, sustainable development is the main desired implementation outcome and this encompasses forest protection to deliver on global expectations for emission reductions and local expectations of community (and other stakeholders) participation and benefits (see subsection 3.5.3).

Emission reductions here involve forest protection to capture and store carbon subject to standardised measures such as additionality, permanence and avoidance of leakage. Participation, on the other hand, refers to the contribution of local communities to REDD+ decisions and receipt of benefits (Angelsen et al., 2009). The UNFCCC safeguards (appendix 1/COP 16) specifically outline the need for participation of local communities to enable their knowledge and interest to be incorporated into REDD+ decisions and benefits (Ribot, 2009). To understand the interests of local communities, in line with the desired participation guidelines, we consulted these local communities about their specific preferences. In order to achieve implementation outcomes, a REDD+ project may draw from ICDP experiences and initiate actions that adopt, improve on and correct certain experiences (Blom et al., 2010). If a REDD+ project is implemented and adopts measures that improve on positive lessons and correct negative ones, then the project has the potential to achieve desired implementation outcomes and sustainable development (Jordan, 1999). If a REDD+ initiative repeats the negative ICDP experiences, then an implementation deficit occurs (Minang and van Noordwijk, 2013). The analysis of and implications for various lessons and their adoption can provide insights for policy.

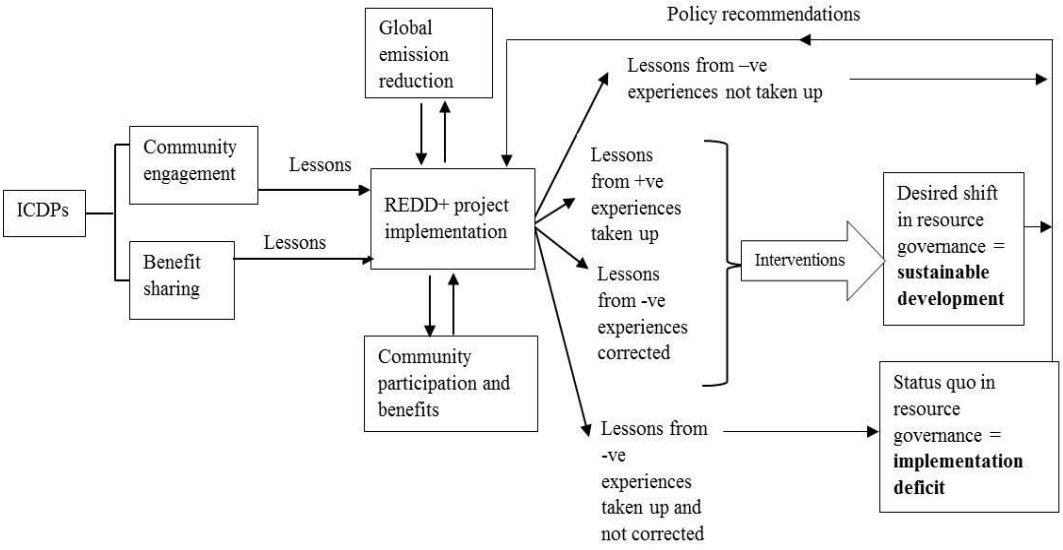

Figure 8.1: Conceptual design of the Chapter

8.3.2 Data collection

One hundred out of 506 households living in each village were randomly sampled for interviews. The sample represented a 19.8% sampling intensity, higher than the rule of thumb ratio of 20-30 households for a population of 100-500 households recommended in Angelsen et al. (2011). To ensure that the sample had equal representation from the different wealth segments of the community, village elders in each village first stratified the households into low, middle and high wealth categories based on their understanding and records of household assets such as land size, livestock numbers and educational capabilities (Scoones, 1995). Households belonging to low-wealth (n=38), middle-wealth (n=33) and high-wealth (n=29) were then randomly and proportionally drawn from the village-wide household list.

The households were interviewed using semi-structured questionnaires. The respondents were first asked to state and explain the key ways in which the REDD+ project differs from each of the ICDP projects in terms of community participation and benefits. Allowing respondents to differentiate between the REDD+ project

and the ICDPs was a first step towards enabling them to clarify their ICDP experiences in relation to the REDD+ project. Respondents were then asked to list three positive and three negative experiences they had had with the ICDPs and how the REDD+ project was responding to these experiences. Community participation was operationalised as design, activity and benefit engagements:

a. Design-engagement: the level to which the community is consulted when projects are being designed and when these design activities are introduced
b. Activity-engagement: the level to which community members are consulted and trained to implement projectactivities
c. Benefit-engagement: the nature of livelihood benefits, whether direct/indirect or tangible/intangible and the ways in which local people access these livelihood benefits.

The questionnaire also sought respondents' views on participating in the design, activities and benefits of the REDD+ project. Community participation is a desired REDD+ implementation outcome, alongside emissions reductions. While emissions reductions requirements are standardised through globally established carbon verification measures, participation guidelines under the UNFCCC safeguards emphasize that REDD+ initiatives must consult with and account for the interests of local communities. Therefore enquiring about the interests of local communities, in line with the UNFCCC participation guidelines was necessary.

A frequency list of household experiences was generated then transcribed into lessons through four focus group discussions (FGDs) (Thurmond, 2004). The FGDs enabled collective discussion of the ICDP experiences reported by households and this usefully overcame the biases associated with individual households whose understanding of carbon issues under REDD+ was low (Sithole, 2002). The FGDs comprised of purposively sampled village elders, community resource persons and representatives of various community groups with knowledge about historical

activities and of community experiences with the ICDP and REDD+ projects. During the discussions, ICDP experiences were discussed, verified, judged and appropriately assigned or excluded as a logical lesson for the REDD+ project. The lessons were assigned to four categories (Table 8.2). In the same FGDs, the frequency list of community expectations for participation and benefit sharing were also discussed.

Table 8.2: Categories of lessons drawnfrom the ICDP experiences

Lessons from ICDP experiences	Description
Adopted +ve	Positive lessons that the REDD+ project has taken up
Potential +ve	Positive lessons that the project has not taken up yet are useful in the context of REDD+ design and community expectations
Corrected –ve	Negative lessons the project has taken up and corrected
Uncorrected –ve	Negative lessons adopted without efforts to reverse.

The FGDs also examined the process by which the REDD+ project adopted lessons from ICDP experiences. This involved discussing and grouping key interventions (approaches) initiated and the actors/stakeholders involved in executing those interventions. The process used by the REDD+ project to correct negative ICDP experiences was crucial for this study because such processes show how REDD+ can streamline forest governance and help mitigate the mistakes of ICDPs to achieve sustainable development (Minang &van Noordwijk, 2013).

The process of adopting lessons was further verified through in-depth interviews with 25 stakeholders linked to the global, national and local REDD+ processes. Initial stakeholders were identified through purposive sampling involving document reviews and consultations undertaken as part of a stakeholder analysis

(Reed et al., 2009). Initial interviews then enabled the identification of additional stakeholders through snowball sampling (Reed et al., 2009). Global level stakeholders included seven UNFCCC staff who usefully highlighted the new approaches REDD+ could bring to forest governance. Three national REDD+ staff members and eight staff members of the REDD+ project provided insights about the role of national institutions in the lesson learning process. These staff members further discussed community expectations for participation in relation to UNFCCC safeguard requirements. Local stakeholders, including two ICDP project staff and four local level informants (Chiefs, leaders of Community Based Organisations (CBO) leaders and community resource persons), provided insights into community experiences with ICDPs and the particular strategies the REDD+ project is using to build on these experiences.

8.3.3 Data analysis and biases

Household data were analysed using descriptive statistics and Chi-squared test for significant differences in respondents' perceptions(Green and Salkind, 2010). Qualitative data drawn from FGDs and in-depth interviews were coded using table matrices to draw out themes and illustrative quotes (Hopkins, 2007). Through table matrices (Kaufman & Rousseeuw, 2009), lessons from ICDP experiences were linked to the expected REDD+ implementation outcomes: emission reductions and community participation.

A key source of bias in the study design and data collection is the reliance on individual households as a source of experiences and lessons. The low understanding of carbon issues among individual households may compromise their ability to objectively reveal relevant experiences for REDD+. Additionally, experiences based on household responses could be biased towards certain interests e.g. livelihoods or local political affiliations. Nonetheless, I such biases were

minimised by triangulating household information with community level discussions and numerous in-depth interviews with actors whose views are relatively independent of local interests.

8.4. Results

8.4.1 Perceived differences between REDD+ and ICDPs

In terms of design-engagement, a majority (51%) perceived no difference between the REDD+ project and the national park. Thirty eight percent also perceived no difference between REDD+ and the World Vision project in design-engagement. However, some respondents (26%) felt that World Vision was more consultative in design-engagement because it reportedly undertook a feasibility study to identify project beneficiaries (Figure 8.2).

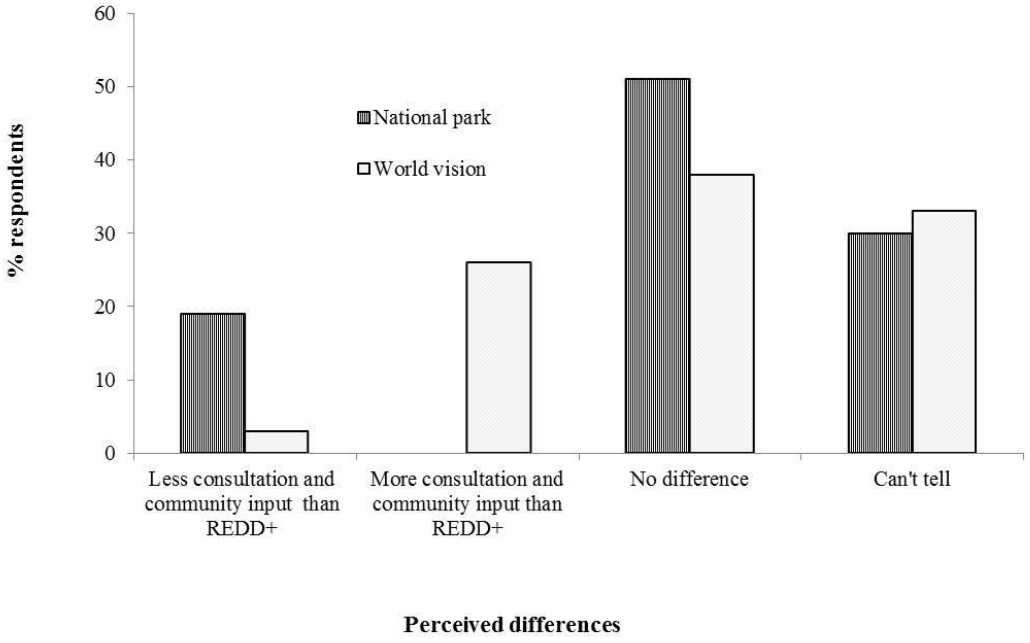

Figure 8.2: Perceived differences in design-engagement between ICDPs and REDD+.

In terms of activity-engagement, the majority (52%), most of whom belonged to low and middle-wealth categories, felt that the REDD+ project consulted more

during implementation than both the ICDP projects (Figure 8.3). Individual versus communal engagement was a key area of difference. The REDD+ project was associated with a more communal approach to its activities compared to the ICDPs. The national park was perceived to be exclusive by the majority of all households (low-wealth (65%), middle-wealth (52%) and high wealth (31%)).

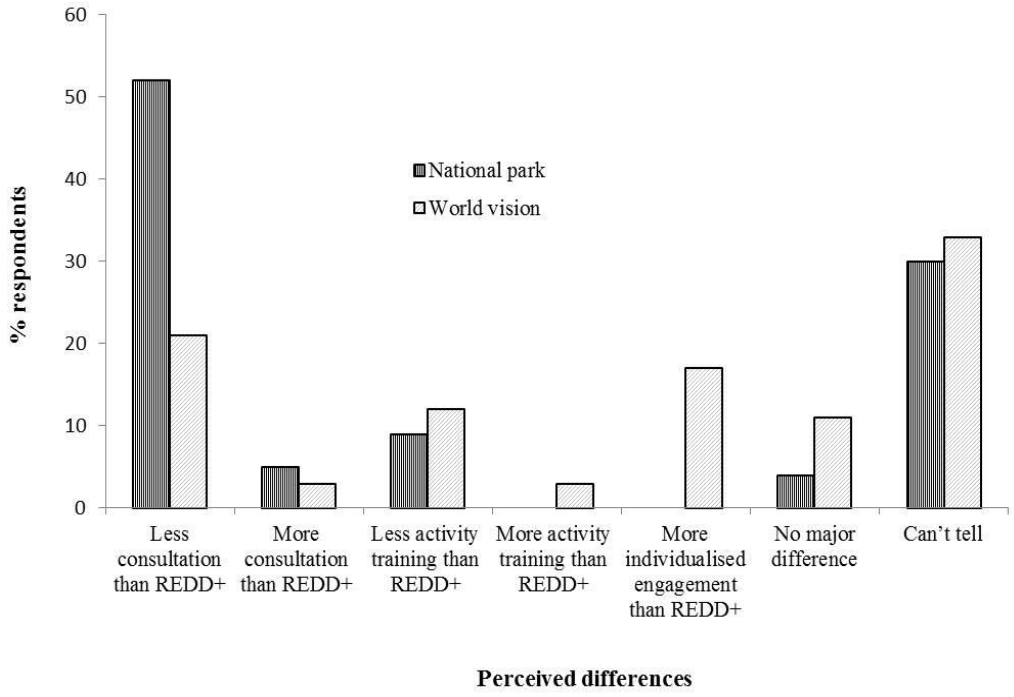

Figure 8.3: Perceived differences in activity-engagement between ICDPs and REDD+.

In terms of benefit-engagement (Figure 8.4), the national park was associated with no benefits compared to the REDD+ project. The World Vision project was perceived to have a shorter benefit waiting period compared to the REDD+ project (24%).

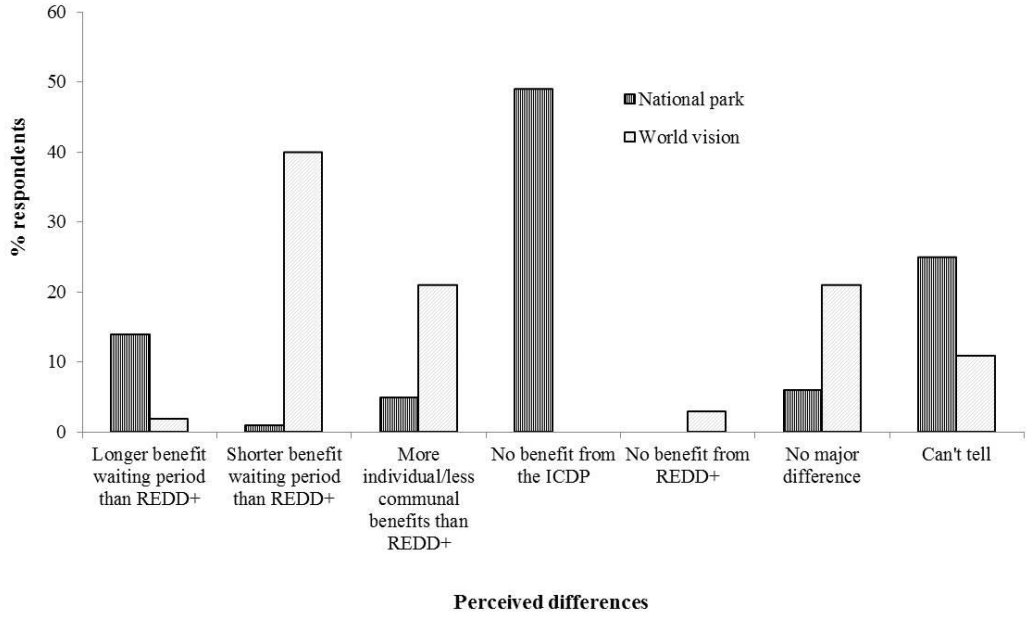

Figure 8.4: Perceived differences in benefit-engagement between the REDD+ project and ICDPs

8.4.2 Lessons from ICDP experiences

Twenty four lessons from ICDP experiences were identified (Figure 8.5). Overall, 14 out of the 24 (58%) were lessons from negative experiences while the rest were from positive experiences.

Lessons on design-engagement were all negative. Both the ICDPs were associated with exclusion in design-engagement and using local elites to introduce projects' intentions. The REDD+ project had not corrected any of these negative lessons in its own engagement design (Figure 6).

Lessons on activity-engagement were both negative and positive. Four out of the six (67%) positive activity-engagement lessons came from the World Vision project and these included using accountable and established community networks,

use of local labour, and flexibility in activities, amongst others. The positive lessons from the national park included support from the government and establishment of activity boundaries. Four out of the six (67%) negative activity-engagement lessons were linked to exclusion, mainly by the national park. Poor follow-up of activities and short-term unsustainable activities were the negative lessons linked to the World Vision project (Figure 8.5). The REDD+ project had adopted three out of the six positive lessons on activity-engagement and corrected four out of the five negative activity- engagement lessons from the ICDP projects.

Most (60%) lessons on benefit-engagement were negative. All the positive benefit-engagement lessons came from the World Vision project and these included a short benefit waiting period and pro-poor benefits aligned with household livelihood calendars:

> "With World Vision, we have terraces on the land and some income at the end of every month. The project is very helpful in needy times especially during drought ...Yes the projects are different because the carbon project does not consider helping people during hard times like World Vision. The carbon project is good but should consider helping people in times of need" [Low-wealth female respondent, Kasigau, September, 2013]

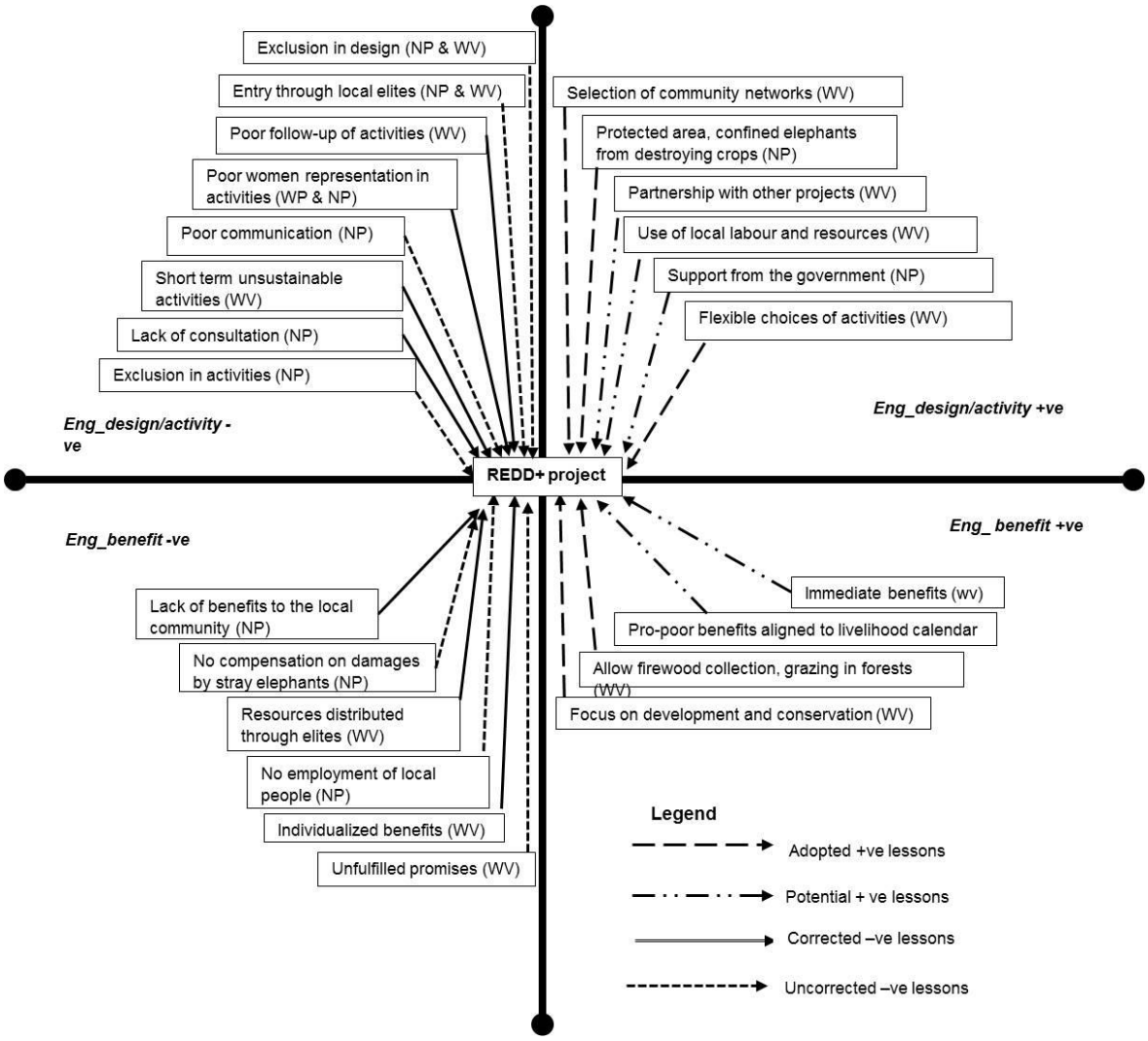

Figure 8.5: Key lessons from the ICDPs that households perceive the REDD+ adopts, avoids and reshuffles

The national park was associated with a lack of any benefits or compensation for local people and so had no positive benefit-engagement lessons. Of all the lessons, the lack of benefits from the national park was mentioned most commonly.

> "We see so many white people pass-by on their way to see wildlife. They are sometimes escorted by government vehicles but we are not asked anything. I hear the government collects a lot of money from the white people who come to see wildlife. All the money is taken to Nairobi and

> the government does not give anything to us, we hope the carbon project will not be the same" [Middle-wealth male respondent, Kasigau, March, 2012]

Short-term unsustainable livelihood activities, unfulfilled promises and individualised benefits were some of the negative benefit-engagement lessons attributed to World Vision. The REDD+ project corrected half (3 out of 6) of the negative benefit-engagement lessons namely: lack of livelihood benefits, unemployment of local people and elite-based benefit sharing (Figure 8.5).

8.4.3 Process of adopting lessons: interventions and actors

The REDD+ project both adopted positive lessons and corrected negative lessons from the ICDP experiences. The process of adopting positive lessons and correcting negative ones helps identify ways through which REDD+ can improve forest governance and help correct ICDP mistakes. Analysis of the REDD+ project implementation process revealed a number of intervening measures that could be used to imrove on ICDP experiences (Table 8.3).

The project recognised and worked with multiple land tenure systems that benefit different social groups. Group ranches registered as private companies generate 75% of all carbon credits. However, most shareholders to the ranching companies/groups reside outside the local community, with only about 5% of the shares held by locals. The (mostly poor) community resident in the project area had laid claim to communal forest, which they committed to the project. As a result they were entitled to all the carbon revenue resulting from this communal forest and additionally, benefit from one third share of carbon revenue from the ranches. The other two thirds are equally divided betweenranch shareholders and project operations. The community share of carbon revenue is invested in a host of

livelihood projects, e.g. communal foodprojects and educational burseries,through an established trust fund 'Wildlife Works REDD+ Project Trust Fund (WWRPTF)'. Such a benefit sharing mechanism was perceived to be inclusive and contrary to the approaches applied by the ICDPs:

> "The REDD+ project has a greater impact than other projects because it serves the whole community and works in various lands" [High-wealth female respondent, Kasigau, August, 2013]

Flexibility in local institutional choices was also observed as a means through which the REDD+ project improved community participation/representation in project activities and benefits. New locational carbon, water and bursary committees were elected by community members to represent them in project decisions. The new committees replaced certain local institutions such as State-based locational development committees which, according to the community, were unaccountable and under capture by retired government employees. Committee membership and leadership was subject to affirmative action and ideally needed to include representation from youth and women. The REDD+ project also logistically and technically supported and worked with existing CBOs, such as the Marungu Hills Conservancy, that were favourably perceived by the community.

Table 8.3: Intervention and actors constituting the process of correcting negative lessons

Lessons from negative experiences	Inteventions by the REDD+ project	Actors involved in th interventions
Community exclusion in project activities (activity-engagement; NP)	Insitutional choices – de-recognition of negatively perceived local institutions and recognitions of positively perceived institutions and establishment of new ones. Landscape aproach to activity and benefit – engagements.	Project proponents Community member
Lack of women representation in project decisions and activities (activity-engagement; WV& NP)	Gender equity in representation in activity and benefit-engagement committees.	Project proponents Community member Chief
Poor communication (activity-engagement ; WP & NP)	Door to door campaigns, theatre on carbon issues	Project proponents Community member
Short term activities confusing the community (activity-engagement; WV)	Activity nesting and longer term project implementation period,	Project proponents Community member
Short notice on interventions (activity-engagement; WV)	Elected committees verify new project interventions	Project proponents Community member
No livelihood benefits (benefit-engagement ;NP)	Landscape approach: integrated communal and individual benefits. Pro-poor benefit sharing mechanism: a third of carbon revenue from ranches allocated to pro-poor livelihood projects.	Community member Project proponent
No employment of local people (benefit-engagement ; NP)	Pro-poor opportunities: any unskilled labour must be sourced from within the local community. Skilled labour only sourced from outisde if not available within the local community.	Project proponents Community member
Elite distribution of resources (benefit-engagement; WV)	Institutional choices – de-recognition of negatively perceived local institutions and recognitions of positively perceived institutions and establishment of new ones.	Project proponents Community member Chief
Individualized benefits (benefit-engagement; WV)	Landscape approach to activity and benefit engagement-recognizing diversity of land tenure system (communal hills, ranches, trust lands) as part of carbon crediting.	Project proponents Community member

In the process of correcting and improving on ICDP experiences, little collaboration between the REDD+ project and the ICDPs was observed. Interviews and discussions revealed no established mechanism or forum to bring together the ICDPs and the REDD+ project to share experiences. The REDD+ project learnt and corrected most lessons based on community views on and experiences with the ICDP projects. Limitations in sharing experiences were also apparent between the REDD+ project and relevant State institutions. At some point, the project abolished direct engagement with State-based locational development committees, largely due to the unfavourable experiences the community had had with the national park. FGD participants associated the State with centralised management and capture of benefits from local wildlife resources. In a voting exercise, most FGD participants (70%) preferred REDD+ to be implemented by the private sector as opposed to the government.

Staff of the Kenya Forest Service (KFS), however, claimed that the negative perception the community had developed against the State was mainly because the community often looked for livelihood benefits from interventions instead of focusing on the content and long term goals of such interventions. A case in point was when community members reportedly preferred to pursue food for work from the World Vision project instead of participating in a tree planting field day organised by the KFS:

> "The community here are more concerned with what they get from projects but not what the project does. They look out for projects for their livelihoods and sometimes will never give attention to a conservation project with no immediate livelihood benefits" [KFS Staff, Voi, August 2013].

8.4.4. Lessons in relation to expected REDD+ implementation outcomes

The relevance of the lessons was then analysed in the context of expected REDD+ implementation outcomes: emission reductions and community participation (engagement and benefits). To understand the interests of local communities in relation to UNFCCC participation guidelines, we consulted with local communities to understand their specific preferences (Figure 8.6). In terms of design-engagement, the community expected to be part of project design, feasibility studies and also to participate in site selection processes for REDD+. In terms of activity-engagement, most community members felt that capacity building should start before the project implementation process. In terms benefit-engagement, the community expected shorter benefit waiting periods and seasonally oriented benefits.

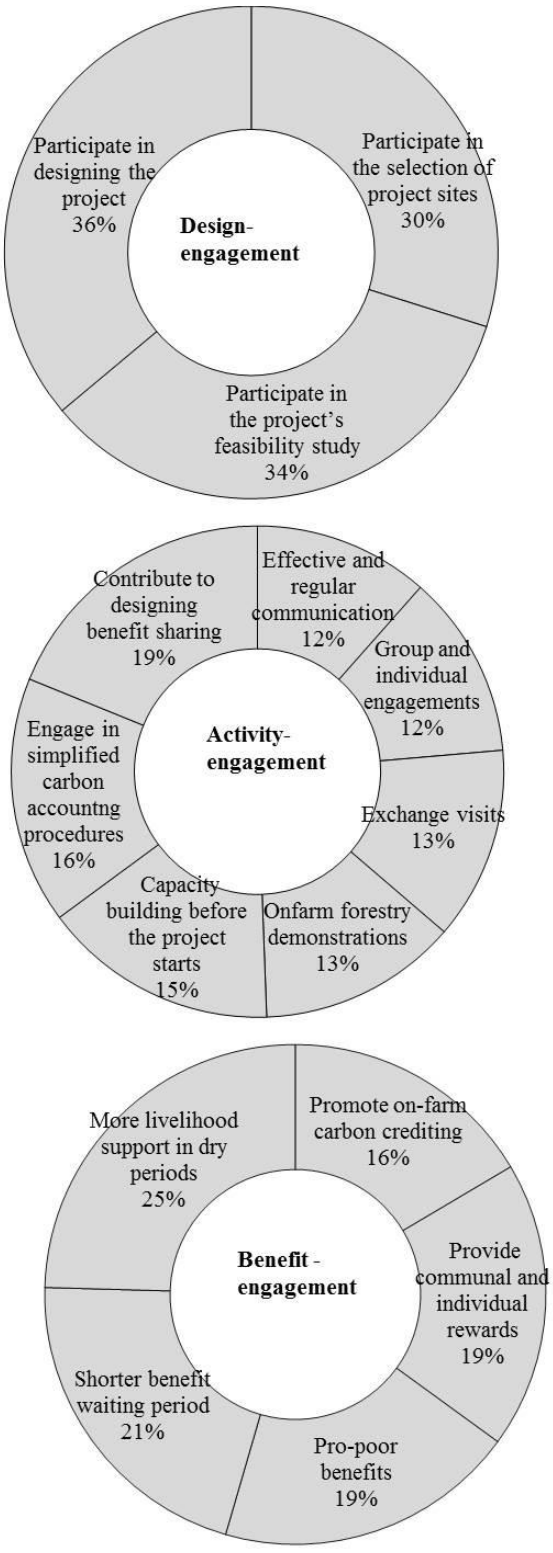

Figure 8.6: Community expectations from participation and benefits.

Twenty two out of 24 lessons related to community participation while only 10 of the 24 lessons were related to emissions reductions outcomes (Table 8.4). About 12 (50%) lessons were purely relevant to community expectations with no clear resonance with emissions reductions requirements. Eight lessons, including the need for projects to focus on conservation and development, and the avoidance of elite capture, related to both participation and emissions reductions.

Table 8.4: Linking lessons from ICDP eperiences with REDD+ implemntation outcomes of emissions reductions and community participation; World Vision (WV), National parks (NP).

Lessons from ICDP experiences	Nature of lessons from ICDP experiences	Relevance		Action by the REDD+ project
		Community rights/interests	Emission reduction	
1. Exclusion in design (NP and WV))	Design_ Eng. (-)	x		Uncorrected
2. Entry through local elites (NP and WV)	Design_ Eng. (-)	x		Uncorrected
3. Coordination and support from the national government (NP)	Activity_ Eng. (+)		x	Adopted
4. Protected area approach (NP)	Activity_ Eng. (+)		x	Adopted
5. Use of local labor and resources (WV)	Activity_ Eng. (+)	x	x	Adopted
6. Focus on both conservation and development (WV)	Activity_ Eng. (+)	x	x	Adopted
7. Flexible choices of activities (WV)	Activity_ Eng. (+)	x		Not adopted
8. Partnership with other projects (WV)	Activity_ Eng. (+)	x		Not adopted
9. Exclusion in activities (NP)	Activity_ Eng. (-)	x	x	Corrected
10. Poor communication (NP)	Activity_ Eng. (-)	x		Corrected
11. Poor women representation in activities (NP&WV)	Activity_ Eng. (-)	x		Corrected
12. Short term unsustainable activities (WV)	Activity_ Eng. (-)	x		Corrected
13. Short notices at intervention (WV)	Activity_ Eng. (-)	x		Corrected
14. Poor follow-up of activities (WV)	Activity_ Eng. (-)	x	x	Uncorrected
15. Immediate benefits (WV)	Benefit_ Eng. (+)	x		Not adopted
16. Pro-poor benefits during droughts (WV)	Benefit_ Eng. (+)	x		Not adopted
17. Allow firewood collection, grazing (WV)	Benefit_ Eng. (+)	x		Not adopted
18. Focus on conservation and development	Benefit_ Eng. (+)	x	x	Adopted
19. No livelihood benefits (adaptation) (NP)	Benefit_ Eng. (-)	x	x	Corrected
20. No compensation on damages by stray elephants (NP)	Benefit_ Eng. (-)	x	x	Uncorrected
21. No employment of local people (NP)	Benefit_ Eng. (-)	x		Corrected
22. Unfulfilled promises (WV)	Benefit_ Eng. (-)	x		Corrected
23. Elite distribution of resources (WV)	Benefit_ Eng. (-)	x	x	Corrected
24. Individualized benefits (WV)	Benefit_ Eng. (-)	x		Corrected

In terms of design-engagement, negative lessons such as exclusion from design, were related to community expectations on participation. On activity-engagement, a key lesson linked to emissions reductions was coordination and support from national governments as a means of avoiding emissions leakage. However, this did not relate well with community expectations because of their experiences with centralisation regimes. Lessons on benefit-engagement, such as a shorter benefit waiting periods and aligning benefits to local livelihood calendars, related more to community participation and do not fully resonate with emission reduction requirements that take time to attract payments.

8.5. Discussion

8.5.1 Lessons from ICDP experiences

The overall aim of this Chapter was to identify and discuss lessons that a REDD+ project could adopt from ICDP experiences in order to meet its expected implementation outcomes. While the primary data here is contextual and largely reliant on community interviews, the dynamic ways through which REDD+ adopts lessons, the process by which these lessons align to REDD+ expected implementation outcomes, and the implications of such processes for the broader REDD+ discourse, are all relevant to REDD+ in other developing countries. From the outset, a number of perceived differences between REDD+ and ICDPs were raised by respondents. These differences mainly revolved around the level to which the projects consult in their design and implementation as well as modalities of benefit sharing. While such perceived differences could be related to households' interests, they are a reflection of how the differing design and goals of REDD+ and ICDPs manifest at implementation. For instance, the REDD+ project was subject to standardised performance checks and market conditions (e.g. delivery of carbon) that delay payments required to serve the livelihood needs of local communities. In contrast, the World Vision project received upfront funds to directly support

livelihoods with little or no delays imposed by market conditions, thus respondents associated the World Vision project with shorter benefit waiting periods compared to REDD+. From a broader perspective, this indicates that even though REDD+ and ICDPs are engaging the same communities, the differences in their goals and institutional arrangements necessitates careful filtering of ICDP experiences to reveal lessons that could fit the expected implementation outcomes for REDD+ (Blom et al., 2010).

The REDD+ project was able to draw on a variety of lessons from the ICDPs, some of which complemented its work while others impeded its work and/or needed to be corrected. In terms of design-engagement, the need to change the top-down design of initiatives was a key lesson emerging from the ICDP experiences. However, this approach was retained in the REDD+ project as the local community were excluded from contributing to its design. Community members had a general feeling that the REDD+ project was a package dropped from "heaven", with new carbon standards that did not necessarily reflect the value this community attached to forest resources. REDD+ design draws from international procedures and standards negotiated as part of the UNFCCC process where representation of local views has been reportedly weak (Schroeder, 2010, Cerbu et al., 2011, Minang et al., 2014). Studies (e.g. Barnsley, 2009, Griffiths, 2008) have raised concerns that such top-down designs are recipes for elite capture of community participation and benefit rights because local communities have little understanding of the project contents. For instance, in its bid to gain community acceptance of the externally designed activities the REDD+ project used community elites such as Chiefs in the beginning, who then became the only legitimate entry points, shaping the nature and contents of initiatives to the dissatisfaction of most community members.

Community exclusion in REDD+ design, if not corrected, could compromise community participation, which is one of the implementation outcomes REDD+ is expected to achieve (Thomson et al., 2011; Ghazoul et al, 2010; Sikor, et al., 2010). As such, whilst REDD+ design is largely controlled by global processes, community knowledge about forest areas, tree species and even hotspots of deforestation could usefully inform REDD+ design prior to implementation. At implementation (activity-engagement), community participation in activities and benefits are emphasised by the UNFCCC safeguards (appendix 1/COP16) and project standards (CCBS) as desired implementation outcomes of REDD+ initiatives. These guidelines steered the REDD+ project to initiate various interventions to improve on particular lessons from ICDP experiences.

8.5.2 Adopting lessons from ICDPs: interventions and implications

A number of interventions shaped the implementation of the REDD+ project. These approaches entailed various actions and institutional choices that improved on ICDP experiences. A key approach was the recognition of a variety of land tenure arrangements that usefully brought together, under the REDD+ project, lands claimed and utilised by different social groups. Approaches that consider various tenure regimes and social interests in emissions reductions have been conceptualised as landscape approaches (Minang et al., 2015). Proponents of landscape approaches argue that they can help REDD+ attend to the interconnections between forests and other land uses, as well as the socioeconomic attributes governing these land uses (Minang et al 2015; Freeman et al., 2015). In this study, this landscape approach improved on ICDP experiences where focus had been directed towards isolated land uses, e.g. wildlife areas (national park) or integrated programme areas (World Vision). Consolidating the various land uses e.g. wildlife corridors, group ranches, communal lands and even private lands, and social claims

associated with these lands into an emission reduction scheme, improved community participation in project activities. In contrast to the ICDPs, this landscape approach also contributed towards addressing the landscape wide drivers of deforestation.

In efforts to realize the landscape approach in practice, reshuffling of various local institutions was observed. A key observation was the reallocation of decision making power and resources to the newly formed Locational Carbon Committee instead of the negatively perceived State based Locational Development Committee. This resulted in a general perception that the REDD+ project was more consultative at implementation than both the ICDPs. Engaging with local institutions that the local community think are fair to them improved on positive experiences from the World Vision project and corrected the exclusion of local communities from decisions and benefits experienced with the national park. Ribot (2011) has conceptualised such institutional choices as institutional recognition or de-recognition where power and resources are transferred from one authority (de-recognition) to another authority (recognition). Studies view such institutional choices as crucial in allowing projects to work with democratic institutions (Ribot, 2011, Maraseni et al., 2014, Corbera et al., 2009).

The landscape approach and institutional (de)recognition in activity-engagement build into benefit-engagement. Bringing together various lands under the REDD+ project meant that all social groups claiming these lands were entitled to benefits. Specifically, the benefit sharing mechanism targeted mainly the poor who pose the greatest threat to the forest. These poor peasants mainly laid claim to communal forests. Through the REDD+ project they were entitled to all the carbon revenue generated from these communal forests, which helped to dissuade them from encroaching protected forest for charcoal burning. Additionally, while most carbon is generated from ranches owned by a relatively small number of richer land owners, redistribution of carbon revenue to the poor was a crucial indication of pro-

poor benefit sharing mechanisms. Benefit redistribution in favour of the poor has been supported as a pro-poor strategy that could enhance equity and social justice in light of monopoly of forests by the State and other private groups (Atela et al., 2015). In this case, pro-poor approaches usefully corrected the no-benefit (negative experiences) associated with the governmental national park and improved on the relatively positive benefit-engagement experiences associated with the nongovernmental World Vision project.

Overall, the intervention approaches (landscape approach, institutional choices and pro-poor approach) through which the REDD+ project improved upon ICDP experiences contributed to the project's efforts to achieve implementation outcomes in the context of sustainable development.

8.5.3. Lessons in the context of expected REDD+ implementation outcomes

Findings show that most lessons from ICDP experiences relate to community participation while a few could be clearly linked to emissions reductions outcomes. This can be linked to a poor understanding of emissions reductions goals and carbon commoditization under REDD+ at the local level. The emissions reductions outcome was designed via a top-down approach that has left little room for local understanding of interventions and transparency measures associated with carbon (Leach and Scoones, 2013). The bias of lessons identified in this study towards community interests can further be explained by the fact that the REDD+ project mainly utilised the local community as a conduit for drawing lessons from the ICDPs. Analysis of actors/stakeholders involved in the lesson adoption process could not identify a direct platform for sharing lessons between ICDPs and the REDD+ project.

The use of local communities as a lesson learning conduit appears to be cost-effective because it additionally helps the project to adhere to the UNFCCC safeguards requirements on community participation in REDD+ projects. However, purely drawing lessons from community experiences is a source implementation deficit. Community members may align experiences more with their livelihood expectations and interests, which they understand better than global emissions reductions. Consequently, the project finds itself pulled between two forces; 'community expectations' and 'emissions reductions expectations' both with equal significance to its activities and success. For instance, while achieving emissions reductions standards such as leakage avoidance (Wunder, 2008) require that REDD+ be coordinated by national institutions, these State institutions are perceived negatively by local communities due to past experiences.

The State is the legitimate country representative in REDD+ policy negotiations and is expected to be the technical and financial link between countries and international REDD+ processes. However, the negative perception that the Kasigau people had raises questions as to whether the State can ably oversee a successful REDD+ process. Should the Kasigau REDD+ project (and other sub-national projects elsewhere) limit their engagement with State institutions in line with community expectations? Such conflicting interests may complicate institutional connectedness between sub-national REDD+ projects like Kasigau and relevant national institutions, thereby creating implementation deficits. As such, there is a need for ways to ensure adequate community participation without compromising emission reduction goals. A starting point would be to address community participation and emissions reductions as trade-offs. Addressing such trade-offs could build on lessons that resonate with both community participation and emission reductions.

Additionally, for lessons from ICDP experiences to be informative for REDD+ implementation outcomes, there is a need fora lesson learning platform that goes beyond just community consultation. Such a platform is needed because certain actors, e.g. the State, that have been implementing ICDPs still control assets and institutions upon which REDD+ depends (Angelsen et al., 2008). If the State is not consulted and integrated into the lesson learning process, they may retain their ICDP approaches and draw REDD+ into failures associated with these approaches.

8.6 Conclusion

This study has examined implementation lessons that REDD+ can draw from ICDPs in order to adapt its global designs to the local setting. The study shows that ICDPs provide diverse lessons, both negative and positive for REDD+. The REDD+ project has usefully improved community participation in implementing activities but has no community input in its globally linked design and thus appears to be retaining the widely critiqued top-down approach used by the ICDPs. The study has also shown that community consultation provides a good conduit through which REDD+ can learn lessons, but if utilised in isolation this could result in institutional disconnectedness, especially between sub-national projects and national institutions. Lessons from ICDP experiences are necessary for effective REDD+ implementation but can only be useful if the process of adopting them is clear and cognisant of relevant stakeholders. This is vital if subnational REDD+ projects are to be sustainable and informative fornational and global policies.

Chapter 9

Synthesis: sources of institutional conflicts in REDD+ design and implementation in the context of sustainable development[26]

9.1. Introduction

This thesis aimed to identify and discuss sources of institutional conflicts in designing and implementing REDD+ in the context of sustainable development. It does so by examining the process of designing REDD+ rules at the global level and the implementation of these rules at the national and local levels drawing on evidence from Kenya. The previous empirical Chapters (Chapter 5-8) have pursued a multilevel analysis addressing specific objectives. The Chapters have shown that designing and implementing REDD+ in the context of sustainable development is determined by mutually interlinked actors, policies and socioeconomic factors across global, national and local levels. Studies recommend that such multilevel analysis provide scientific insights and informative lessons needed for REDD+ effective design and implementation (Visseren-Hamakers et al., 2012, Corbera, 2012, Korhonen-Kurki et al., 2013).

This Chapter synthesises findings from the empirical Chapters. It links the key findings to the overall thesis aim and analytical framework 'the Integrated Institutions and Development Analytical Framework'.

[26] Atela JO., Minang PA. Quinn CH. and Duguma LA. (In preparation). Designing and implementing REDD+ in the context of sustainable development: a multilevel analysis of sources of institutional conflicts. In preparation for Environmental Science and Policy.

9.2. Revisiting key findings in the context of IDAF

This section revisits the key findings in each of the four empirical Chapters representing objective 1-5.

9.2.1. Objective 1: To explore the process of designing REDD+ at theglobal level with specific focus on the agency of African States inthe process

This objective is addressed in Chapter 5 and constitutes the existing policy environment and the action arena of the IDAF. Subsection 5.3.1 shows that the process of designing REDD+ at the global level involves multiple actors. These actors apply their expertise and mode of governance to execute various roles in designing methodology, financial and safeguard components of REDD+. The global process formally recognises States as the most legitimate mode of governance to design and enforce REDD+ rules (subsection 5.3.2). However, the agency of African States targeted for REDD+ is weak partly due to economic limitation which impedes the continent's institutional and technical representation in the global process. Even though economic constraints are commonly blamed as impediments to Africa's agency in international climate regimes (Najam et al., 2003, Nhamo, 2011, Makina, 2013), findings point to the possibility that efforts to secure REDD+ funds also contribute to the weak agency. In this, countries focus more on securing funds rather than proposing technical solutions (subsection 5.3.3). The findings about Africa's weak agency in climate regimes may not be new but because REDD+ is spatially and institutionally targeted at Africa, this weak agency is a recipe for implementation deficits at the national level.

9.2.2. Objective 2: To analyse how global REDD+ rules are implemented at the national level

This objective is addressed in Chapter 5 and is an intercept between existing policies and the action arena of the IDAF. The weak agency of Africa coupled with interest in REDD+ funds create gaps in technical capacity and funding required for implementing the global rules at the national level. In Kenya, REDD+ implementation relies on technical solutions and funds from resource endowed multilateral intermediaries. However, the bid to secure the funds reinforces existing path dependency in national institutions. The forestry sector monopolises and controls REDD+ activities to the exclusion of key sectors e.g. lands and agriculture that are linked to deforestation (subsection 5.3.3, 5.3.4). Such sectoral exclusion is reportedly an impediment to institutional reforms needed to address underlying drivers of deforestation in many developing countries (Minang et al., 2014b). This Chapter further reveals that sectoral exclusion overshadows relevant cross-sectoral expertise required for REDD+ (subsections 5.3.3 and 5.4.2).

The Chapter also shows poor participation of local communities in the national process. Studies have attributed exclusion of communities in national REDD+ implementation to lack of decentralisation of forest management and continued monopoly of forests by the State (Brown et al., 2011, Chhatre et al., 2012, Minang et al., 2014, Cerbu et al., 2011). On the contrary, the Kenyan case reveals that despite legally decentralising forest management to CFAs, local communities are still not involved apparently because they lack skills needed for the formulation of carbon requirements (subsection 5.3.3, 5.3.4). Overall, the Chapter demonstrates evidence on ways in which weak agency of Africa in international climate negotiations play into existing institutional gaps at the national level to impede effective implementation of REDD+. Such institutional gaps could also create conflicts between global REDD+ rules and existing socioeconomic circumstances.

9.2.3. Objective 3: To analyse the interactions between globally linkedREDD+ projects with sub-national socioeconomic factors

This objective is addressed in Chapter 6 and is part of the action arena of the IDAF. The Chapter shows that REDD+ projects in Kenya avoid implementation within poor communities whose socioeconomic circumstances could impede delivery of carbon funds. Subsections 6.3.2, 6.3.3 and 6.3.4 show that 13 (87.6%) of the 15 REDD+ projects in Kenya are hosted in low-vulnerability areas while relatively poor areas, host only two of the projects. This finding challenges the generic notion that REDD+ is pro-poor simply because it targets developing countries (Angelsen et al., 2008c, Stern, 2006). Evolving REDD+ design rules that focus more on carbon based funding appear to be mainly feasible within richer communities of developing countries (Brown et al., 2011). This in effect limits participation of poor communities in REDD+ implementation and negates poverty alleviation outcomes expected from implementing REDD+ (Thompson et al., 2011, Vatn and Vedeld, 2013).

The Chapter also shows poor involvement of the national government in the demonstration projects due to lack of capacity within government departments to design and assess the global standards to which the projects are designed (section 6.3.4 and 6.3.5). The Chapter argues that while the private sector and consultants dominate the REDD+ design process and on-ground demonstrations, it is the State which is expected to enforce the REDD+ rules within a developing country like Kenya (Chhatre et al., 2012). This could result in institutional conflicts between the State and the private sector especially given that States expect to control REDD+ activities and funds (Brown et al., 20111). As revealed in the next objective, such conflicting interests impede State's commitment to support enabling conditions for local level implementation of private REDD+ projects.

9.2.4. Objective 4: To analyse the interaction between a globally linked REDD+project with local livelihood assets

This objective is addressed in Chapter 7 and constitutes the action arena and the outcome parts of the IDAF. The Chapter builds on Chapter 6 which investigated the interaction of projects with sub-national socioeconomic settings. The Chapter draws evidence from an ongoing REDD+ project 'the Kasigau Corridor project'. Subsections 7.3.3, 7.3.4, 7.3.5 reveal that while global REDD+ rules emphasise carbon as a funding condition,on-ground implementation requires projects to support pro-poor livelihoods in order to achieve carbon and associated funds. The need for REDD+ to be pro-poor at implementation has been recommended in other studies (Boyd 2007; Smith and Scherr 2003) but this Chapter reveals specific pro-poor strategies that projects could adopt. Such strategies include redistribution of carbon revenues between project proponents/rich land owners and the poor and investing in pro-poor assets such as water projects, education and microeconomic enterprises. Benefit redistribution beyond property rights is crucial considering that the State and other private groups control most tropical forests. Payments based on property rights as required by the global standards could generate relatively low benefits to the poor in light of the burden they bear from climate change (Lyster, 2011). As such, benefit sharing remains a key source of institutional interplay between REDD+ design and the local setting. Findings further reveal that this interplay is constrained by the tension between strict carbon requirements that limit trade-offs between forest protection and livelihoods, fluctuating carbon prices that create uncertainty in funds needed for project's operations and livelihoods and most critically, national institutional gaps that do not support enabling conditions for positive interplay.

9.2.5. Objective 5: To identify and analyse lessons that a globally linked REDD+project can draw from pre-REDD integrated conservation and development projects (ICDPs)

This objective is addressed in Chapter 8 and is part of the action arena and the outcome part of the IDAF. The Chapter investigates how the Kasigau project interacts and draws lessons from ICDPs (a governmental national park and a non-governmental world vision project). The Chapter shows that despite differences in design procedures between the REDD+ and ICDP projects, the ICDPs offer diverse community engagement and benefit sharing lessons relevant for adapting the REDD+ project to the local context (subsection 8.5.2). The REDD+ project improved on some positive lessons such as community networking and local institutional choices to enhance community representation in implementing activities. These intervening approaches indicate the potential for REDD+ to create a shift in local resource governance and correct past ICDP mistakes. This finding relates to literature that report that community mobilization is a key achievement of ICDPs that could help REDD+ adapt its global designs to local context (Minang et al., 2013).

The Chapter reveals that the globally-linked project design, with little community input, reinforces the commonly critiqued top-down intervening approach as the ICDPs. There was also a lack of collaborative engagements between the REDD+ and ICDP projects. This positioned the local community as the main conduit conveying lessons between the projects. Most lessons conveyed through the local community are however characterised with expectations that sometimes overshadow REDD+ design rules and most importantly, disconnect the REDD+ project from State institutions. The Chapter acknowledges that State institutional gaps enable the REDD+ project to gain legitimacy among the local people. However for projects to be sustainable and informative to national and global policies, the State should be engaged in the lesson learning process.

9.3. Institutional conflicts in REDD+ design and implementation

This section discusses the key findings in the context of the study's aim. The study's aim was to identify sources of institutional conflicts in designing and implementing REDD+ in the context of sustainable development. Sustainable development represents the outcome part of the IDAF. The discussions here identify sources of institutional conflicts that cut across the empirical findings and link these to literature and sustainable development. The findings are discussed along three crosscutting themes that have emerged from the empirical Chapters (1) representation in REDD+ decisions (2)institutional/policy divergences in REDD+ (3) carbon versus livelihoods in REDD+.

9.3.1. Representation of actors in REDD+ design and implementation

Representation of actors in various REDD+ decisions determines how much varied policy and socioeconomic interests are accounted for in REDD+ design and implementation (Ribot, 2009). This study has applied representation as an indicator of actor participation and their agency in designing and implementing REDD+. Equitable representation/participation of actors is an expected sustainable development outcome of REDD+.

Findings reveal that actor representation in the global design process nests into national level implementation and influences on-ground REDD+ activities at the local level. At the global level where REDD+ is designed, Chapter 5 revealed that Africa is technically and institutionally underrepresented and this weakens the continent's agency in the design rules.

The causes and consequences of Africa's underrepresentation are discussed in section 5.4. In the analysis, the study re-emphasises views in other studies (Makina,

2013, Najam et al., 2003) that economic constraints causes Africa's underrepresentation in REDD+ by limiting the continent's expertise and delegations to the global process. Findings additionally highlight an often overlooked source of this underrepresentation and this involves interest in securing REDD+ funds for economic development or as part of climate compensation. This interest makes countries overlook their technical obligations in REDD+ and other climate regimes. In the context of literature, underrepresentation of African States in REDD+ challenges the generic notion that States have the ultimate authority in designing REDD+ and that it is mainly the local communities who are underrepresented (Thompson et al., 2011). Given that States are expected to govern the implementation of REDD+ within their jurisdictions, there is need to reinforce their capacity to inform the design of REDD+ and other global environmental regimes. This is crucial in the context of emerging powerful non-State actors who may use resources to shape design rules wtiht little resonance with the socioeconomic and policy realities of Africa (Gupta and van der Zaag, 2009). The consequences of underrepresentation mainly manifest at national and local level implementation including poor stakeholder engagements at the national level and conflicting institutional legitimacy at the local level.

The Kenyan case reveals that the underrepresentation at the global level creates technical and institutional capacity gaps in implementing REDD+. The national process in Kenya relies on financial and technical support from the FCPF and consultants(section 5.3.3). The external expertise and funds, if adequately integrated with existing institutions of acountry, could promote technology transfer for REDD+ as expected by the UNFCCC and Rio declaration on sustainable development (UN, 1992). The Kenyan case contrasts this expectation. The FCPF support comes with carbon-based funding conditions that play into existing path dependencies in Kenya's resource management decisions. In the bid to deliver

carbon funding, the forestry sector monopolises the process while key sectors, local communities and the private sector are underrepresented in the national process yet these are the main actors in Kenya's deforestation history (Ndungu Land Commission, 2004).

The implications of sectoral underrepresentation for REDD+ are discussed in section 5.4. The analysis shows how poor sectoral representation retain status quo by failing to factor in underlying drivers of deforestation in the national REDD+ agenda (subsection 5.4.2). Additional concern is that the poor sectoral representation reduces legitimacy of REDD+ across sectors and this subdues relevant cross-sectoral expertise required for the programme. As such, while literature e.g. Angelsen et al. (2012), and the UNFCCC text (decision 4/CP 15), call on 'external' actors to support REDD+ capacity in developing countries, little attention has been paid to existing cross-sectoral expertise that is often subdued by sectoral underrepresentation in the national REDD+ process. Institutional reforms especially sectoral integration in Kenya and other African countries could be a crucial first step towards leveraging inbuilt cross-sectoral expertise for REDD+. This could minimise dependence on external expertise from consultants and resource endowed actors.

At the local level, the poor expertise at the national level limits the State's ability to appraise on-ground REDD+ demonstration projects (Chapter 6 and 7). Additionally, decisions emanating from the excluded sectors negatively affect the implementation of the Kasigau project. The lands sector for instance was in the process of discretionarily subdividing group ranches into individualised pieces yet it is from these group ranches that the Kasigau project draws its apparent success (Chapter 7 and 8). The actions by the lands sector contrasts expectations of the UNFCCC that States will assess and support REDD+ implementation in the interest of the global mitigation and local communities (appendix 1/COP. 16). Therefore,

cross-sectoral approach to REDD+ is crucial if capacity for REDD+ implementation is to be improved, deforestation curbed, emissions reduced and carbon money secured.

Other than sectors, local communities are also underrepresented in the global and national processes. This complicates local level implementation because these communities are the custodians of forests targeted for REDD+. Their underrepresentation is a source of REDD+ implementation deficit. At the global level, studies (Schroder, 2010, Ghazoul et al. 2010, Sikor et al., 2010, Thompson et al., 2011) attribute underrepresentation of local communities to monopoly of the global process by the State and powerful private sector actors. Peculiar to these studies is that States and local communities are addressed as separate institutions yet these communities are expected to be part of State's socioeconomic and policy agenda in the global process. Ideally, the underrepresentation of African States as evidenced in this study (Chapter 5) would imply that these States are unable to adequately represent the interests of local communities residing within their jurisdictions. Even though a host of international civil society groups have emerged to represent local communities in the global process, safeguarding communities' interests in REDD+ will mainly depend on the States. The States control legal institutions in developing countries where these communities live.

Strengthening representation of States in the global process may have a knock effect on improved representation of local communities in the global process. This may however depend more on how much local communities are represented in the national process (Schroder, 2010). This study reveals that local communities are underrepresented in the national process. This is not only a concern in Kenya (subsection 5.3.4) but also in other African countries e.g. Cameroon, Congo (Brown et al., 2011) and elsewhere e.g. Vietnam, Peru (Minang et al., 2014b). A key argument in literature is that lack of decentralised resource management and

monopoly of forests by State institutions are the impediments to adequate community representation in national resource management decisions. The Kenyan case slightly contests this notion. Findings reveal that despite legally decentralised forests management units 'the CFAs', local communities are still underrepresented mainly because they lack the necessary technical skills to inform an efficient MVR system for delivering carbon funds. This casts doubts on the notion that decentralising natural resource management automatically translates into adequate community representation in decision making. The role of decentralisation in empowering local communities in resource management requires additional research attention. As discussed in subsection 5.4.3, underrepresenting local communities in global and national processes compromise the participation and benefits rights of these communities and this contradicts the Rio declaration on sustainable development and REDD+ safeguards.

Underrepresentation of local communities in the national process manifests at the local level where the Kaigau project is being impmented. This occurs in a amanner that creates institutional complexities for REDD+ (Chapter 7 and 8). The poor representation of local communities in State decisions whether for REDD+ or other ICDPs such as national parks appears to shift community allegiance from the State to the private sector actor 'thye Wildlife-Works Co Ltd' implementing the Kasigau project. For engaging the community in project implementation and benefits, the local community favourably perceived the private investor but negatively perceived the State for excluding them from managing and benefiting from wildlife resources in the area. The positive perception of the private investor takes place despite the fact that the local community was not represented in the project's design process (subsection 8.4.3). This scenario corroborates with claims in literature that non-State actors, with stronger representation/agency in global regimes, could utilise institutional gaps within States to gain legitimacy over States (Gupta and Lebel,

2010). Given that the State is expected to coordinate the implementation of REDD+, such shifting allegiance complicates multilevel institutional arrangement and political goodwill for States to do so.

As such, how to balance the UNFCCC expectations of States and community negative perceptions about States in most parts of developing countries (Shackleton et al., 2002), is a major dilemma for REDD+.

9.3.2. Institutional divergence/conflicts in REDD+ design and implementation

The previous subsection indicates that representation of various actors in the REDD+ design and implementation may create institutional conflicts (especially where certain actors are underrepresented). This study shows that multiple actors including States and non-State actors e.g. the private sector, scientific bodies, civil society organisations complementarily contribute expertise, resources and enforcement mechanism to design REDD+ (Chapter 5). However, within the complementing actor roles, lie interests that create conflicts especially in the context of varied capabilities of actors.

In the global design process, a key conflict is observed in the interests of African States to secure REDD+/climate funds at the expense of contributing technoclogical solutions. While Africa's economic constraints and climate vulnerability necessitates support from developed countries and private sector actors responsible for climate change, focus on securing REDD+ finances overshadows Africa's technical obligations. In this, key conflicts arise where the technical procedures e.g. strict carbon regulations upon which funding is based result in conflicting institutional processes at the national and local levels.

At the national level, the poor representation of key sectors in the bid to deliver carbon funding to the forestry sector creates negative interplay between REDD+

technical requirements and certain policies of the underrepresented sectors (subsection 5.3.5). Policies such as resettlement in the lands sector and agricultural mechanisation in the agriculture sector negatively interplay carbon requirements such as emission permanence, leakage control and additionality. Both resettlement and agricultural commercialisation policies are historical drivers of deforestation in Kenya (Ndungu Land Commission, 2004) and other African countries (Lawson, 2014, Lovell and Moriarty, 2003). Studies have identified such conflicting sectoral policies as impediments to institutional transformation needed for REDD+ to work effectively (Alemagi et al., 2014, Brockhaus et al., 2014). This study further demonstrates how and where such conflicts actually occur.

In the context of literature, evidence on conflicting REDD+ rules with national sectoral policies brings a new insight into the theory of institutional interplay. The theory indicates that if interacting instituions/rules have similar objectives, then the outcome of the interactions would be positive (Young, 2002). However, this study demonstrates that even though interacting institutions could have similar objectives, a negative interplay may result from the process of designing these institutions. Therefore, institutional analysis in REDD+ and other regimes should pay attention to the process of designing rules as a source of negative interplay in multilevel institutional interactions.

Another source of institutional conflict arises from competing roles between the State and the private sector and particularly over the control of REDD+ funds. While the State through the forestry sector dominates the national level REDD+ implementation in Kenya and other developing countries (Minang et al., 2014) and expects to benefit from REDD+ funds, the ongoing REDD+ demonstrations contrast this expectation. Most sub-national demonstration projects in Kenya are managed by international private and consulting companies that are able to mobilise resources, design and implement these projects. The State on the other hand

manages less than 5% of the Kenyan projects (subsection 6.3.3). Even at the global level, the private sector actors dominate over 80% of forestry credits (including those of REDD+) and this trend is projected to persist into the future (Peters-Stanley and Gonzalez, 2014).

On one hand, the private sector is a key player in mobilising the much needed funds for REDD+. On the other hand, Kenya and other African States expect to control the REDD+ funds and use these to support economic development (subsection 5.4.2). This complicates the institutional arrangments for the flow and control of REDD+ funds and could have implications on effective REDD+ implementation. States may withdraw their political goodwill for REDD+ if most funds remain under the custody of the private sector. Similarly, the private sector may withhold resources if REDD+ funds are directly under States' control. Even though States are building their hopes on the fact that the UNFCCC COP has given them the legitimate authority to manage REDD+ through national MVR system (decision 2/CP 17), the dominance of the private sector in REDD+ investments may only leave a meagre share of REDD+ funds for the States i.e. assessment fees, licensing fees rather than the actual financial flows from carbon credits. The poor representation of the private sector in the national REDD+ process in Kenya (subsection 5.3.4) and elsewhere e.g. Cameroon (Alemagi et al., 2014) leaves little room for harmonising the competing interests. While some studies e.g. Peskett et al. (2011) recommend the establishment of national REDD+ fund to harmonise such competing interests, this is mainly feasible if there were a balance between public and market based funds for REDD+. However, as it stands now, market/private funds dominate and are likely to remain so in the future.

The implications of the ensuing conflict between the State and the private sector manifest at the local level implementation of REDD+. Given that the Kasigau project is a private initiative, there is little involvement of the State either in

collaborative activities or support to enabling assets for the project's work. Findings also reveal a perception among the national REDD+ stakeholders that the Kasigau project is a private entity operating with its own funds and the State wouldn't want to interfere (Chapter 7). The dilemma here however is that the State is the institutional custodian of most enablers for REDD+ whether land tenure structure, water supply procedures or enforcement of carbon rights. As such, private projects may have the resources to design REDD+ and support its enablers locally but realising this private sector potential would depend on the political goodwill and support from the State. There is need to harmonise the private sector and States' interests in REDD+ but this remains a wider political issue.

Overall, the institutional conflicts arising from both within the State and between the State and other non-State actors especially the private sector and local communities are sources of REDD+ implementation deficits. These conflicts are impediments to collective action for sustainable development through REDD+. While conflict between the State and the private sector centers more on the control of REDD+ funds, achieving these funds are conditioned by strict carbon requirements that create yet another source of conflict especially with regards to livelihood expectations of local communities.

9.3.3. Carbon versus livelihoods in REDD+ design and implementation

Improved livelihoods at the local level and development at the national level constitute the poverty alleviation actions and sustainable development outcomes expected from implementing REDD+ (Appendix 1/CP. 16). However, tension between carbon and livelihoods is an impediment to achieving these outcomes. The tension emanates from the global design process and builds into local level implementation. At the global level, negotiations have agreed on carbon based funding for REDD+. Livelihood outcomes are documented as part of safeguards

but are not part of the funding conditions (subsection 5.3.1). Carbon based funding is mainly attributed to the need for credible carbon credits to ensure performance in mitigation and to meet the requirements of international carbon markets. While credible mitigation is a global need, market based carbon credits are mainly steered by for-profit multilateral private companies and intermediaries expecting to offset their emissions or as part of capital investment into an expected post-Kyoto deal (subsection 5.3.3). Indeed these for-profit private companies have utilised their strong agency/representation in the global process (subsection 5.3.1)to get the carbon based funding condition into the global rules. However, for the local communities and African States, their weak agency/representation in the global process might have compromised their ability to push for livelihoods as part of funding considerations even though their submissions suggested so (see subsection 5.3.2).

While the global REDD+ funding rules already expect REDD+ to achieve credible carbon credits, national and local level expectations lie more in development and livelihoods. The Kenyan case reveals that the global carbon standards and funding conditions have been entrenched at the national level but with little or no funding tied to local livelihoods. The carbon funds could positively support national level development if transparently managed. The strict carbon requirements however conflict local livelihoods particularly because these livelihoods have been dependent on the forests that REDD+ targets to protect.

Scholars have cautioned that a transition to a pure carbon based approach to REDD+ could restrict/harm forest based livelihoods (Brown et al., 2011, Pokorny et al., 2013). Project investors could be unwilling to incur costs of alternative livelihoods for local communities, they argue. Chapter 6 (section 6.3) of this study shows that indeed strict carbon standards push REDD+ investments away from

poor communities especially those inhabiting dryland areas dominating most parts of Kenya. Most private REDD+ projects avoid poor communities because the socioeconomic circumstances of these communities' could impede delivery of carbon funding and threaten their investments (subsection 6.3.3). This finding challenges claims in some studies that simplified standards and diversified funds enable REDD+ to be pro-poor compared to the CDM (Bond et al., 2009, Diaz et al., 2011). As such, evolving REDD+ design aimed at securing carbon funds appears to favour livelihood opportunities for relatively richer segment of a developing country but constrains livelihood opportunities REDD+ could offer to the poor.

Strict carbon rules that are not feasible with the circumstances of poor communities could also compromise the overall forest protection and emissions reduction objective under REDD+. This could take place in situations where forest resources in poor areas are left out of REDD+ scheme thus become subjected to overexploitation while those in relatively richer areas are protected. Such inequalities constrain achievement of environmental sustainability as frontiers of deforestation such as charcoal production could shift from restricted forests in richer areas to poor neglected areas.

Inequalities in carbon investments exacerbate social and environmental inequalities. This contravenes sustainable development which aims to spatially and temporally harmonise resource conservation with development (UNCED, 1992, Matthews, 2004) (subsection 3.5.5). Therefore, in preparing national climate smart development plans and REDD+ strategies, countries should legislate affirmative action on equitable distribution of REDD+ investments. Such plans should be informed by additional investigations into the potential opportunities and incentives required to support REDD+ implementation in poor areas especially those occurring in dryland ecosystems.

The tension between carbon requirements and livelihoods manifests at the local level. Subsections 7.3.5, 7.3.6 and 7.3.7 specifically show that while global REDD+ design rules and the project's verification standard (VCS) are mainly focused on carbon, delivering this carbon depends more on the livelihood needs of the local people especially alternatives that keep them away from forests than the forest protection strategies themselves. The need for REDD+ to adopt pro-poor approach as part of enabling condition for successful implementation at the local level has been emphasised in literature (Boyd 2007, Thompson et al., 2011, Vatn and Vedeld, 2013, Pokorny et al., 2013) (see discussions in section 7.4). However, Chapter 7 concerns that the Kasigau project's effort to support pro-poor livelihoods is constrained by strict carbon requirements that limit trade-offs between forest livelihoods and forest protection. This tension between carbon and livelihoods is the key source of certain negative impacts the community associates the project with. Even though an equitable share of carbon revenue was channelled to local livelihood initiatives, this equitable share did not adequately cover for community expectations and opportunity costs most community members forego for not drawing livelihoods from the forest. This is mainly because carbon-linked conditions such as fluctuating carbon prices and sometimes diminishing carbon buyers in the global carbon market,constrain the available funds needed for project transaction costs and local livelihood expectations.

A plethora of studies (Pokorny et al., 2013, Vatn and Vedeld, 2013, Thomson et al., 2011, Lederer, 2012, Luttrell et al., 2012, Schroder, 2010) have emphasised equity and rights as prerequisites for effective REDD+ implementation. From these findings however, evolving debates on equity and rights in REDD+ implementation should consider carbon prices and global buyer constellations as factors that exacerbate carbon-livelihood tension and make even pro-poor and equitable benefit distribution insufficient for effective implementation.

9.4. Policy implications and recommndations to achieving sustainable development inREDD+design and implementation

This section provides recommendations for ways in which REDD+ design and implementation can move towards achieving sustainable development. The recommendations are mainly institutional and are focused on addressing the institutional conflicts that have been highlighted in the foregoing synthesis (section 9.3).

Representation of various actors in the design and implementation of REDD+ is crucial for the programme's implementation in the context of sustainable development. However, evidence shows that African States and local communities are underrepresented in REDD+ design decisions and this creates implementation deficits. At the global level, reinforcing representation of African States to inform the design of REDD+ could improve the States' capacity to govern the programme's implementation within their jurisdiction and enhance the integration of local communities' knowledge and livelihood interest in the design process. One way of improving Africa's representation is by supporting additional African delegations to the SBSTA and COP talks. This could mean seeking financial support from financially endowed actors even though conditions associated with such financial support could further compromise the positions of the sponsored delegations. As such, reinforcing the role of smaller expert sessions informing REDD+ design with equal regional representation in would be ideal to ensure that COP decisions are balanced across regional, technical and socioeconomic interests. Otherwise decisions based on overall political bargaining at the COP will remain skewed in favour of resource endowed actors able to lobby and use resources to push for their interests among poor countries.

If representation of States is improved, representation of local communities in the design process could improve as well. This would require upscaling the

representation of these communities in national processes so that their interests are embedded in national positions carried to the global process. Community representation in the national process could be impeded by existing path dependency in national decisions thus there would be need for national institutional reforms.

National institutional reforms especially sectoral integration and decentralising forests management are crucial for effective REDD+ implementation. Sectoral integration in the national REDD+ process is crucial given the evidence that poor integration of key sectors, especially those linked to deforestation, impedes the ability of REDD+ to address underlying drivers of deforestation and subdues cross-sectoral expertise required for REDD+. As such, integrating key sectors in national REDD+ decisions should be a key criteria in evaluating country readiness process under the FCPF process. Even though assessing stakeholder engagement is a criterion in the FCPF process, the criterion is not explicit anddoes not assess sectoral integration in a detailed manner. Such sectoral integration would ideally leverage cross-sectoral expertise and enhance inbuilt national capacity for REDD+ implementation. A key impediment to sectoral integration however remains in the competition for REDD+/climate funds. In this, REDD+ decisions, legislations and funds are confined within the forestry sector in Kenya and other developing countries. However, as the forestry sector leads the process of implementing REDD+, sharing REDD+ tasks and resources with other sectors linked to deforestation could yield positive outcomes in terms of curbing deforestation and generating carbon for more funds. Otherwise excluding other sectors such as agriculture and lands may accelerate deforestation that leads to loss of carbon funds.

Evidence in this study reveals that forest management in Kenya has been decentralised to CFAs but these CFAs are not supported or engaged in exercising those powers in the context of REDD+. As such, decentralising forest resources

requires not only legislative documentation but most importantly, support for local communities to exercise the legislated powers. Building capacity of CFAs and instititonalising their participation in national REDD+ could enhance multilevel governance for REDD+ and promote the achievement of REDD+ safeguards. The support could promote linkage between national REDD+ institutions and private sub-national projects working with local communities through CFAs in various settings.

The study has shown that alternative livelihood initiatives that keep local communities, especially the poor out of forests are crucial for forest protection for carbon. As such, emphasis on carbon as the main source of funding may not make REDD+ work within local communities unless part of REDD+ funding is tied to livelihood/development benefits. However, this study has shown that carbon funds, even if equally shared to support livelihoods may not cover the livelihood losses emanating from forest protection. This is due to fluctuating carbon prices and changing buyers. As such, while equitable sharing of carbon funds is necessary, there is need for additional upfront funding to provide livelihood safety nets especially in times of unstable carbon prices (also see Dougill et al., 2012). Such upfront funds could be in form of grants or soft loans from the internationally established green climate fund. Another alternative source of upfront funds for livelihoods would be the UNFCCC adaptation fund that is often channelled to developing countries. Part of this fund could be tied to REDD+ to support and safeguard livelihoods strategies. National governments like Kenya also have yearly budgetary allocations to forest conservation. These funds could be tied to REDD+ activities and channelled towards supporting livelihoods. Whether sourced from the international community or national budgetary allocations, adaptation funds for REDD+ could enable synergy between mitigation and adaptation in the REDD+ programme. This is crucial considering that developing countries targeted for

REDD+ are the most vulnerable to climatic changes and need support for adaptation if they are to support any mitigation via REDD+.

Evidence from this study shows that livelihood investments in REDD+ should be pro-poor in order to effectively safeguard forests. As such, projects should adopt pro-poor benefit sharing strategies that redistribute benefits in favour of the poor. This is because it is this poor segment of the local community that exerts the most pressure on forests. Evidence generated from the Kasigau project reveals that a communal/collective approach to sharing benefits beyond property rights is a crucial pro-poor strategy for REDD+.

Another approach to pro-poor REDD+ implementation would be the landscape approach. The landscape approach involves recognising the various components of landscapes including diverse land tenure arrangements and resource claim systems in REDD+. This helps in reconciling economic, social and environmental objectives and the interests of various land uses and social groups. Specifically, the landscape approach enables the recognition of the interests and entitlements of the poor which sometimes are excluded as 'inferior' or 'traditional' with little relevance to REDD+.

Overall, the recommendations this study makes require careful and sometimes very hard choices to achieve. In many instances, they require new assessments and studies to unpack their feasibility in various contexts as well as shifts in political systems. Nonetheless, these choices and trade-offs reflect why REDD+ being a multilevel governance programme, appears to be simple as a concept but in practice, is complex.

Overal, findings in this study reveal that REDD+ can change lives and livelihoods alongside curbing deforestation and forest degradation. REDD+ can be an important addition to sustainable forest management for Kenya and other

developing countries. Forests in Kenya make an enormous contribution to the country's economy and livelihoods. They provide conducive ecosystems for the production of cash crops such as tea and coffee, which are the main foreign exchange earners for the country's economy. Also Kenya's industrialisation process is mainly driven by hydroelectric power that is generated from forested highlands that are popularly known as water towers. The livelihoods of more than 70% of Kenyans living in rural areas depend of forest-driven rainfed agriculture and other forest products. As such, REDD+ provides an important policy instrument that can support Kenya's forest protection efforts, enhance ecosystems services for the economy and most importantly attract foreign exchange from carbon credits. In this way, REDD+ can an important addition to Kenya's and other developing countries' efforts to achieve sustainable development, improve international relations and attend to climate change obligations under the UNFCCC.

The case study of Kasigau reveals that REDD+ potential is realisable in dryland areas where REDD+ investments have the potential to be pro-poor. This reveals an important opportunity for Kenya, where 85% of land is classified as arid or semi-arid. Bringing these dryland areas under REDD+ could cost-effectively conserve dryland forests and uplift the livelihood standards of poorer people who dominate in these ecosystems.

To realize the positive opportunities that REDD+ presents, a number of policy transformations discussed in sections 9.4 would be required. These measures are mainly sectoral integration, improved engagement of local communities in national REDD+ decisions, promoting pro-poor approaches in REDD+ strategies and supporting decentralised forest management systems. These changes would not only support REDD+ work but also have a long lasting impact on sustainable forest management in Kenya.

9.6. Reflections

This study provides one of the first multilevel and interdisciplinary analyses of REDD+. A plethora of studies including journal articles, special issues and books on REDD+ exist and continue to emerge but these have focused more on specific REDD+ issues at particular governance levels, e.g. local implementation or national policies with few linkages of issues across these levels. However as REDD+ matures to full implementation, books (Angelsen et al., 2012, Meridian Institute, 2009) and journal special issues (Angelsen et al., 2012, Visseren-Hamakers I, 2012, Corbera and Schroeder, 2011) have made a strong case for multilevel and interdisciplinary analysis of REDD+ such as the one presented here. Multilevel analysis of REDD+ is however an ambitious undertaking and requires bold academic commitment. A major difficulty in multilevel analysis is the fact that it requires time to gather information from various sources i.e. global, national, sub-national and local levels. Additionally, it is intellectually demanding to synthesise and link the information collected from various levels in a coherent manner and generate crosscutting themes informative to science and policy. Linking issues across levels was complicated by the fact that the REDD+ process is still maturing and is characterised by a disjoint in activities linking national and local levels. For instance, while the State implements the global design rules at the national level, Kenya (and other developing countries) has not initiated local/on-the-ground State-led interventions. Instead, most on-the-ground REDD+ activities are led by the private sector with little linkage to national processes.

Despite the difficulties in pursuing multilevel analysis, the work presented here provides a vital starting point upon which new studies can draw concepts, research questions or criticisms to pursue similar multilevel analysis. Such new studies can utilise the integrated institutions and development analytical framework (IDAF) constructed and used in this study. The IDAF focuses on actor interactions in

making rules at the global and implementing them at the national and local levels. The interaction between REDD+ policy design and implementation produces outcomes that can be verified in the context of sustainable development. Generally, the IDAF can be useful in analysing global environmental regimes targeting national and local actions.

The key finding from the multilevel analysis is that institutional conflicts that could impede REDD+ success mainly emanate from global and national level institutional conflicts but manifest at the local level implementation. The global and national processes are characterized by institutional complexities that mostly impede enabling conditions for implementing REDD+ locally. Globally, poor representation of African States impedes Kenyan government capacity to oversee on-the-ground REDD+ implementation, thereby compromising the necessary enabling institutional set up for effective implementation. Additionally, global carbon conditions such as fluctuating carbon prices and buyers constrain the funds needed for project operations and alternative livelihood needs supportive to forest protection. While local settings present diverse opportunities for REDD+ to learn, adapt and deliver sustainable development goals, these opportunities can only be realized when an enabling national institutional set up is in place and upfront funding provided to cushion projects and local communities from fluctuating global prices and buyers.

Chapter 10

Conclusion and future research

This chapter draws on the synthesis presented in previous chapter to make overall conclusions and point to future research needs.

10.1. General Conclusion

This study aimed to analyse REDD+ institutional design at the global level and implementation at the national and local levels in the context of sustainable development. The study focused on Kenya as a case country to draw evidence on how global REDD+ policies build into national and local settings. The study is executed through an integrated framework 'the integrated institutions and development framework (IDAF)' within which institutional and socioeconomic data were gathered in the context of sustainable development. IDAF provides a new analytical approach for analysing global environmental regimes targeting to achieve sustainable development through national and local level actions. In applying the IDAF, this study provides one of the first multilevel analyses of REDD+ institutional design and implementation. The evidence generated from the analysis is an important contribution to literature on REDD+ governance. Specifically, the evidence reveals sources of institutional synergies and conflicts in designing and implementing REDD+ in the context of sustainable development. These include actor representation in REDD+, institutional coherences and tension between carbon and livelihoods.

Representation of actors determines equity in influencing decisions, harmony in actor interests and legitimacy of REDD+ decisions among various actors. This study reveals how underrepresentation of actors in global REDD+ decisions nests

into national and local levels to create multiple implementation deficits. The case of Kenya reveals that this underrepresentation creates poor understanding of technical requirements for REDD+ and subsequently, technical and institutional capacity gaps within the State to implement REDD+ as expected by the UNFCCC. While such technical capacity gaps are of global origin, they are compounded by existing national institutional gaps including path dependency in which forestry decisions are monopolized by the forestry sector with little integration of key sectors, local communities and the private sector all of whom have crucial links to deforestation.

Mainstreaming REDD+ activities within the forestry sector provides the necessary experience for REDD+ coordination but excluding other sectors in the national implementation creates multiple implementation deficits that studies and the international community have often overlooked. Evidence reveals that such lack of sectoral integration subdues existing cross-sectoral expertise relevant for REDD+ and creates the negative interplay between REDD+ rules and policies of the excluded sectors thereby compromising the State's capacity to coordinate and support effective implementation of sub-national projects such as the Kasigau. Most importantly, underrepresentation of local communities in the national REDD+ process compromises the REDD+ safeguard requirements but also complicate systematic multilevel institutional arrangements for REDD+ as the community develops favourable attitude towards non-State actors e.g. private sector engaging them in on-ground demonstrations but have negative attitude towards the State-based centralisation regimes contrary to the UNFCCC expectations. The complexity in achieving systematic multilevel design and implementation of REDD+ is further complicated by the poor linkage between the State and the private sector, both in national REDD+ policy and local project implementation.

While the global and national processes are characterised by institutional gaps of underrepresentation and poor sectoral integration, the local settings present diverse lessons and opportunities including ICDP experiences, community experiences and diverse livelihood assets, all of which reshuffle global REDD+ design to improve its adaptiveness to this local context. While REDD+ projects are mainly designed and funded based on ability to deliver carbon, the local setting requires projects to support pro-poor livelihoods as a pre-condition for delivering carbon funding. This makes benefit sharing geared towards livelihoods a key area of interplay between REDD+ design and implementation. However, the intersect between enabling benefit sharing strategies and the global and national policy gaps remain complex in light of national sectoral policies such as land allocation decisions that interfere with collective/communal approach to forest conservation, strict global carbon standards that limit trade-offs between livelihoods and forest protection and fluctuating carbon prices and buyers that constrain funds needed for project's operations and local livelihood expectations. Therefore, national level institutional reforms and upfront funding for REDD+ are crucial for unlocking the opportunities for effective REDD+ implementation both at the national and local levels. Overall, REDD+ is a simple idea in policy but a complex one in practice. Multi-actor interests, varying development and conservation priorities and governance norms make it difficult to have coherent understanding as expected in the international provisions on sustainable development.

Finally, while the data analysed and discussed in this Chapter may be contextual, the dynamic ways through which REDD+ adopts lessons, the process by which the project aligns these lessons to the varying UNFCCC and community expectations and the implications of such processes to the broader REDD discourse, are key areas covered in this Chapter in a manner applicable to various developing contexts.

10.2. Future Research

This study is one of the first that has attempted to link the threads of REDD+ institutional processes from global to local levels. The analysis has used case study approach to unpack key institutional conflicts in REDD+ design and implementation. The case study experiences presented in the study, albeit contextual, is indicative of lessons that point to ways in which global and national process influence REDD+ in practice. The lessons are particularly relevant for African countries participating in the readiness process.

In the continued call for multilevel analysis from REDD+, a key research need is multilevel analysis of specific REDD+ components especially safeguards. The study shows that social safeguards are crucial for REDD+ local legitimacy yet they are poorly enforced. Multilevel analysis of safeguards is necessary to inform ways in which various actors interpret and observe these safeguards in policy and practice. This could inform mechanisms for reinforcing these safeguards in practice. Secondly, unlocking potential leverages for sectoral integration in the context of forests management is crucial to inform the institutional transformation needed to address drivers of deforestation and make REDD+ work. Thirdly, new enquires that unpack whether resource decentralisation policies could generate equity and participation in REDD+ is necessary. Lastly, studies on the opportunities for REDD+ in poor communities especially those in dryland ecosystems is needed especially for developing countries like Kenya that target dryland forests for REDD+. Such analysis may include carbon stock estimations, cost-benefit analysis and policy incentives. Dryland ecosystems are key frontiers of deforestation in the developing world yet have been neglected. They need to be protected if any meaningful sustainable development is to be achieved through REDD+.

References

ADGER, W. N. 2003. Social aspects of adaptive capacity. Climate change, adaptive capacity and development. *In:* SMITH, J., KLEIN, R. & HUQ, S. (eds.). Imperial College Press, London. .

AGRAWAL, A. & ANGELSEN, A. 2009. Using community forest management to achieve REDD+ goals. *Realising REDD+: National strategy and policy options***,** 201-212.

AGRAWAL, A., CHHATRE, A. & HARDIN, R. 2008. Changing governance of the world's forests. *science,* 320**,** 1460-1462.

AGRAWAL, A., NEPSTAD, D. & CHHATRE, A. 2011. Reducing Emissions from Deforestation and Forest Degradation. *Annual Review of Environment and Resources,* 36**,** 373-396.

AGRAWAL, A. & RIBOT, J. 1999. Accountability in decentralisation: A framework with South Asian and West African cases. *The Journal of Developing Areas***,** 473-502.

ALEMAGI, D., MINANG, P. A., FEUDJIO, M. & DUGUMA, L. 2014. REDD+ readiness process in Cameroon: an analysis of multi-stakeholder perspectives. *Climate Policy***,** 1-25.

ALIGICA, P. 2006. Institutional and stakeholder mapping: frameworks for policy analysis and institutional change. *Public Organisation Review,* 6 79-90.

ALLEN, M. R. & INGRAM, W. J. 2002. Constraints on future changes in climate and the hydrologic cycle. *Nature,* 419**,** 224-232.

ANDONOVA, L. B., BETSILL, M. M. & BULKELEY, H. 2009. Transnational climate governance. *Global environmental politics,* 9**,** 52-73.

ANGELSEN, A. 2008a. How do we set the reference levels for REDD payments? *In:* ANGELSEN, A. (ed.) *Moving Ahead with REDD: issues, options and implications.* Bogor: CIFOR

ANGELSEN, A. (ed.) 2008b. *Moving ahead with REDD: Issues, options and implications,* Bogor, Indonesia.: CIFOR. pp 172.

ANGELSEN, A. 2008c. *Moving ahead with REDD: issues, options and implications,* Bogor, Cifor.

ANGELSEN, A., BROCKAUS, M., SUNDERLIN, W. D. & VERCHOT, L. (eds.) 2012. *Analysing REDD: Challenges and choices,* Bogor: CIFOR. pp 384.

ANGELSEN, A., BROCKHAUS, M., KANNINEN, M., SILLS, E., SUNDERLIN, W. D. & WERTZ-KANOUNNIKOFF, S. (eds.) 2009. *Realising REDD+: National strategy and policy options,* Bogor, Indonesia: CIFOR. PP 330.

ANGELSEN, A. & LUND, J. 2011. Designing the Household Questionnaire. *In:* ANGELSEN, A., LARSEN, H., LUND, J., C., S.-H. & WUNDER, S. (eds.) *Measuring livelihoods and environmental dependence: methods for research and fieldwork.* Bogor, Indonesia: CIFOR pp. 107-126.

ANGELSEN, A., STRECK, C., PESKETT, L., B., B. & LUTTRELL, C. 2008. What is the right scale for REDD? *In:* ANGELSEN, A. (ed.). Bogor, Indonesia: CIFOR. pp 31-40.

ANTWI-AGYEI, P., FRASER, E. D. G., DOUGILL, A. J., STRINGER, L. C. & SIMELTON, E. 2012. Mapping the vulnerability of crop production to drought in Ghana using rainfall, yield and socioeconomic data. *Applied Geography,* 32**,** 324-334.

ARCHER, M. S. 2003. *Structure, agency and the internal conversation*, Cambridge University Press.

ARKSEY, H. & O'MALLEY, L. 2005. Scoping studies: towards a methodological framework. *International journal of social research methodology,* 8**,** 19-32.

ASNER, G. P. 2009. Tropical forest carbon assessment: integrating satellite and airborne mapping approaches. *Environmental Research Letters,* 4**,** 034009.

ASQUITH, N. M., VARGAS RÍOS, M. T. & SMITH, J. 2002. Can Forest-protection carbon projects improve rural livelihoods? Analysis of the Noel Kempff Mercado climate action project, Bolivia. *Mitigation and Adaptation Strategies for Global Change,* 7**,** 323-337.

ATELA, J. 2012. The politics of agricultural carbon finance: the case of the Kenya agricultural carbon project. STEPS Working Paper 49, Brighton: STEPS Centre.

ATELA, J. 2013. Governing REDD+: global framings versus practical evidence from the Kasigau Corridor REDD+ Project, Kenya. STEPS Working Paper 55, Brighton: STEPS Centre.

ATELA, J., DENICH, M., KAGUAMBA, R. & KIBWAGE, J. 2012. Agricultural land allocation in small farms around Maasai Mau forest, Kenya and the implications on carbon stocks. *Journal of Ecology and the Natural Environment* 4**,** 98-108.

ATELA, J. O., QUINN, C. H. & MINANG, P. A. 2014. Are REDD projects pro-poor in their spatial targeting? Evidence from Kenya. *Applied Geography,* 52**,** 14-24.

ATTIWILL, P. M. & ADAMS, M. A. 1993. Nutrient cycling in forests. *New phytologist,* 124**,** 561-582.

BABBIE, E. & MOUTON, J. 2001. The practice of social research, Cape Town, Oxford University press

BACKSTRAND, K. 2008. Accountability of networked climate governance: the rise of transnational climate partnerships *Global Environmental Politics* 8**,** 74–102

BÄCKSTRAND, K. 2006. Multi-stakeholder partnerships for sustainable development: rethinking legitimacy, accountability and effectiveness. *Environmental Policy and Governance* 16 290–306.

BÄCKSTRAND, K. 2008. Accountability of Networked Climate Governance: The Rise of Transnational Climate Partnerships. *Global Environmental Politics,* 8**,** 74-102.

BARNSLEY, I. 2009. *Reducing emissions from deforestation and forest degradation in developing countries (REDD): A guide for indigenous peoples* IAS Guide: United Nations University.

BAUER, G. & BRITTON, H. E. 2006. *Women in African parliaments,* Boulder, CO, Lynne Rienner Publishers

BEDFORD, T. & BURGESS, J. 2001. The focus-group experience. *In:* LIMB, M. & DWYER, C. (eds.) *Qualitative Methodologies for Geographers.* London, pp 121 - 135: Arnold.

BERMAN, R., QUINN, C. & PAAVOLA, J. 2012. The role of institutions in the transformation of coping capacity to sustainable adaptive capacity. *Environmental Development,* 2**,** 86-100.

BERNARD, F., MINANG, P. A., ADKINS, B. & FREUND, J. T. 2014. REDD+ projects and national-level Readiness processes: a case study from Kenya. *Climate Policy***,** 1-13.

BETSILL, M. M. & BULKELEY, H. 2004. Transnational networks and global environmental governance: The cities for climate protection program. *International Studies Quarterly,* 48**,** 471-493.

BIERMANN, F. 2002. Institutions for scientific advice: global environmental assessments andtheir influence in developing countries. *Global Governance* . 8**,** 195–219

BIERMANN, F., ABBOTT, K., ANDRESEN, S., BÄCKSTRAND, K., BERNSTEIN, S., BETSILL, M. M., BULKELEY, H., CASHORE, B., CLAPP, J., FOLKE, C., GUPTA, A., GUPTA, J., HAAS, P. M., JORDAN, A., KANIE, N., KLUVÁNKOVÁ-ORAVSKÁ, T., LEBEL, L., LIVERMAN, D., MEADOWCROFT, J., MITCHELL, R. B., NEWELL, P., OBERTHÜR, S., OLSSON, L., PATTBERG, P., SÁNCHEZ-RODRÍGUEZ, R., SCHROEDER, H., UNDERDAL, A., VIEIRA, S. C., VOGEL, C., YOUNG, O. R., BROCK, A. & ZONDERVAN, R. 2012. Transforming governance and institutions for global sustainability: key insights from the Earth System Governance Project. *Current Opinion in Environmental Sustainability,* 4**,** 51-60.

BIERMANN, F., BETSILL, M., GUPTA, J., KANIE, N., LEBEL, L., LIVERMAN, D., SCHROEDER, H., SIEBENHÜNER, B. & ZONDERVAN, R. 2010. Earth system governance: a research framework. *International Environmental Agreements: Politics, Law and Economics,* 10**,** 277-298.

BIERMANN, F. & GUPTA, A. 2011. Accountability and legitimacy in earth system governance: a research framework. *Ecological Economics,* 70**,** 1856–1864.

BIERMANN, F., PATTBERG, P., VAN ASSELT, H. & ZELLI, F. 2009. The fragmentation of global governance architectures: A Framework for Analysis. *Global Environmental Politics,* 9**,** 14-40.

BLOM, B., SUNDERLAND, T. & MURDIYARSO, D. 2010. Getting REDD to work locally: lessons learned from integrated conservation and development projects. *Environmental Science & Policy,* 13**,** 164-172.

BLUFFSTONE, R., ROBINSON, E. & GUTHIGA, P. 2013. REDD+ and community-controlled forests in low-income countries: Any hope for a linkage? *Ecological Economics,* 87**,** 43-52.

BODIN, O. & CRONA, B. 2009. The role of social networks in natural resource governance: What rational patterns make a difference *Global Environmental Change,* 19**,** 366-374.

BOLBOACA, S.-D. & JÄNTSCHI, L. 2006. Pearson versus Spearman, Kendall's tau correlation analysis on structure-activity relationships of biologic active compounds. *Leonardo Journal of Sciences,* 9**,** 179-200.

BOLIN, A. & TASSA, D. T. 2012. Exploring Climate Justice for Forest Communities Engaging in REDD+: Experiences from Tanzania. *Forum for Development Studies,* 39**,** 5-29.

BOND, I., GRIEG-GRAN, M., WERTZ-KANOUNNIKOFF, S., HAZLEWOOD, P., WUNDER, S. & ANGELSEN, A. 2009. Incentives to sustain forest ecosystem services: A review and lessons for REDD Natural Resource Issues No. 16. International Institute for Environment and Development, London, UK, with CIFOR, Bogor, Indonesia, and World Resources Institute, Washington D.C., USA

BOUTELIGIER, S. 2011. Exploring the agency of global environmental consultancy firms in earth system governance. *International Environmental Agreements: Politics, Law and Economics,* 11**,** 43-61.

BOYD, E., GUTIERREZ, M. & CHANG, M. 2007. Small-scale forest carbon projects: Adapting CDM to low-income communities. *Global Environmental Change,* 17**,** 250-259.

BRANDON, K. E. & WELLS, M. 2009. Lessons for REDD+ from protected areas and integrated conservation and development projects. *In:* ANGELSEN, A., BROCKHAUS, M., KANNINEN, M., SILLS, E., SUNDERLIN, W. D. & WERTZ-KANOUNNIKOFF, S. (eds.) *Realising REDD+: National strategy and policy options. CIFOR, Bogor, Indonesia.* Bogor, Indonesia: CIFOR, pp. 225–236.

BROCKHAUS, M. & ANGELSEN, A. 2012. Seeing REDD+ through 4Is A political economy framework. *Analysing REDD***,** 15.

BROCKHAUS, M., DI GREGORIO, M. & MARDIAH, S. 2013. Governing the design of national REDD: An analysis of the power of agency. *Forest Policy and Economics (In Press).*

BROOKS, N., NEIL ADGER, W. & MICK KELLY, P. 2005. The determinants of vulnerability and adaptive capacity at the national level and the implications for adaptation. *Global Environmental Change,* 15**,** 151-163.

BROWN, D. & BIRD, N. M. 2008. *The REDD road to Copenhagen: readiness for what?* Overseas Development Institute London.

BROWN, D., SEYMOUR, F. & PESKETT, L. 2008. How do we achieve REDD co-benefits and avoid doing harm. In ANGELSEN, A *(ed) Moving ahead with REDD: issues, options and implications***,** 107-118.

BROWN, H. C. P., SMIT, B., SONWA, D. J., SOMORIN, O. A. & NKEM, J. 2011. Institutional perceptions of opportunities and challenges of REDD+ in the Congo basin. *The Journal of Environment & Development,* 20**,** 381-404.

BROWN, K., ADGER, W. N., BOYD, E., CORBRERA-ELIZALDE, E. & SHACKLEY, S. 2004. How do CDM projects contribute to sustainable development? Norwich, UK: Tyndall Centre for Climate Change Research Technical Report 16.

BROWN, K. & CORBERA, E. 2003. Exploring equity and sustainable development in the new carbon economy. *Climate Policy,* 3**,** 41-56.

BROWN, S. & LUGO, A. E. 1982. The storage and production of organic matter in tropical forests and their role in the global carbon cycle. *Biotropica***,** 161-187.

BULTE, E. H., LIPPER, L., STRINGER, R. & ZILBERMAN, D. 2008. Payments for ecosystem services and poverty reduction: concepts, issues, and empirical perspectives. *Environment and Development Economics,* 13**,** 245-254.

BUSCH, J., STRASSBURG, B., CATTANEO, A., LUBOWSKI, R., BRUNER, A., RICE, R., CREED, A., ASHTON, R. & BOLTZ, F. 2009. Comparing climate and cost

impacts of reference levels for reducing emissions from deforestation. *Environmental Research Letters,* 4**,** 044006.

CAMPBELL, D. J., GICHOHI, H., MWANGI, A. & CHEGE, L. 2000. Land use conflict in kajiado District, Kenya. *Land Use Policy,* 17**,** 337-348.

CANADELL, J. G. & RAUPACH, M. R. 2008. Managing forests for climate change mitigation. *Science,* 320**,** 1456-1457.

CAPLOW, S., JAGGER, P., LAWLOR, K. & SILLS, E. 2011. Evaluating land use and livelihood impacts of early forest carbon projects: Lessons for learning about REDD+. *Environmental Science & Policy,* 14**,** 152-167.

CARACELLI, V. J. & GREENE, J. C. 1993. Data analysis strategies for mixed-method evaluation designs. *Educational evaluation and policy analysis,* 15**,** 195-207.

CATTANEO, A. 2010. Incentives to reduce emissions from deforestation: a stock-flow approach with target reductions. *Deforestation and Climate Change: Reducing Carbon Emissions from Deforestation and Forest Degradation. Edward Elgar Publishing, Cheltenham,* 93-120.

CERBU, G. A., SWALLOW, B. M. & THOMPSON, D. Y. 2011. Locating REDD: A global survey and analysis of REDD readiness and demonstration activities. *Environmental Science & Policy,* 14**,** 168-180.

CHALLINOR, A., WHEELER, T., GARFORTH, C., CRAUFURD, P. & KASSAM, A. 2007. Assessing the vulnerability of food crop systems in Africa to climate change. *Climatic Change,* 83**,** 381-399.

CHAMBERS, R. 1994. The origins and practice of participatory rural appraisal. *World Development,* 22**,** 953-969.

CHAMBERS, R. 1997. Shortcut and participatory methods for gaining social information for projects. *Sustainable Development: Social Organisation, Institutional Arrangements and Rural Development,* 6**,** 177-208.

CHAMBERS, R. 2008. *Revolutions in development inquiry,* London, Earthscan.

CHAMBERS, R. & CONWAY, G. 1992. Sustainable rural livelihoods: Practical concepts for the 21st century. Brighton: IDS: IDS, Discussion Paper No. 296.

CHATFIELD, C. 1996. *The analysis of time series,* CRC Press, Boca Raton, FL, 283.

CHHATRE, A., LAKHANPAL, S., LARSON, A. M., NELSON, F., OJHA, H. & RAO, J. 2012. Social safeguards and co-benefits in REDD+: a review of the adjacent possible. *Current Opinion in Environmental Sustainability,* 4**,** 654-660.

CHRISTMAN, B. 2014. International environmental law and distributive justice: the equitable distribution of CDM projects under the Kyoto Protocol. *Journal of Environmental Policy & Planning,* 1-3.

CIAIS P, A., DOLMAN, J., BOMBELLI, A., DUREN, R., A. PEREGON, A., RAYNER, J., MILLER, C., GOBRON, N., KINDERMAN, G., MARLAND, G., GRUBER, N., CHEVALLIER, F., ANDRES, J., BALSAMO, G., BOPP, L., BRÉON, M., BROQUET, G., DARGAVILLE, R., BATTIN, J., BORGES, A., BOVENSMANN, H., BUCHWITZ, M., BUTLER, J. & CANADELL, G. 2014. Current systematic carbon-climate observations and the need for

implementing a policy-relevant carbon observing system. *Biogeosciences* 11**,** 3547–602.

CLARK, T. 2008. 'We are over-research here': Exploring accounts of research fatigue within qualitative research engagements. *Sociology,* 2**,** 953-970.

CLEMENT, F. 2010. Analysing decentralised natural resource governance: proposition for a "politicised" institutional analysis and development framework. *Policy Sciences,* 43**,** 129-156.

CLEMENTS, T. 2010. Reduced expectations: the political and institutional challenges of REDD+. *Oryx,* 44**,** 309-310.

COOKE, B. & KOTHARI, U. 2001. *Participation:the new tyranny?,* London, Zed Books.

CORBERA, E. 2012. Problematizing REDD+ as an experiment in payments for ecosystem services. *Current Opinion in Environmental Sustainability,* 4**,** 612-619.

CORBERA, E., BROWN, K. & ADGER, W. N. 2007. The equity and legitimacy of markets for ecosystem services. *Development and change,* 38**,** 587-613.

CORBERA, E. & SCHROEDER, H. 2011. Governing and implementing REDD+. *Environmental Science & Policy,* 14**,** 89-99.

CORBERA, E., SOBERANIS, C. G. & BROWN, K. 2009. Institutional dimensions of Payments for Ecosystem Services: an analysis of Mexico's carbon forestry programme. *Ecological Economics,* 68**,** 743-761.

CRONA, B. I. & BODIN, Ö. 2006. What you know is who you know? communication patterns among resource users as a prerequisite for co-management.

CUNDILL, G., SHACKLETON, S. & LARSEN, H. 2011. Collecting contextual information *In:* ANGELSEN A, LARSEN HO, LUND JF, SMITH-HALL, C. & S., W. (eds.) *Measuring livelihoods and environmental dependence: methods for research and fieldwork.* Bogor, Indonesia: CIFOR, pp. 71-88.

DAHL, R. 1971. *Polyarchy: Participation and opposition,* New Haven, CT, Yale University Press.

DARLINGTON, Y. & SCOTT, D. 2003. *Qualitative research in practice: stories from the field,* Taylor & Francis.

DAUVERGNE, P. 2012. *Handbook of global environmental politics*, Edward Elgar Publishing.

DE NOOY, W., MRVAR, A. & BATAGELJ, V. 2011. *Exploratory social network analysis with Pajek*, Cambridge University Press.

DELLAS, E., PATTBERG, P. & BETSILL, M. 2011. Agency in earth system governance: refining a research agenda. *International Environmental Agreements: Politics, Law and Economics,* 11**,** 85-98.

DESANKER, P. 2005. The Kyoto Protocol and the CDM in Africa: a good idea but. *UNASYLVA-FAO,* 56, 24.

DFID 1999. Sustainable Livelihoods Guidence Sheets London: DFID.

DI GREGORIO, M., BROCKHAUS, M., CRONIN, T. & MUHARROM, E. 2012. Politics and power in national REDD+ policy processes *In:* BROCKHAUS, M., SUNDERLIN, W. & VERCHOT, L. (eds.) *Analysing REDD+ Challenges and choices.* Bogor, Indonesia: CIFOR, pp 69-90.

DI GREGORIO, M., BROCKHAUS, M., CRONIN, T., MUHARROM, E., SANTOSO, L., MARDIAH, S. & BÜDENBENDER, M. 2013. Equity and REDD+ in the media: a comparative analysis of policy discourses. *Ecology and Society,* 18.

DIAZ, D., HAMILTON, K. & JOHNSON, E. 2011. Status of forest carbon markets 2011. Ecosystem Market Place.

DKAMELA, G. P. 2010. The context of REDD+ in Cameroon: Drivers, agents and institutions. . Occasional paper 57.CIFOR, Bogor, Indonesia.

DORUSSEN, H., LENZ, H. & BLAVOUKOS, S. 2005. Assessing the reliability and validity of expert interviews. *European Union Politics,* 6**,** 315-337.

DOUGILL, A., FRASER, E., HOLDEN, J., HUBACEK, K., PRELL, C., REED, M., STAGL, S. & STRINGER, L. 2006. Learning from doing participatory rural research: lessons from the Peak District National Park. *Journal of Agricultural Economics,* 57**,** 259-275.

DOUGILL, A. J., STRINGER, L. C., LEVENTON, J., RIDDELL, M., RUEFF, H., SPRACKLEN, D. V. & BUTT, E. 2012. Lessons from community-based payment for ecosystem service schemes: from forests to rangelands. *Philos Trans R Soc Lond B Biol Sci,* 367**,** 3178-90.

DUGUMA, L., MINANG, P. & VAN NOORDWIJK, M. 2014a. Climate change mitigation and adaptation in the land use sector: from complementarity to synergy. *Environmental Management***,** 1-13.

DUGUMA, L. A., WAMBUGU, S. W., MINANG, P. A. & VAN NOORDWIJK, M. 2014b. A systematic analysis of enabling conditions for synergy between climate change mitigation and adaptation measures in developing countries. *Environmental Science & Policy,* 42**,** 138-148.

MALCOMB, D. W., WEAVER, E. A. & KRAKOWKA, A. R. 2014. Vulnerability modeling for sub-Saharan Africa: An operationalized approach in Malawi. *Applied Geography,* 48**,** 17-30.

DUTSCHKE, M. & WERTZ-KANOUNNKOFF, S. 2008. How do we ensure permanence and assign liability? *In:* ANGELSEN, A. (ed.) *Moving ahead with REDD: Issues, options and implications.* . Bogor, Indonesia: CIFOR. pp 77-86.

DZINGIRAI, V. 2014. Rural disenfranchisement through carbon: The case of Kariba REDD, Zimbabwe *In:* SCOONES, I. & LEACH, M. (eds.) *Carbon conflicts and forest landscapes in africa.* Londom: Routledge (In Press).

EASTAUGH, C. 2010. Climate change impacts on African forests and people. IUFRO Occasional Paper No. 24 ISSN 1024-414X.

EASTERLING, W., CHEN, X., HAYS, C., BRANDLE, J. & ZHANG, H. 1996. Improving the validation of model-simulated crop yield response to climate change: an application to the EPIC model. *Climate Research,* 06**,** 263-273.

EBELING, J. & YASUÉ, M. 2008. Generating carbon finance through avoided deforestation and its potential to create climatic, conservation and human development benefits. *Philosophical Transactions of the Royal Society B: Biological Sciences,* 363**,** 1917-1924.

EISENHARDT, K. M. 1989. Building theories from case study research. *Academy of management review,* 14**,** 532-550.

ELDER JR, G. H. 1994. Time, human agency, and social change: Perspectives on the life course. *Social psychology quarterly***,** 4-15.

ELLIS, C. 2000. Creating criteria: An ethnographic short story. *Qualitative Inquiry,* 6**,** 273-277.

ENRIGHT, A., MCNALLY, R. & SIKOR, T. 2012. An approach to designing pro-poor local REDD+ benefit distribution systems: Lessons from Vietnam. Hanoi, Vietnam: SNV - Netherlands Development Organisation

ENTENMANN, S., SCHMITT, C. & KONOLD, W. 2014. REDD+-related activities in Kenya: actors' views on biodiversity and monitoring in a broader policy context. *Biodiversity and Conservation***,** 1-26.

ERGUN, A. & ERDEMIR, A. 2010. Negotiating insider and outsider identities in the field: "Insider" in a foreign land; "Outsider" in one's own land'. *Field Methods,* 22**,** 16-38.

ERIKSEN, S. H., BROWN, K. & KELLY, P. M. 2005. The dynamics of vulnerability: locating coping strategies in Kenya and Tanzania. *The geographical journal,* 171**,** 287-305.

FAO 2010a. Forest Resources Assessment. Key findings. Rome, Italy: FAO.

FAO 2011. A submission to the UNFCCC Secretariat on methodological guidance for activities relating to REDD+, in answer to the invitation of paragraph 31 of Decision. Bonn: UNFCCC.

FARLEY, J. & COSTANZA, R. 2010. Payments for ecosystem services: from local to global. *Ecological Economics,* 69**,** 2060-2068.

FCCC/SB/2009/MISC.1 Provisional list of participants to the 30th SBSTA Session held in Bonn, June 2009. UNFCCC, available online: http://unfccc.int/resource/docs/2009/sb/eng/misc01.pdf.

FCCC/SBSTA/2009/3 Report of the Subsidiary Body for Scientific and Technological Advice on its thirtieth session, held in Bonn from 1 to 10 June 2009. UNFCCC, available online: http://unfccc.int/resource/docs/2009/sbsta/eng/03.pdf.

FCCC/SBSTA/2011/INF Report on the expert meeting on forest reference emission levels and forest reference levels for implementation of REDD-plus activities. UNFCCC, available online: http://unfccc.int/resource/docs/2011/sbsta/eng/inf18.pdf.

FCCC/SBSTA/2014/MISC.6 Views on experiences and lessons learned from the development of systems for providing information on how all the safeguards are being addressed and respected and the challenges faced in developing such systems; Submissions from developing country Parties. UNFCCC; available online at http://unfccc.int/resource/docs/2014/sbsta/eng/misc06.pdf.

FCCC/TP/2012/3 Financing options for the full implementation of resultsbased actions relating to the activities referred to in decision 1/CP.16, paragraph 70, including related modalities and procedures. UNFCCC.

FCPF 2012. The FCPF Carbon Fund: Pan Africa indigenous peoples dialogue in Arusha, Tanzania , April19-24, 2012. Arusha: World Bank.

FCPF, FIP & UN-REDD 2010. Enhancing cooperation and coherence among multilateral REDD+ Institutions to support REDD+ activities. Washington D.C: Climate Investment Funds, FCPF, UN-REDD Program

FITZPATRICK, J., CHRISTIE, C. & MARK, M. M. 2009. *Evaluation in action: Interviews with expert evaluators*, Sage.

FLEMING, G. 1966. Authority, Efficiency, and Role Stress: Problems in the development of East African bureaucracies. *Administrative Science Quarterly* 11**,** 386-404

FORSTER, P., JACKSON, L., LORENZ, S., SIMELTON, E. & BAHADUR, K. 2012. Food security: near future projections of the impact of drought in Africa *Centre for Low Carbon Futures*

FORSTER, P. M. & COLLINS, M. 2004. Quantifying the water vapour feedback associated with post-Pinatubo global cooling. *Climate Dynamics,* 23**,** 207-214.

FROST, P. 2001. Zimbabwe and the United Nations Framework Convention on Climate Change. London: Overseas Development Institut, Working Paper.

FRY, I. 2008. Reducing emissions from deforestation and forest degradation: Opportunities and pitfalls in developing a new legal regime. *Review of European Community and International Environmental Law,* 17**,** 166-182.

FÜSSEL, H.-M. & KLEIN, R. T. 2006. Climate Change Vulnerability Assessments: an evolution of conceptual thinking. *Climatic Change,* 75**,** 301-329.

GBETIBOUO, G. A., RINGLER, C. & HASSAN, R. 2010. Vulnerability of the South African farming sector to climate change and variability: an indicator approach. *Natural Resources Forum,* 34**,** 175-187.

GELLER, S., MCCONNELL, R. & WANYIRI, J. 2007. Linking national forest programmes and poverty reduction strategies; Kenya. Rome, Italy: Food and Agriculture Organisation.

GHAZOUL, J., BUTLER, R. A., MATEO-VEGA, J. & KOH, L. P. 2010. REDD: a reckoning of environment and development implications. *Trends in Ecology & Evolution,* 25**,** 396-402.

GIBBS, D. 2000. Globalization, the bioscience industry and local environmental responses. *Global Environmental Change,* 10**,** 245-257.

GIBBS, H. K., BROWN, S., NILES, J. O. & FOLEY, J. A. 2007. Monitoring and estimating tropical forest carbon stocks: making REDD a reality. *Environmental Research Letters,* 2**,** 045023.

GIBSON, C. C., ANDERSSON, K., OSTROM, E. & SHIVAKUMAR, S. (eds.) 2005. *The Samaritan's dilemma: the political economy of development aid,* Oxford: Oxford University Press.

GIGER, N., ROSSET, J. & BERNAUER, J. 2012. The poor political representataion of the poor in a comparative process. *Representation,* 48**,** 47-61.

GLAESER, E., LA PORTA, R. & LOPEZ-DE-SILANES, F. 2004. Do institutions cause growth? *Journal of Economic Growth,* 9**,** 271–303.

GRAY, D. E. 2009. *Doing research in the real world,* London, Sage.

GREEN, S. B. & SALKIND, N. J. 2010. *Using SPSS for windows and Macintosh: analysing and understanding data,* Prentice Hall Press.

GRIFFITHS, T. & MARTONE, F. 2009. *Seeing 'REDD'?: forests, climate change mitigation and the rights of indigenous peoples and local communities.* Forest Peoples Programme.

GULLISON, R. E., FRUMHOFF, P. C., CANADELL, J. G., FIELD, C. B., NEPSTAD, D. C., HAYHOE, K., AVISSAR, R., CURRAN, L. M., FRIEDLINGSTEIN, P., JONES, C. D. & NOBRE, C. 2007. Tropical forests and climate policy. *Science,* 316**,** 985-986.

GUPTA, A. 2010. Transparency in global environmental governance: a coming of age? *Global Environmental Politics,* 10**,** 1-9.

GUPTA, J. 2008. Global change: analysing scale and scaling in environmental governance. *In:* YOUNG, O. R., SCHROEDER, H. & KING, L. (eds.) *Institutions and environmental change: Principal findings, applications, and research frontiers.* Cambridge: MIT Press pp. 225–258.

GUPTA, J. & LEBEL, L. 2010. Access and allocation in earth system governance: Water and climate change compared. *International Environmental Agreements: Politics, Law and Economics,* 10**,** 377-395.

GUPTA, J., TERMEER, C., KLOSTERMANN, J., MEIJERINK, S., VAN DEN BRINK, M., JONG, P., NOOTEBOOM, S. & BERGSMA, E. 2010. The adaptive capacity wheel: a method to assess the inherent characteristics of institutions to enable the adaptive capacity of society. *Environmental Science & Policy,* 13**,** 459-471.

GUPTA, J. & VAN DER ZAAG, P. 2009. The politics of water science: on unresolved water problems and biased research agendas. *Global Environmental Politics,* 9**,** 14-23.

GUTMAN, P. 2003. From goodwill to payments for environmental services: a survey of financing options for sustainable natural resource management in developing countries. World Wide Fund for Nature (WWF).

HASHMIU, I. 2012. Carbon offsets and agricultural livelihoods: lessons learned from a carbon credit project in the transition zone of Ghana. STEPS Working Paper 50, Brighton: STEPS Centre.

HAY, I. 2000. *Qualitative research methods in human geography.* Oxford University Press

HOLLAND, J. & CAMPBELL, J. 2005. Methods in development research: combining qualitative and quantitative approaches. Rome, Italy: FAO.

HOLLING, C. S. 2001. Understanding the complexity of economic, ecological, and social systems. *Ecosystems,* 4**,** 390-405.

HOPKINS, P. E. 2007. Thinking critically and creatively about focus groups. *Area,* 39**,** 528-535.

HOWARD, A. 1990. Using an Ecological Perspective to Study Organisational Founding Rates (1990). . *Entrepreneurship Theory and Practice,* 14**,** 7-24.

HULME, M., DOHERTY, R., NGARA, T., NEW, M. & LISTER, D. 2001. African climate change: 1900-2100. *Climate Research,* 17**,** 145-168.

IDS 2009. Research to Policy for Adaptation:Linking African Researchers with Adaptation Policy Spaces. Brighton: IDS, Technical Report. .

IFPRI 2010. Food security and climate change, challenges to 2050 and beyond. *In:* NELSON G., ROSEGRANT, M., PALAZZO, A., GRAY, I., INGERSOLL, C., ROBERTSON, R., TOKGOZ, S., ZHU, T., T., S., RINGLER, C., MSANGI, S. & YO, L. (eds.). Wahington, DC: IFPRI Issue Brief 66, IFPRI.

IMPERIAL, M. T. 1999. Institutional Analysis and ecosystem-based management: the institutional analysis and development framework. *Environmental Management,* 24**,** 449-465.

IPCC 1990. Climate Change: The IPCC scientific assessment. contribution of working group I to the fourth assessment report of the Intergovernmental Panel on Climate Change Cambridge: Cambridge University Press.

IPCC 2000. Land use, land-use change and forestry. Cambridge Cambridge University Press.

IPCC 2001a. Climate change 2001: mpacts, Adaptation andVulnerability. Contribution of Working Group II to the third assessment report of the Intergovernmental Panel on Climate Change Cambridge: Cambridge University Press.

IPCC 2001b. Climate change, the scientific basis. Cambridge: Cambridge Univ. Press, 881 pp.

IPCC 2007a. 4th assessment report: climate change 2007 Geneva: IPCC.

IPCC 2007b. Climate change 2007: mitigation of climate change. contribution of working group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge: Cambridge University Press..

IPCC 2007c. *Impacts, adaptation and vulnerability. contribution of working group II to the fourth assessment report of the Intergovernmental Panel on Climate Change* Cambridge University Press, Cambridge, UK

IPCC 2013. 5th assessment report: Climate change 2011. Geneva: IPCC.

IUFRO 2009. Adaptation of forests and people to climate change - a global assessment report. *In:* SEPPÄLÄ, R., BUCK, A. & KATILA, P. (eds.). Helsinki: IUFRO, Volume 22. 224 p.

JACK, B. K., KOUSKY, C. & SIMS, K. R. 2008. Designing payments for ecosystem services: Lessons from previous experience with incentive-based mechanisms. *Proceedings of the National Academy of Sciences,* 105**,** 9465-9470.

JAGGER, P., SILLS, E. O., LAWLOR, K. & SUNDERLIN, W. D. 2010. A guide to learning about livelihood impacts of REDD+. *Center for International Forestry Research* Occasional Paper No 56, Bogor, Indonesia.

JAGGER, P., BROCKHAUS, M., DUCHELLE, A. E., GEBARA, M. F., LAWLOR, K., RESOSUDARMO, I. A. P., & SUNDERLIN, W. D. 2014. Multi-level policy dialogues, processes, and actions: Challenges and opportunities for national REDD+ safeguards measurement, reporting, and verification (MRV). *Forests, 5*, 2136-2162.

JINDAL, R. 2010. Livelihood impacts of payments for forestry carbon services: field evidence from Mozambique. *In:* TACCONI, L., MAHANTY, S. & SUICH, H. (eds.) *Livelihoods in REDD: payments for environmental services. forest conservation and climate change.* Cheltenham: Edward Elgar.

JINDAL, R., SWALLOW, B. & KERR, J. 2008. Forestry-based carbon sequestration projects in Africa: Potential benefits and challenges *Natural Resources Forum* 32 116–130.

JORDAN, A. 1999. The implementation of EU environmental policy: a policy problem without a political solution? *Environment and Planning C: Government and Policy,* 17**,** 69-90.

KALABA, F., QUINN, C. & DOUGILL, A. 2013a. Contribution of forest provisioning ecosystem services to rural livelihoods in the Miombo woodlands of Zambia. *Population and Environment,* 35**,** 159-182.

KALABA, F., QUINN, C. & DOUGILL, A. 2014. Policy coherence and interplay between Zambia's forest, energy, agricultural and climate change policies and multilateral environmental agreements. *International Environmental Agreements: Politics, Law and Economics,* 14**,** 181-198.

KALABA, F. K., QUINN, C. H. & DOUGILL, A. J. 2013b. The role of forest provisioning ecosystem services in coping with household stresses and shocks in Miombo woodlands, Zambia. *Ecosystem Services,* 5**,** 143-148.

KARKY, B. S., VAIDYA, R., KARKI, S. & TULACHAN, B. 2013. What is REDD+ additionality in community managed forest for Nepal? *Journal of Forest and Livelihood,* 11**,** 37-45.

KEELEY, J. & SCOONES, I. 2003. 'Understanding Environmental Policy Processes; Cases from Africa'. London: Earthscan/James and James.

KENYA METEOROLOGICAL DEPARTMENT 2012. Precipitation readings from meterological sub-station of Kenya. *In:* KENYA METEOROLOGICAL DEPARTMENT (ed.). Nairobi: Government Printer.

Kenya National Bureau of Statistics 2007. Kenya integrated household budget survey 2005/2006. *in:* KNBS (ed.). government printer, Nairobi, Kenya.

KENYA NATIONAL BEUREAU OF STATISTICS 2011. Statictical abstract. Government Printer Nairobi Kenya

KISER, E. 1999. Comparing varieties of agency theory in economics, political science, and sociology: An illustration from state policy implementation. *Sociological Theory,* 17**,** 146-170.

KLOPP, J. M. 2000. Pilfering the public: The problem of land grabbing in contemporary Kenya. *Africa Today,* 47**,** 7-26.

KOHLBACHER, F. The use of qualitative content analysis in case study research. Forum Qualitative Sozialforschung/Forum: Qualitative Social Research, 2006.

KOLLMUSS, A., ZINK, H. & POLYCARP, C. 2008. Making sense of the voluntary carbon market. a comparison of carbon offset standards. Stockholm Environmental Institute.

KORCHINSKY, M., FREUND, J., COWAN, L. & DODSON, R. 2008. The Kasigau corridor redd project phase II – Rukinga sanctuary: project design document (PDD) for validation using the climate, community and biodiversity standard (CCBS). Wildlife-Works, Rukinga.

KORHONEN-KURKI, K., BROCKHAUS, M., DUCHELLE, A. E., ATMADJA, S., THUY, P. T. & SCHOFIELD, L. 2013. Multiple levels and multiple challenges for measurement, reporting and verification of REDD+. *International Journal of the Commons,* 7**,** 344-366.

KORHONEN-KURKI, K., SEHRING, J., BROCKHAUS, M. & DI GREGORIO, M. 2014. Enabling factors for establishing REDD plus in a context of weak governance. *Climate Policy,* 14**,** 167-186.

KRIPPENDORFF, K. 2004. Reliability in content analysis. *Human Communication Research,* 30**,** 411-433.

LAM, W. 1998. Governing irrigation systems in Nepal. Institutions, infrastructure, and collective action. Oakland, CA: CS Press.

LAMBIN, E. F. & MEYFROIDT, P. 2011. Global land use change, economic globalization, and the looming land scarcity. *Proceedings of the National Academy of Sciences,* 108**,** 3465-3472.

LAWLOR, K., WEINTHAL, E. & OLANDER, L. 2010. Institutions and policies to protect rural livelihoods in REDD+ regimes. *Global Environmental Politics,* 10**,** 1-11.

LAWSON, S. 2014. Consumer goods and deforestation: an analysis of the extent and nature of illegality in forest conversion for agriculture and timber plantations. Washington, DC: Forest Trends and UKaId.

LEACH, M., MEARNS, R. & SCOONES, I. 1997. Challenges to community-based sustainable development: dynamics, entitlements, institutions. *IDS Bulletin,* 28**,** 4-14.

LEACH, M., MEARNS, R. & SCOONES, I. 1999. Environmental entitlements: dynamics and institutions in community-based natural resource management. *World Development,* 27**,** 225-247.

LEACH, M. & SCOONES, I. 2013. Carbon forestry in West Africa: the politics of models, measures and verification processes. *Global Environmental Change,* 23**,** 957-967.

LEDERER, M. 2011. From CDM to REDD+ — What do we know for setting up effective and legitimate carbon governance? *Ecological Economics,* 70**,** 1900-1907.

LEDERER, M. 2012. REDD+ governance. *Wiley Interdisciplinary Reviews: Climate Change,* 3**,** 107-113.

LEMAITRE, S. 2011. Indigenous peoples' land rights and REDD: a case study. *Review of European Community & International Environmental Law,* 20**,** 150-162.

LEICHENKO, R. & O'BRIEN, K. (2002) The dynamics of rural vulnerability to global change: the case of Southern Africa *Mitigation and Adaptation Strategies for Global Change,* 7.

LEVENTON, J. & ANTYPAS, A. 2012. Multi-level governance, multi-level deficits: the case of drinking water management in Hungary. *Environmental Policy and Governance,* 22**,** 253-267.

LEVENTON, J., KALABA, F. K., DYER, J. C., STRINGER, L. C. & DOUGILL, A. J. 2014. Delivering community benefits through REDD +: Lessons from joint forest management in Zambia. *Forest Policy and Economics,* 44**,** 10-17.

LIN, L., SILLS, E. & CHESHIRE, H. 2014. Targeting areas for reducing emissions from deforestation and forest degradation (REDD+) projects in Tanzania. *Global Environmental Change,* 24**,** 277-286.

LOBELL, D., CAHILL, K. & FIELD, C. 2007. Historical effects of temperature and precipitation on California crop yiels *Climatic Change,* 81 187-203.

LOBELL, D. B., BANZIGER, M., MAGOROKOSHO, C. & VIVEK, B. 2011. Nonlinear heat effects on African maize as evidenced by historical yield trials. *Nature Clim. Change,* 1**,** 42-45.

LOCATELLI, B., EVANS, V., WARDELL, A., ANDRADE, A. & VIGNOLA, R. 2011. Forests and climate change in Latin America: linking adaptation and mitigation. *Forests,* 2**,** 431-450.

LUKES, S. 1974. *Power: A radical view,* London Macmillan.

LUERS, A. (2005) The surface of vulerability: an analytical framework fro examining environmental change. *Global Environmental Change,* 15**,** 214- 223.

LUND, J., SHACKLETON, S. & LUCKERT, M. 2011. Getting Quality Data *In:* ANGELSEN, A., HO., L., JF., L., SMITH-HALL C & S., W. (eds.) *Measuring livelihoods and environmental dependence: methods for research and fieldwork.* Bogor, Indonesia: CIFOR, .

LUTTRELL, C., LOFT, L., GEBARA, M. & KWEKA, D. 2012. Who should benefit and why? Discourses on REDD+ benefit sharing. *In:* ANGELSEN, A., BROCKHAUS, M., SUNDERLIN, W. D. & VERCHOT, L. (eds.) *Analysing REDD: challenges and choices.* Bogor: CIFOR. pg. 129-152.

LYSTER, R. 2011. REDD+, transparency, participation and resource rights: the role of law. *Environmental Science & Policy,* 14**,** 118-126.

LYSTER, R. 2013. International legal frameworks for REDD+: ensuring legitimacy. *law, tropical forests and carbon: the case of REDD+*, R. LYSTER, C. MACKENZIE & C. MCDERMOTT,(eds), *Cambridge University Press: United Kingdom*.

MABEY, N., GALLAGHER, L. & BORN, C. 2013. Understanding Climate Diplomacy: Building diplomatic capacity and systems to avoid dangerous climate change. London: CDKN

MAINA, I., A., N. & OKOTI, M. 2013. Agriculture and climate change in Kenya: climate chaos, policy dilemmas. Brighton, UK: Future Agricultures Consortium, Working Paper 70.

MAKINA, A. 2013. Managing Climate Change: The Africa Group in Multilateral Environmental Negotiations. *Journal of International Organisations Studies,* 4**,** 36-48.

MALHI, Y. & WRIGHT, J. 2004. Spatial patterns and recent trends in the climate of tropical rainforest regions. *Philosophical Transactions of the Royal Society of London. Series B: Biological Sciences,* 359**,** 311-329.

MARASENI, T. N., NEUPANE, P. R., LOPEZ-CASERO, F. & CADMAN, T. 2014. An assessment of the impacts of the REDD+ pilot project on community forests user groups (CFUGs) and their community forests in Nepal. *Journal of Environmental Management,* 136**,** 37-46.

MARSH, E. E. & WHITE, M. D. 2006. Content analysis: a flexible methodology. *Library trends,* 55**,** 22-45.

MARTIN, A. & LEMON, M. 2001. Challenges for participatory institutions: the case of village forest committees in Karnataka, South India. *Society & Natural Resources,* 14**,** 585-597.

MARTIN, A. & SHERINGTON, J. 1997. Participatory research methods—implementation, effectiveness and institutional context. *Agricultural Systems,* 55**,** 195-216.

MARTIN, A., BLOWERS, A. & BOERSEMA, J. 2010. Ecosystem services and poverty alleviation: assessing the constraints and opportunities. *Journal of Integrative Environmental Sciences,* 7**,** 99-104.

MATHUR, V. N., AFIONIS, S., PAAVOLA, J., DOUGILL, A. J. & STRINGER, L. C. 2013. Experiences of host communities with carbon market projects: towards multi-level climate justice. *Climate Policy,* 14**,** 42-62.

MATTHEW, R. A. & HAMMILL, A. 2009. Sustainable development and climate change. *International Affairs,* 85**,** 1117-1128.

MAYS, N., ROBERTS, E. & POPAY, J. 2000. Synthesising research evidence. *In:* FULOP, N., ALLEN, P., CLARKE, A. & BLACK, N. (eds.) *Studying the organisation and delivery of health services: Research methods.* London: Routledge.

MBOW, C., SMITH, P., SKOLE, D., DUGUMA, L. & BUSTAMANTE, M. 2014. Achieving mitigation and adaptation to climate change through sustainable agroforestry practices in Africa. *Current Opinion in Environmental Sustainability,* 6**,** 8-14.

MCDERMOTT, C. L., COAD, L., HELFGOTT, A. & SCHROEDER, H. 2012. Operationalizing social safeguards in REDD+: actors, interests and ideas. *Environmental Science & Policy,* 21**,** 63-72.

MCSHANE, T. & NEWBY, S. 2004. Expecting the unattainable: the assumptions behind ICDPs. *In:* MCSHANE, T. & WELLS, P. (eds.) *Getting Biodiversity Projects to Work.* New York, pp. 49–74: Columbia University Press

MERIDIAN INSTITUTE 2009. Reducing emissions from deforestation and forest degradation (REDD): an options assessment report prepared for the Government of Norway *In:* ANGELSEN, A., BROWN, S., LOISEL, C., PESKETT, L., STRECK, C. & ZARIN, D. (eds.). Meridian Institute.

MIDGAARD, G. & UNDERDAL, A. 1977. Multiparty conferences". *In:* DRUCKMAN, D. (ed.) *Negotiation: social-psychological perspectives.* Beverly Hills, Calif: Sage, pp 335-336.

MINANG, P. 2009. Africa in post 2012 climate change negotiations: some policy perspectives presentation made at the Pan African Parliamentary Conference in Yaoundé, Cameroon.

MINANG, P. A., DUGUMA, L. A., BERNARD, F., MERTZ, O. & VAN NOORDWIJK, M. 2014a. Prospects for agroforestry in REDD+ landscapes in Africa. *Current Opinion in Environmental Sustainability,* 6**,** 78-82.

MINANG, P. A. & VAN NOORDWIJK, M. 2013. Design challenges for achieving reduced emissions from deforestation and forest degradation through conservation: leveraging multiple paradigms at the tropical forest margins. *Land Use Policy,* 31**,** 61-70.

MINANG, P. A., VAN NOORDWIJK, M., DUGUMA, L. A., ALEMAGI, D., DO, T. H., BERNARD, F., AGUNG, P., ROBIGLIO, V., CATACUTAN, D., SUYANTO, S., ARMAS, A., SILVA AGUAD, C., FEUDJIO, M., GALUDRA, G., MARYANI, R., WHITE, D., WIDAYATI, A., KAHURANI, E., NAMIREMBE, S. & LEIMONA, B. 2014b. REDD+ readiness progress across countries: time for reconsideration. *Climate Policy***,** 1-24.

MINANG, P. A., VAN NOORDWIJK, M., FREEMAN, O. E., MBOW, C., DE LEEUW, J. & CATACUTAN, D. (eds.) 2015. *Climate-Smart Landscapes: Multifunctionality in Practice,* Nairobi: World Agroforestry Centre, 404p.

MITCHELL, T. & MAXWELL, S. 2010. Defining climate compatible development. London: CDKN Policy Brief

MOGOI, J., OBONYO, E., ONGUGO, P., OEBA, V. & MWANGI, E. 2012. Communities, property rights and forest decentralisation in Kenya: early lessons from participatory forestry management. *Conservation and Society,* 10**,** 182-194.

MOHAMMED, E. 2011. Pro-poor benefit distribution in REDD+: Who gets what and why does it matter? London: MPRA Paper No. 43648, IIED.

MOLLICONE, D., ACHARD, F., FEDERICI, S., EVA, H., GRASSI, G., BELWARD, A., RAES, F., SEUFERT, G., STIBIG, H.-J., MATTEUCCI, G. & SCHULZE, E.-D. 2007. An incentive mechanism for reducing emissions from conversion of intact and non-intact forests. *Climatic Change,* 83**,** 477-493.

MORTON, J. 2007. The impact of climate change on smallholder and subsistence agriculture. *PNAS,* 104 19680–19685

MURPHY, D. & MCFATRIDGE, S. 2012. Kenya's climate change action plan: REDD+ concept note: dryland forest conservation. Winnipeg, Canada International Institute for Sustainable Development.

MURRAY, B. C. & OLANDER, L. 2008. A core participation requirement for creation of a REDD market. Durham, NC, USA.: Nicholas Institute for Environmental Policy Solutions.

MUSTALAHTI, I., BOLIN, A., BOYD, E. & PAAVOLA, J. 2012. Can REDD+ reconcile local priorities and needs with global mitigation benefits? Lessons from Angai Forest, Tanzania. *Ecol Soc,* 17**,** 16.

MUSTALAHTI, I. & RAKOTONARIVO, O. S. 2014. REDD+ and empowered deliberative democracy: learning from Tanzania. *World Development,* 59**,** 199-211.

MWAKALOBO, A., KAJEMBE, G., SILAYO, S., NZUNDA, E., ZAHABU, E., MALIONDO, S. & KIMARO, D. 2011. REDD and sustainable development – perspective from Tanzania IIED Working Papers: London.

MYERS, G. E. 1986. Introspection and self-knowledge. *American Philosophical Quarterly***,** 199-207.

NAESS, L., POLACK, E. & CHINSINGA, B. 2011. 'Bridging research and policy processes for climate change adaptation', . *IDS Bullein* 42**,** 97-103

NAJAM, A., HUQ, S. & SOKONA, Y. 2003. Climate negotiations beyond Kyoto: developing countries concerns and interests. *Climate Policy,* 3**,** 221-231.

NATIONAL LAND ALLIANCE 2007. National Land Policy: The popular version. Nakuru, Kenya: Kenya Land Alliance.

NDUNGU LAND COMMISSION 2004. Report of the commission of inquiry into the irregular allocation of public land. Nairobi, Kenya: Government Printer

NEPAL, F. 2012. Is REDD+ Redefining forest governance in Nepal? *Journal of Forest and Livelihood,* 10**,** 1.

NEYLAN, J. 2008. Social policy and the authority of evidence. *Australian Journal of Public Administration,* 67**,** 12-19

NGUGI, R. & NYARIKI, D. 2005. Rural livelihoods in the arid and semi-arid environments of Kenya: Sustainable alternatives and challenges. *Agriculture and Human Values,* 22**,** 65-71.

NHAMO, G. 2011. REDD_ and the global climate policy negotiating regimes: challenges and opportunities for Africa. . *South African Journal of International Affairs* 18 385-406.

NKAKO. M, LAMBRECHTS. C, GACHANJA. M & WOODLEY, B. 2005. Maasai Mau forest status report of 2005 Ewaso Ngiro South Development Authority, Narok, Kenya

NKEM, J., IDINOBA, M. & SENDASHONGA, C. 2008. Forests for climate change adaptation in the Congo basin: responding to an urgent need with sustainable practices CIFOR Environment Brief No. 2.

NKEM, J., SOMORIN, O., JUM, C., IDINOBA, M., BELE, Y. & SONWA, D. 2012. Profiling climate change vulnerability of forest indigenous communities in the Congo Basin. *Mitigation and Adaptation Strategies for Global Change***,** 1-21.

OBERSTEINER, M., HUETTNER, M., KRAXNER, F., MCCALLUM, I., AOKI, K., BOTTCHER, H., FRITZ, S., GUSTI, M., HAVLIK, P. & KINDERMANN, G. 2009. On fair, effective and efficient REDD mechanism design. *Carbon Balance and Management,* 4**,** 1-11.

OKEREKE, C., BULKELEY, H. & SCHROEDER, H. 2009. Conceptualising climate governance beyond the international regime. *Global Environmental Politics,* 9**,** 58-78.

OKEREKE, C. & DOOLEY, K. 2010. Principles of justice in proposals and policy approaches to avoided deforestation: Towards a post-Kyoto climate agreement. *Global Environmental Change,* 20**,** 82-95.

OLANDER, L. P., GIBBS, H. K., STEININGER, M., SWENSON, J. J. & MURRAY, B. C. 2008. Reference scenarios for deforestation and forest degradation in support of REDD: a review of data and methods. *Environmental Research Letters,* 3**,** 025011.

OLE RIAMIT, K. 2010. REDD+ in Kenya:An indigenous peoples' perspective. *In:* ALANGUI, W. V., SUBIDO, G. & TINDA-AN, R. (eds.) *Indigenous peoples, forests & REDD plus: state of forests, policy environment & ways forward.* Baguio, Philippines: Tebtebba Foundation, PP. 367-458.

OSTROM, E. 2008. Institutions and the environment *Economic Affairs* 28**,** 24–31.

OSTROM, E. 2007. Institutional rational choice: An assessment of the Institutional Analysis and Development framework. *In:* SABATIER, P. A. (ed.) *Theories of the policy process.* Boulder, CO: Westview Press, pp. 21-64.

OSTROM, E., GARDNER, R. & WALKER, J. 1994. Rules, games & common-pool resources. Ann Arbor: The University of Michigan Press.

PAAVOLA, J. 2003. 'Environmental justice and governance: theory and lessons from the implementation of the European Union's habitat directive'. Norwich: University of East Anglia, Centre for Social and Economic Research on the Global Environment. Working Paper EDM 03-05.

PAGIOLA, S., ARCENAS, A. & PLATAIS, G. 2005. Can payments for environmental services help reduce poverty? An exploration of the issues and the evidence to date. *World Development,* 33**,** 237-253.

PAGIOLA, S., LANDELL-MILLS, N. & BISHOP, J. 2002. Market-based Mechanisms for forest conservation and development. *In:* PAGIOLA, S., BISHOP, J. & LANDELL-MILLS, N. (eds.) *Selling forest environmental services. market-based mechanisms for conservation and development.* London: Earthscan, pp 1-13.

PAIVA, D. S., GOMES, G. A. M. D. M., FERNÁNDEZ, L. & ANDRADE, J. C. S. 2014. Voluntary carbon market and its contributions to sustainable development: analysis of the Monte Pascoal-Pau Brazil ecological corridor. *International Journal of Innovation and Sustainable Development,* 8**,** 1-16.

PALMER FRY, B. 2011. Community forest monitoring in REDD+: the 'M'in MRV? *Environmental Science & Policy,* 14**,** 181-187.

PATTBERG, P. 2005. The institutionalisation of private governance: how business and non-profit organisations agree on transnational rules. *Governance,* 18**,** 589-610.

PEARSON, T., WALKER, S. & BROWN, S. 2006. Afforestation and reforestation under the clean development mechanism: project formulation manual. International Tropical Timber Organisation. Technical Series, 25.Pp. 53.

PELUSO, N. L. 1993. Coercing conservation?: The politics of state resource control. *Global Environmental Change,* 3**,** 199-217.

PESKETT, L. & BROCKHAUS, M. 2008. When REDD+ goes national: A review of realities, opportunities and challenges. *In:* ANGELSEN, A. (ed.) *Moving Ahead with REDD: Issues, Options and Implications* Bogor CIFOR.

PESKETT, L., SCHRECKENBERG, K. & BROWN, J. 2011. Institutional approaches for carbon financing in the forest sector: learning lessons for REDD+ from forest carbon projects in Uganda. *Environmental Science & Policy,* 14**,** 216-229.

PETERS-STANLEY, M. & GONZALEZ, G. 2014. Sharing the stage: state of the voluntary carbon markets 2014, Executive Summary. Washington: Forest Trends Association

PETERS-STANLEY, M., GONZALEZ, G. & YIN, D. 2013. Covering new ground: state of the forest carbon markets 2013 Washington DC: Ecosystem Marketplace.

PHELPS, J., GUERRERO, M., DALABAJAN, D., YOUNG, B. & WEBBA, E. 2010. What makes a 'REDD' country? *Global Environmental Change,* 20 322–332.

PITKIN, H. 1967. The concept of representation. Berkeley: University of California Press.

POKORNY, B., SCHOLZ, I. & DE JONG, W. 2013. REDD+ for the poor or the poor for REDD+? About the limitations of environmental policies in the Amazon and the potential of achieving environmental goals through pro-poor policies. *Ecology and Society,* 18**,** 3.

REED, M., DOUGILL, A. & TAYLOR, M. 2007. Integrating local and scientific knowledge for adaptation to land degradation: Kalahari rangeland management options. *Land Degradation & Development,* 18**,** 249-268.

REED, M. S., GRAVES, A., DANDY, N., POSTHUMUS, H., HUBACEK, K., MORRIS, J., PRELL, C., QUINN, C. H. & STRINGER, L. C. 2009. Who's in and why? A typology of stakeholder analysis methods for natural resource management. *Journal of Environmental Management,* 90**,** 1933-1949.

REINECKE, S., PISTORIUS, T. & PREGERNIG, M. 2014. UNFCCC and the REDD+ Partnership from a networked governance perspective. *Environmental Science & Policy,* 35**,** 30-39.

REPUBLIC OF KENYA 1968. Land (group representation) Act. Nairobi, Kenya: Government Printer.

REPUBLIC OF KENYA 1994. *Kenya Forestry Master Plan, 1995-2020: Executive Summary,* Nairobi, Kenya, Ministry of Environment and Natural Resources, Government Printer.

REPUBLIC OF KENYA 1999. Environmental Management and Coordination Act (1999). Nairobi, Kenya: Government Printer.

REPUBLIC OF KENYA 2003. Economic recovery strategy for wealth and employment creation Nairobi, Kenya: Ministry of Planning and National Development, Government Printer.

REPUBLIC OF KENYA 2004. Wildlife Consevation Ammendament Bill. Nairobi, Kenya: Government Printer.

REPUBLIC OF KENYA 2005. Forests Act, 2005. Nairobi, Kenya: Government Printer.

REPUBLIC OF KENYA 2007a. Participatory forest management guidelines. Nairobi Government Printer.

REPUBLIC OF KENYA 2007b. The wildlife (conservation and management) bill, 2007. Nairobi Government Printer.

REPUBLIC OF KENYA 2009. The 2009 national population and household population census. Government Printer, Nairobi Kenya. .

REPUBLIC OF KENYA 2010. Revised REDD Readiness Preparation Proposal. Nairobi, Kenya: Government Printer.

REPUBLIC OF KENYA 2010a. Kenya national climate change response strategy. Government Printer Nairobi, Kenya.

REPUBLIC OF KENYA 2010c. The Constitution of Kenya. Government Printer, Nairobi, Kenya

REPUBLIC OF KENYA 2010d. Agricultural sector development strategy for 2010-2020. Nairobi, Kenya: Government Printer.

REPUBLIC OF KENYA 2012a. National climate change action plan. Government Printer, Nairobi Kenya.

REPUBLIC OF KENYA 2013a. *Analysis of drivers and underlying causes of forest cover change in the various forest types of Kenya,* Nairobi, Kenya, Governement Printer

REPUBLIC OF KENYA 2013b. National climate change action plan 2013 -2017. Nairobi, Kenya: Government Printer.

RIBOT, J. C. 2009. Authority over forests: empowerment and subordination in Senegal's democratic decentralisation. *Development and change,* 40**,** 105-129.

ROE, D. 2008. The origins and evolution of the conservationpoverty debate: a review of key literature, events and policy processes. *Oryx* 42**,** 491-503.

RONCOLI, C. (2006) Ethnographic and participatory approaches to research on farmers' responses to climate predictions. Climate Research, 33(1): 81–99.

ROMIJN, E., HEROLD, M., KOOISTRA, L., MURDIYARSO, D. & VERCHOT, L. 2012. Assessing capacities of non-Annex I countries for national forest monitoring in the context of REDD+. *Environmental Science & Policy,* 19–20**,** 33-48.

ROSENDAL, G. K. & ANDRESEN, S. 2011. Institutional design for improved forest governance through REDD: Lessons from the global environment facility. *Ecological Economics,* 70**,** 1908-1915.

ROSSET, J., GIGER, N. & BERNAUER, J. 2013. More Money, Fewer Problems? Cross-level effects of economic deprivation on political representation. *West European Politics,* 36**,** 817-835.

RUDD, M. A. 2004. An institutional framework for designing and monitoring ecosystem-based fisheries management policy experiments. *Ecological Economics,* 48**,** 109-124.

SABATIER, P. & MAZMANIAN, D. 1980. The Implementation of Public Policy: A Framework of Analysis*. *Policy studies journal,* 8**,** 538-560.

SALEEMUL, H. & SOKONA, Y. 2001. *Climate change negotiations. a view from the South*, ENDA.

SANTILLI, M., MOUTINHO, P., SCHWARTZMAN, S., NEPSTAD, D., CURRAN, L. & NOBRE, C. 2005. Tropical deforestation and the Kyoto Protocol. *Climatic Change,* 71**,** 267-276.

SAUNDERS, L. S., HANBURY-TENISON, R. & SWINGLAND, I. R. 2002. Social capital from carbon property: creating equity for indigenous people. *In:* SWINGLAND, I. (ed.) *capturing carbon & conserving biodiversity. the market approach*. London: Earthscan. pp. 218-230.

SAWYER, J. & H., G. 1965. Bargaining and negotiation in international relations. *In:* KELMAN, H. C. (ed.) *International Behavior :A Social-Psychological Analysis.* New York: Holt

SCHENSUL, S. L., SCHENSUL, J. J., SINGER, M., WEEKS, M. & BRAULT, M. 2014. Participatory methods and community-based collaborations. *Handbook of Methods in Cultural Anthropology***,** 185.

SCHROEDER, H. 2010. Agency in international climate negotiations: the case of indigenous peoples and avoided deforestation. *International Environmental Agreements: Politics, Law and Economics,* 10**,** 317-332.

SCHROEDER, H. & LOVELL, H. 2012. The role of non-nation-state actors and side events in the international climate negotiations. *Climate Policy,* 12**,** 23-37.

SCOONES, I. 1995. Investigating difference: applications of wealth ranking and household survey approaches among farming households in southern Zimbabwe. *Development and change,* 26**,** 67-88.

SCOONES, I. 1998. Sustainable rural livelihoods: a framework for analysis. *IDS Working Paper No. 72. Brighton: Institute of Development Studies at the University of Sussex.*

SCOONES, I. 2009. Livelihoods perspectives and rural development. *The Journal of Peasant Studies,* 36**,** 171-196.

SEBENIUS, J. K. 1983. Negotiation arithmetic: adding and subtracting issues and parties. *International Organisation,* 37**,** 281-316.

SCHRECKENBERG, K., CAMARGO, I., WITHNALL, K., CORRIGAN, C., FRANKS, P., ROE, D., SCHERL, L. M. AND RICHARDSON, V. 2010. *Social Assessment of Conservation Initiatives: A review of rapid methodologies,* Natural Resource Issues No. 22. IIED, London.

SHACKLETON, C. M., SHACKLETON, S. E., BUITEN, E. & BIRD, N. 2007. The importance of dry woodlands and forests in rural livelihoods and poverty alleviation in South Africa. *Forest Policy and Economics,* 9**,** 558-577.

SHANNON, M. A. 2003. Mechanisms for coordination *In:* DUBÉ, Y. C. & SCHMITHÜSEN, F. (eds.) *Cross-sectoral policy impacts between forestry and other sectors.* Rome, Italy: FAO Forestry Paper, vol. 142

SHELBY, D. H. & MORGAN, R. M. 1996. The Resource-advantage theory of competition: dynamics, path dependencies, and evolutionary dimensions. *Journal of Marketing,* 60**,** 107-114.

SHIVELY, G. 2011. Sampling: Who, how and how many? *In:* ANGELSEN A, LARSEN HO, LUND JF, SMITH-HALL, C. & S., W. (eds.) *Measuring livelihoods and environmental dependence: methods for research and fieldwork.* Bogor, Indonesia: CIFOR, 51-70.

SIKOR, T., STAHL, J., ENTERS, T., RIBOT, J. C., SINGH, N., SUNDERLIN, W. D. & WOLLENBERG, L. 2010. REDD-plus, forest people's rights and nested climate governance. *Global Environmental Change,* 20**,** 423-425.

SILAYAN, A. 2005. Equitable distribution of CDM projects among developing countries. HWWA-Report.

SILLS, E., MADEIRA, E., SUNDERLIN, W. & WERTZ-KANOUNNIKOFF, S. 2009. The evolving landscape of REDD+ projects. *In:* ANGELSEN, A. (ed.) *Realising REDD+National strategy and policy options.* Bogor, pp. 265-280: CIFOR.

SIMELTON, E., FRASER, E. D. G., TERMANSEN, M., FORSTER, P. M. & DOUGILL, A. J. 2009. Typologies of crop-drought vulnerability: an empirical analysis of the socio-economic factors that influence the sensitivity and resilience to drought of three major food crops in China (1961–2001). *Environmental Science & Policy,* 12**,** 438-452.

SITHOLE, B. 2002. Where the power lies: multiple stakeholder politics over natural resources: a participatory methods guide. Bogor, Indonesia: CIFOR.

STERN, N. 2006. The Economics of climate change: The Stern review. Cambridge, UK: Cambridge.

STRASSBURG, B., TURNER, R. K., FISHER, B., SCHAEFFER, R. & LOVETT, A. 2009. Reducing emissions from deforestation—the "combined incentives" mechanism and empirical simulations. *Global Environmental Change,* 19**,** 265-278.

STRINGER, L., DOUGILL, A., DYER, J., VINCENT, K., FRITZSCHE, F., LEVENTON, J., FALCÃO, M., MANYAKAIDZE, P., SYAMPUNGANI, S., POWELL, P. & KALABA, G. 2014. Advancing climate compatible development: lessons from southern Africa. *Regional Environmental Change,* 14**,** 713-725.

STRINGER, L. C., DYER, J. C., REED, M. S., DOUGILL, A. J., TWYMAN, C. & MKWAMBISI, D. 2009. Adaptations to climate change, drought and desertification: local insights to enhance policy in southern Africa. *Environmental Science & Policy,* 12**,** 748-765.

SWINGLAND, I. (ed.) 2002. *Capturing carbon and conserving biodiversity. the market approach.* London: Earthscan.

TASHAKKORI, A. & TEDDLIE, C. 2010. *Sage handbook of mixed methods in social & behavioral research*, Sage.

TENG-ZENG, F. 2009. Financing science and innovation in Africa: institutional development and challenges. *In:* KALUA, F., AWOTEDU, A., KAMWANJA, L. & SAKA, J. (eds.) *Science, technology and innovation for public health in Africa.* Johannesburg: NEPAD office of Science and Technology.

THAI, V., HANDSCHUH, S. & DECKER, S. 2008. *IVEA: An information visualization tool for personalized exploratory document collection analysis*, Springer.

THENYA, T. & KIAMA, S. 2008. Socioeconomic survey and livelihood analysis of the Maasai Mau Ecosystems. Technical series; Kenya Forest Working Group. Nairobi, Kenya: Kenya Forest Working Group, Technical series;.

THOMAS, D. S. & TWYMAN, C. 2005. Equity and justice in climate change adaptation amongst natural-resource-dependent societies. *Global Environmental Change,* 15**,** 115-124.

THOMPSON, M. C., BARUAH, M. & CARR, E. R. 2011. Seeing REDD+ as a project of environmental governance. *Environmental Science & Policy,* 14**,** 100-110.

THURMOND, V. 2004. The point of triangulation. *Journal of Nursing Scholarship* 33**,** 253-258.

TOLMAN, D. L. & BRYDON-MILLER, M. E. 2001. *From subjects to subjectivities: A handbook of interpretive and participatory methods*, New York University Press.

TORRES, A. B. & SKUTSCH, M. M. 2014. *Challenges for pro-poor benefit sharing schemes in the implementation of REDD+ in Mexico*, IUCN.

UNEP AND WCWC 2010. Carbon in Kenya's biomass and soil. Nairobi: UNEP.

UN-REDD 2008 Framework document collaborative program on reducing emissions from deforestation and forest degradation in developing countries (UN-REDD), Technical series, UN-REDD program; available at http://www.un-redd.org/ (retrieved on 13.10.10).

UN-REDD 2010. The UN-REDD Program Strategy 2010-2015. Washington D.C.: FAO, UNDP, UNEP.

UN-REDD 2010. UNDP mission to reducing emissions from deforestation and forest degradation in Suriname; available athttp://undpsuriname.org.

UN 2000. United Nations Millenium Declarartions New York, USA: UN Genral Assembly, A/RES/55: http://www.un.org/millennium/declaration/ares552e.pdf.

UN 2012. Report of the United Nations Conference on sustainable development Rio de Janeiro: UN: A/CONF.216/16: http://www.uncsd2012.org/content/documents/814UNCSD%20REPORT%20final%20revs.pdf.

UNCED 1992. Report of the United Nations Conference on Environment and Development. Rio de Janeiro: UN, A/CONF.151/26 (Vol. I): http://www.un.org/documents/ga/conf151/aconf15126-1annex1.htm.

UNDP 2007. Human Development Report 2007/2008: fighting climate change: human solidarity in a divided world. New York: : United Nations Development Programme.

UNDRIP 2008. United Nations Declaration on the Rights of Indigenous Peoples. UN.

UNFAIRPLAY 2011. A Report to the UNFCCC on Negotiating Capacity & Access to Information. Youth Climate.

UNFCCC 1992. United Nations Framework Convention on Climate Change. Rio de Janeiro UN Summit.

UNFCCC 1998. Kyoto Protocol. Kyoto: UN.

UNFCCC 2010. Report of the Conference of the Parties on its sixteenth session, held in Cancun from 29 November to 10 December 2010. FCCC/CP/2010/7.

UNFCCC 2011 Report of the Conference of the Parties on its seventeenth session, held in Durban from 28 November to 11 December 2011. FCCC/CP/2011/9/Add.1.

UNFCCC 2013. Report of the Conference of the Parties on its nineteenth session, held in Warsaw from 11 to 23 November 2013. FCCC /CP/2013/10/Add.1 available online: http://unfccc.int/resource/docs/2013/cop19/eng/10a01.pdf#page=24.

VAN NOORDWIJK, M., LUSIANA, B., LEIMONA, B., DEWI, S. & WULANDARI, D. 2013. Negotiation-support toolkit for learning landscapes. *Bogor, Indonesia: World Agroforestry Centre (ICRAF) Southeast Asia Regional Program*.

VATN, A. & VEDELD, P. O. 2013. National governance structures for REDD+. *Global Environmental Change,* 23**,** 422-432.

VERCHOT, L. V., PETKOVA, E. & BOGOR, I. 2009. *The state of REDD negotiations: consensus points, options for moving forward and research needs to support the process,* Center for International Forestry Research.

VERMEULEN, S. & COTULA, L. 2010. Over the heads of local people: consultation, consent, and recompense in large-scale land deals for biofuels projects in Africa. *The Journal of Peasant Studies,* 37**,** 899-916.

VINCENT, K. 2007. Uncertainty in adaptive capacity and the importance of scale. *Global Environmental Change,* 17**,** 12-24.

VISSEREN-HAMAKERS I, M. C., VIJGE M, CASHORE B: 2012. Trade-offs, co-benefits and safeguards: current debates on the breadth of REDD+. *Curr Opin Environ Sustain* 4.

VISSEREN-HAMAKERS, I. J., GUPTA, A., HEROLD, M., PEÑA-CLAROS, M. & VIJGE, M. J. 2012. Will REDD+ work? The need for interdisciplinary research to address key challenges. *Current Opinion in Environmental Sustainability,* 4**,** 590-596.

VOIGT, S. 2013. How (Not) to measure institutions. *Journal of Institutional Economics,* 9**,** 1-26.

WALLBOTT, L. 2014. Indigenous peoples in UN REDD+ Negotiations: importing power and lobbying for rights through discursive interplay management. *Ecology and Society,* 19.

WARRICK, O. 2009. Ethics and methods in research for community-based adaptation: reflections from rural Vanuatu *Journal of Participatory Learning and Action,* 60**,** 76-87.

WASS, P. 1995. *Kenya's Indigenous forests: status, management, and conservation,* Washington DC., Island Press.

WASSERMAN, S. 1994. *Social network analysis: Methods and applications*, Cambridge university press.

WCED 1987. Our Common Future. Newyork: Oxford University Press.

WELLS, M. 2003. 2003. Protected area management in the tropics:can we learn from experience? Journal of Sustainable. *Forestry* 17.

WERTZ-KANOUNNIKOFF, S. & KONGPHAN-APIRAK, M. 2009. Emerging REDD+: a preliminary survey of demonstration and readiness activities. Bogor, Indonesia: CIFOR Working Paper no. 46.

WILDLIFE-WORKS 2008. The Kasigau Corridor REDD Project Phase I – Rukinga sanctuary: project design document (PDD) For Validation Using the climate, community and biodiversity standard (CCBS) Rukinga: Wildlife-Works.

WILDLIFE-WORKS 2011. The Kasigau Corridor REDD Project, Phase I – Rukinga sanctuary project document (PD) for validation using the voluntary carbon standard (VCS) 2007.1 / sectoral scope 14 vm0009 methodology for avoided mosaic deforestation of tropical forests, version 9. Wildlife-Works, Rukinga.

WILLIAMS, M. 2005. The third World and global environmental negotiations: interests, institutions and ideas. *Global Environmental Politics,* 5**,** 48-69.

WOLMER, W., KEELEY, J., LEACH, M., MEHTA, L., SCOONES, I. & WALDMAN, L. 2006. Understanding Policy Processes. A Review of IDS research on the environment. Brighton: Institute of Development Studies.

WORLD BANK 2008. World Development Report 2008: Agriculture for development. Washington, DC: World Bank.

WORLD BANK 2011. Carbon Finance;The World Bank weighs in. Washington: World Bank.

WUNDER, S. 2005. *Payments for environmental services: some nuts and bolts*, CIFOR Jakarta, Indonesia.

WUNDER, S. 2008a. How do we deal with leakage? *In:* ANGELSEN, A. (ed.) *Moving Ahead with REDD.* Bogor: CIFOR.

WUNDER, S. 2008b. How do we deal with leakage? *In:* ANGELSEN, A. (ed.) *Moving ahead with REDD: Issues, options and implications.* Bogor, Indonesia: CIFOR, pp 65-76.

WUNDER, S. & ALBÁN, M. 2008. Decentralized payments for environmental services: The cases of Pimampiro and PROFAFOR in Ecuador. *Ecological Economics,* 65**,** 685-698.

YIN, R. 1984. *Case study research. Beverly* Hills, CA, Sage Publications.

ZOMER, R., TRABUCCO, A., VAN STRAATEN, O. & BOSSIO, D. 2006. Carbon, land and water: A global analysis of the hydrologic dimensions of climate change mitigation through Afforestation/reforestation. IWMI Research Report 101, Colombo, Sri Lanka: IMWI.

ZOMER, R. J., TRABUCCO, A., COE, R., PLACE, F., 2009. Trees on farm: analysis of global extent and geographical patterns of agroforestry. Nairobi, World Agroforestry Centre.

Appendices

Appendix 1: Sample data used in Vulnerability indexing

County	Year	Area (ha)	Prod. (tons)	Observed yield (tons/ha)	(-)0.008x	Constant =0.703	Expected yield (y=-0.008x+0.703)	Sensitivity index (Expected yield/Observed yield)
					(-)0.056x	2.753	y=0.056x+2.753)	
Kiambu	1975	21884.000	43786.000	2.001	0.056	2.753	2.697	1.348
Kiambu	1976	18626.000	58672.000	3.150	0.112	2.753	2.641	0.838
Kiambu	1977	21472.213	51694.829	2.408	0.168	2.753	2.585	1.074
Kiambu	1978	16896.000	30410.000	1.800	0.224	2.753	2.529	1.405
Kiambu	1979	18700.000	40500.000	2.166	0.280	2.753	2.473	1.142
Kiambu	1980	19000.000	63000.000	3.316	0.336	2.753	2.417	0.729
Kiambu	1981	21000.000	58800.000	2.800	0.392	2.753	2.361	0.843
Kiambu	1982	22923.753	76503.604	3.337	0.448	2.753	2.305	0.691
Kiambu	1983	26257.768	67778.517	2.581	0.504	2.753	2.249	0.871
Kiambu	1984	19813.000	45579.000	2.300	0.560	2.753	2.193	0.953
Kiambu	1985	30584.000	76460.000	2.500	0.616	2.753	2.137	0.855
Kiambu	1986	26457.000	66130.000	2.500	0.672	2.753	2.081	0.833
Kiambu	1987	28880.654	79481.723	2.752	0.728	2.753	2.025	0.736
Kiambu	1988	15709.000	26705.000	1.700	0.784	2.753	1.969	1.158
Kiambu	1989	25702.000	29784.000	1.159	0.840	2.753	1.913	1.651
Kiambu	1990	21997.027	26853.874	1.221	0.896	2.753	1.857	1.521
Kiambu	1991	34869.000	41832.000	1.200	0.952	2.753	1.801	1.501
Kiambu	1992	27005.000	76286.000	2.825	1.008	2.753	1.745	0.618
Kiambu	1993	26270.000	18386.000	0.700	1.064	2.753	1.689	2.413
Kiambu	1994	27404.000	49327.000	1.800	1.120	2.753	1.633	0.907
Kiambu	1995	18800.000	25380.000	1.350	1.176	2.753	1.577	1.168
Kiambu	1996	14764.000	20463.000	1.386	1.232	2.753	1.521	1.097
Kiambu	1997	17213.000	26339.000	1.530	1.288	2.753	1.465	0.957
Kiambu	1998	17706.000	12916.000	0.729	1.344	2.753	1.409	1.932
Kiambu	1999	15360.000	11844.284	0.771	1.400	2.753	1.353	1.755
Kiambu	2000	14740.000	11439.244	0.776	1.456	2.753	1.297	1.671
Kiambu	2001	16500.000	12790.000	0.775	1.512	2.753	1.241	1.601
Kiambu	2002	18750.000	25408.000	1.355	1.568	2.753	1.185	0.874
Kiambu	2003	24706.750	28121.696	1.138	1.624	2.753	1.129	0.992
Kiambu	2004	30663.500	30835.391	1.006	1.680	2.753	1.073	1.067
Kiambu	2005	36620.250	33549.087	0.916	1.736	2.753	1.017	1.110
Kiambu	2006	42577.000	36262.782	0.852	1.792	2.753	0.961	1.128
Kiambu	2007	41237.000	49047.651	1.189	1.848	2.753	0.905	0.761
Kiambu	2008	48232.000	27376.380	0.568	1.904	2.753	0.849	1.496
Kiambu	2009	40835.550	37877.400	0.928	1.960	2.753	0.793	0.855
Kiambu	2010	50025.000	55191.150	1.103	2.016	2.753	0.737	0.668
Kiambu	2011	53832.000	65471.670	1.216	2.072	2.753	0.681	0.560
Kiambu	2012	57639.000	75752.190	1.314	2.128	2.753	0.625	0.476
					0.016x	Constant =1.570	(y=0.016x+1.57)	
Taita Taveta	1975	7005.380	11341.164	1.619	0.016	1.570	1.554	0.960
Taita Taveta	1976	16955.000	29520.409	2.940	0.032	1.570	1.538	0.523
Taita Taveta	1977	5951.500	9579.726	2.808	0.048	1.570	1.522	0.542
Taita Taveta	1978	4834.000	7145.430	2.677	0.064	1.570	1.506	0.563
Taita Taveta	1979	3116.600	4522.443	2.350	0.080	1.570	1.490	0.634
Taita Taveta	1980	4169.800	5937.811	2.023	0.096	1.570	1.474	0.728
Taita Taveta	1981	16509.000	22614.800	1.370	0.112	1.570	1.458	1.064
Taita Taveta	1982	8082.000	8946.000	1.107	0.128	1.570	1.442	1.303
Taita Taveta	1983	3870.000	6966.697	1.800	0.144	1.570	1.426	0.792
Taita Taveta	1984	3511.000	7876.598	2.243	0.160	1.570	1.410	0.629
Taita Taveta	1985	7198.000	12956.000	1.800	0.176	1.570	1.394	0.774
Taita Taveta	1986	7715.000	12556.000	1.627	0.192	1.570	1.378	0.847

Taita Taveta	1987	5187.000	7271.000	1.402	0.208	1.570	1.362	0.972
Taita Taveta	1988	6089.000	10046.000	1.650	0.224	1.570	1.346	0.816
Taita Taveta	1989	38400.000	58560.000	1.525	0.240	1.570	1.330	0.872
Taita Taveta	1990	45801.000	49921.000	1.090	0.256	1.570	1.314	1.206
Taita Taveta	1991	4007.000	8146.000	2.033	0.272	1.570	1.298	0.638
Taita Taveta	1992	8146.000	3784.000	0.465	0.288	1.570	1.282	2.760
Taita Taveta	1993	3920.000	5155.000	1.315	0.304	1.570	1.266	0.963
Taita Taveta	1994	4060.000	5683.000	1.400	0.320	1.570	1.250	0.893
Taita Taveta	1995	4235.000	11188.000	2.642	0.336	1.570	1.234	0.467
Taita Taveta	1996	4230.000	2538.000	0.600	0.352	1.570	1.218	2.030
Taita Taveta	1997	6488.000	7765.347	1.197	0.368	1.570	1.202	1.004
Taita Taveta	1998	6376.600	6843.564	1.073	0.384	1.570	1.186	1.105
Taita Taveta	1999	4320.000	6313.465	1.461	0.400	1.570	1.170	0.801
Taita Taveta	2000	8592.000	5358.416	0.624	0.416	1.570	1.154	1.850
Taita Taveta	2001	7635.000	7559.406	0.990	0.432	1.570	1.138	1.149
Taita Taveta	2002	7253.000	5875.518	0.810	0.448	1.570	1.122	1.385
Taita Taveta	2003	8718.000	3487.399	0.400	0.464	1.570	1.106	2.765
Taita Taveta	2004	5081.500	2522.052	0.496	0.480	1.570	1.090	2.196
Taita Taveta	2005	1445.000	1556.706	1.077	0.496	1.570	1.074	0.997
Taita Taveta	2006	1210.500	1085.793	0.897	0.512	1.570	1.058	1.180
Taita Taveta	2007	976.000	614.880	0.630	0.528	1.570	1.042	1.654
Taita Taveta	2008	2503.500	2899.823	1.158	0.544	1.570	1.026	0.886
Taita Taveta	2009	4031.000	5184.765	1.286	0.560	1.570	1.010	0.785
Taita Taveta	2010	7086.000	9754.650	1.377	0.576	1.570	0.994	0.722
Taita Taveta	2011	11962.000	14283.765	1.194	0.592	1.570	0.978	0.819
Taita Taveta	2012	16838.000	18812.880	1.117	0.608	1.570	0.962	0.861

Sample county level monthly rainfall data

County	Year	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec
Kiambu	1970	56.40	9.40	272.90	203.60	136.60	6.90	53.00	21.10	47.50	34.80	81.70	46.80
Kiambu	1971	11.10	0.00	47.40	314.10	212.90	24.80	7.40	5.30	1.80	50.40	103.90	183.70
Kiambu	1972	27.50	120.40	30.60	48.70	94.60	44.70	6.70	1.50	38.80	117.90	127.90	18.80
Kiambu	1973	91.80	21.70	41.60	199.30	75.80	20.10	4.30	0.30	27.70	25.30	158.20	21.30
Kiambu	1974	0.30	7.60	113.20	319.70	32.90	65.40	97.20	40.90	0.00	45.70	114.30	23.40
Kiambu	1975	2.50	8.30	119.10	163.80	90.80	17.60	64.00	4.00	29.40	52.00	98.40	47.30
Kiambu	1976	15.15	25.35	131.65	93.80	35.10	61.90	5.00	0.60	71.30	43.90	212.30	62.80
Kiambu	1977	27.80	42.40	144.20	348.50	154.40	13.20	12.60	9.70	11.20	27.90	380.60	69.30
Kiambu	1978	83.80	64.00	171.50	198.00	47.30	10.30	13.10	2.50	59.90	150.00	138.40	72.30
Kiambu	1979	98.30	32.70	163.00	252.90	176.80	27.70	11.90	7.80	2.70	37.10	205.30	20.50
Kiambu	1980	79.30	1.40	91.80	95.30	219.30	4.80	1.90	16.60	1.50	37.50	267.40	12.10
Kiambu	1981	2.30	2.10	217.10	230.80	174.90	20.70	8.90	2.90	4.20	68.00	69.00	69.80
Kiambu	1982	0.70	0.00	118.80	149.20	37.40	7.50	24.90	7.10	7.30	248.90	198.40	67.70
Kiambu	1983	1.00	127.30	124.30	243.50	15.00	30.30	0.00	10.10	0.40	167.50	84.40	170.20
Kiambu	1984	5.30	1.20	23.50	67.40	0.90	0.90	29.50	2.70	76.00	157.90	125.60	81.60
Kiambu	1985	4.50	97.70	145.60	399.60	58.50	11.90	2.00	0.00	5.20	58.40	105.70	21.50
Kiambu	1986	15.90	0.00	123.00	346.10	125.20	12.10	1.20	1.10	1.50	45.10	227.30	72.40
Kiambu	1987	5.70	3.60	6.30	159.90	103.30	137.50	18.60	33.90	0.00	2.80	119.80	18.60
Kiambu	1988	48.60	19.10	173.90	271.30	118.90	48.40	13.10	8.60	35.20	62.60	136.40	189.80
Kiambu	1989	165.60	34.10	116.80	314.90	78.90	7.40	30.30	23.00	49.60	109.40	150.20	128.60
Kiambu	1990	68.00	79.00	318.50	268.90	97.30	3.60	3.30	4.10	61.40		178.20	172.40
Kiambu	1991	67.70	6.20	98.00	195.20	141.00	17.80	2.70	7.40	0.30	40.80	157.50	61.20
Kiambu	1992	4.60	0.50	13.60	324.20	78.30	7.40	31.80	1.70	5.30	32.90	173.10	110.20
Kiambu	1993	162.80	129.70	11.60	78.30	86.50		4.00	1.60	3.80	40.70	193.20	87.70
Kiambu	1994	0.00	28.00	54.70	187.30	56.80	9.70	5.60	20.30	6.20	167.90	318.30	56.20
Kiambu	1995	11.40	49.20	129.90	153.70	40.00	10.70	6.20	31.00	3.60	171.20	137.30	162.50
Kiambu	1996	20.80	76.40	161.40	52.10	49.60	36.30	28.70	1.50	0.20	0.00	375.20	63.10
Kiambu	1997	0.00	0.00	59.30	487.20	91.80	9.80	1.80	63.60	0.90	238.80	416.60	229.00
Kiambu	1998	297.70	236.10	180.90	176.40	356.50	131.90	61.70	8.00	2.70	10.50	92.00	13.00
Kiambu	1999	9.70	2.60	0.00	264.30	10.30	2.30	21.80	11.10	2.60	29.10	318.80	221.60
Kiambu	2000	3.50	0.00	18.80	74.90	29.40	5.00	5.90	2.20	7.90	11.50	136.10	62.10
Kiambu	2001	358.40	32.70	170.20	106.00	66.50	4.60	0.80	16.10	1.70	48.70	233.20	20.70
Kiambu	2002	16.30	22.10	227.50	313.40	250.50	3.70	2.20	5.50	80.20	83.10	137.70	243.10
Kiambu	2003	14.20	3.00	93.50	215.90	254.30	1.00	3.60	17.30	0.00	83.30	180.90	44.20
Kiambu	2004	40.60	74.70	47.90	376.20	120.90	1.20	0.00	0.00	20.90	78.20	129.30	98.70
Kiambu	2005	21.40	1.00	52.30	245.10	259.20	10.90	7.50	1.90	5.50	38.10	144.80	2.10
Kiambu	2006	17.50	27.80	100.70	196.70	185.40	9.40		21.70	22.70	33.60	374.10	226.70
Kiambu	2007	30.80	102.90	24.10	239.30	85.00	3.30	14.70	13.70	20.20	55.90	55.90	25.60
Kiambu	2008	104.80	27.10	100.40	271.00	7.40	6.40	28.30	7.70	10.10	95.20	87.55	59.90

Kiambu	2009	49.30	19.00	51.50	173.70	91.10	10.10	1.10	1.70	0.00	134.50	119.20	94.20
Kiambu	2010	138.30	107.00	209.50	175.90	152.40	24.90	4.80	6.30	1.30	98.50	153.50	101.60
Taita Taveta	1970	116.40	0.20	200.20	23.70	16.80	0.20	3.90	1.90	6.00	3.90	51.60	117.50
Taita Taveta	1971	2.40	0.20	11.10	114.10	12.70	6.30	4.70	0.00	2.60	4.90	60.20	61.30
Taita Taveta	1972	46.00	103.50	60.80	90.70	159.70	0.00	5.00	1.80	36.60	9.80	214.10	114.90
Taita Taveta	1973	27.40	36.40	70.00	60.40	30.60	0.20	0.60	1.80	5.10	14.30	203.70	18.40
Taita Taveta	1974	12.00	0.80	13.00	200.60	6.10	2.40	11.70	6.00	0.90	16.00	68.40	46.10
Taita Taveta	1975	6.00	4.00	26.30	41.00	25.40	0.00	1.20	0.00	22.00	10.30	102.60	94.90
Taita Taveta	1976	19.30	2.60	19.10	59.90	41.20	0.50	0.40	4.50	57.00	1.30	143.30	33.30
Taita Taveta	1977	30.00	27.60	29.60	92.70	5.80	9.40	0.00	2.60	19.70	47.10	156.50	207.70
Taita Taveta	1978	106.00	35.40	216.00	100.60	14.70	0.50	1.60	0.00	0.80	15.80	334.20	115.80
Taita Taveta	1979	144.10	26.50	67.50	165.20	56.20	10.70	5.80	0.30	3.80	23.40	79.40	220.30
Taita Taveta	1980	50.40	15.80	54.10	49.00	4.40	0.00	1.50	32.00	8.90	2.60	97.30	96.90
Taita Taveta	1981	1.50	0.70	248.40	84.10	22.60	0.00	3.00	2.70	13.80	35.20	62.50	259.10
Taita Taveta	1982	4.50	0.00	68.60	82.90	25.90	5.30	10.10	12.90	60.80	106.40	254.00	64.20
Taita Taveta	1983	2.70	55.50	89.90	3.10	36.30	2.80	5.60	0.10	4.20	0.00	81.70	43.50
Taita Taveta	1984	0.30	0.60	24.50	60.20	1.60	10.00	4.60	0.20	4.10	72.50	120.60	229.20
Taita Taveta	1985	37.90	52.30	10.60	69.40	14.30	0.00	6.90	2.50	5.40	18.00	93.90	143.00
Taita Taveta	1986	7.60	0.10	24.20	30.00	97.30	0.00	0.00	8.40	0.00	20.40	148.00	218.70
Taita Taveta	1987	22.20	2.30	8.30	160.70	44.80	1.60	11.40	17.70	0.00	6.10	53.50	18.50
Taita Taveta	1988	110.40	3.50	95.40	65.70	4.80	6.40	0.10	9.90	29.50	27.30	63.10	193.40
Taita Taveta	1989	32.60	0.00	8.50	120.90	9.00	0.00	0.00	6.90	2.20	68.10	114.50	123.20
Taita Taveta	1990	11.80	53.90	204.30	209.50	1.30	0.00	0.00	0.00	19.80	19.40	57.00	170.70
Taita Taveta	1991	8.60	2.70	186.70	147.60	41.50	5.10	13.90	44.80	2.60	18.40	33.00	88.50
Taita Taveta	1992	2.00	3.30	44.80	103.00	31.00	8.90	0.00	1.90	1.20	20.60	192.80	198.20
Taita Taveta	1993	142.20	19.40	16.90	72.50	3.50	9.90	0.80	6.60	1.00	16.90	140.90	106.80
Taita Taveta	1994	8.10	21.50	203.00	10.90	24.80	1.20	5.70	2.30	10.60	14.00	264.10	202.10
Taita Taveta	1995	8.20	26.80	23.60	114.50	5.40	0.00	0.40	9.60	0.00	20.90	205.50	18.60
Taita Taveta	1996	6.20	29.30	106.30	62.30	37.80	0.00	0.60	0.00	0.40	2.00	176.00	56.00
Taita Taveta	1997	1.90	0.00	39.30	127.20	41.60	9.20	0.00	0.00	0.60	113.50	212.00	169.50
Taita Taveta	1998	355.80	196.80	120.20	129.30	26.00	1.20	3.80	0.00	10.20	4.20	238.40	53.90
Taita Taveta	1999	16.30	7.00	48.00	109.40	8.60	14.30	0.50	6.70	3.90	0.40	112.80	111.90
Taita Taveta	2000	3.00	0.00	67.90	5.70	10.90	14.10	0.20	19.00	18.50	17.30	192.00	195.10
Taita Taveta	2001	126.40	4.10	91.30	32.30	6.80	7.90	0.00	0.50	0.00	5.70	133.10	171.40
Taita Taveta	2002	89.60	2.10	57.00	27.20	59.90	2.90	2.70	15.00	44.30	98.60	213.70	185.50
Taita Taveta	2003	2.30	6.00	66.90	21.70	28.70	1.40	0.00	6.30	3.20	0.00	23.80	50.10
Taita Taveta	2004	247.70	41.60	38.70	128.60	0.00	9.20	1.20	0.00	0.00	62.60	141.40	128.90
Taita Taveta	2005	18.20	2.00	64.80	59.30	34.60	0.00	1.10	4.90	8.20	14.70	48.80	24.60
Taita Taveta	2006	22.40	0.00	97.40	113.60	29.70	2.00	2.80	0.80	36.10	27.40	171.50	274.30
Taita Taveta	2007	53.60	8.60	48.10	12.70	42.70	9.70	8.20	10.40	1.50	35.00	0.00	24.60
Taita Taveta	2008	30.50	6.50	144.70	105.10	2.30	2.30	3.50	4.70	4.70	1.70	143.30	31.70
Taita Taveta	2009	46.20	9.20	59.70	137.00	0.00	17.30	0.60	0.60	0.00	107.80	102.20	207.20
Taita Taveta	2010	79.10	24.90	102.30	43.80	22.90	1.20	0.00	0.70	3.90	1.40	75.40	107.40

Appendix 2: Household questionnaire

Household Questionnaire: Intervention Sites

for PhD Research Project: REDD+ design and implementation

University of Leeds

Introduction

You are being invited to respond to a set of study questions. The study intends to find out how the carbon project (Kenya Agricultural Carbon Project) work with people living in this area. The study is undertaken for academic purposes and specifically for a PhD degree at the University of Leeds in the UK.

You have been chosen to participate in this interview because you live in this area and the carbon project affects your life in one way or the other. Your experience and knowledge of how the project interacts with your livelihood activities is useful for this study. An additional 99 households within this area will also be asked similar questions. At some point, selected members of the community will be brought together for discuss related questions.

It is your decision to accept to respond to the questions. In that regard, you are free to withdraw from answering the questions if you feel uncomfortable and we assure you that nothing will be held against you for doing so. We will ask you a series of questions about your livelihood strategies, your involvement in the carbon project, what benefits and how it has changed your living conditions. The interview will take not more than 2 hours.

All the information collected during the interview will remain confidential and various symbols will be used to represents names of respondents. The results of the research will be used in academic publications and reports for the University of Leeds and the Partnership for Tropical Forest Margins. The data may also be used in subsequent research.

Whilst there are no immediate benefits for participating in this research, it is hoped that this work will contribute to better implementation of the current and future projects for the overall benefit of the people in this area.

If you have any further questions or clarifications after the interview, you can contact the student leading the research on the contacts below:

Mr Joanes Atela, P.O Box 30677- 00200 Nairobi Kenya

Questionnaire Summary

Section	Number of questions	Minutes per question	Total minutes
General Introduction	1	10	10
1	10	0.5	5
2	1	5	5
3	24	2	48
4	22	2	44
5	3	2	6
6	1	2	2
Total	61		120 (2 hours)

Part 1: Demographic data (descriptive statistics)

Questionnaire Number						
Respondent Code						
Location /Village						
Age						
Gender						
Household size						
Main livelihood activity						
Wealth category	High		middle		Low	
Project household		Non project household				

Part 2: Oral livelihood history

Please give a brief history of how the sources and amounts of water, land, income, and education facilities have changed since you moved into this area? And what do you think caused the changes?

Part 3: Profiling livelihood assets

3.1. Natural assets									
3.1.1. Who owns this land?	Myself		Community		State		Other (tenant)		
3.2.2. What is the size of your land (acres)		**3.1.3.** Do you have a title deed for this land?	No Yes	**3.1.4**. If no, what proof do you have to show that you own this land how is the proof reiforced within state or traditional laws?					
3.1.5. How did you acquire your land?	Inheritance		Purchase		Rent		Other		

3.1.6. How much land (acres) have you allocated to each of the following purposes?	20 years ago		10 years ago		Currently	
	Food crops Cash crop Farm forest Grazing land Other		Food crops Cash crop Farm forest Grazing land Other		Food crops Cash crop Farm forest Grazing land Other	
Why did you change the land allocations to various uses and what changes do you expect in future and why?						

3.1.7. How many bags of food/cash crops do you harvest from your land each year and how long do you consume the food	Food crops (list)	Cash crops (list)
	1 2 3 Consumption period (months) and copping strategy during the yield gap	

3.1.8. If farming is your main livelihood activity and income source do you experience crop failure? Please indicate the causes of such failures and how you cope?	Cause of crop failure	Seasons	Coping strategy

3.1.9. Do you apply any fertilizer or manure on your farm? Yes/No. If yes	Farm yard manure type and amount in kg/acre or use any local scales	Artificial fertilizers type and amount Kg/acre or use any local scales

state the type amount and cropping field to which you apply the manure/fertilizer				
3.1.10. What other forest/land resources exist in the area and how are they accessed and owned?	Resource	Who owns it	Who permits the use of the resource?	
3.1.11. Where do you get water and how do you use the water?	Source and use		Access (distance in km and available times	
	1 2 3			
3.1.12. How do you use forests in this area?	Product/service	Forest type (state/community/onfarm or both)	Season (dry, wet, other)	Reason for the season
	Timber		.	
	Charcoal			
	Fuel wood			
	Building. materials			
	Medicine			
	Wild fruit			
	Game meat			
	Farming			
	Recreation			.
	Others (name)			

3.2. Financial assets

	Income category Type(s)	Season(dry, wet etc.) and abundance	Amount (Ksh per day/week/month
3.2.1. What is your main source of income	1		
3.2.2. What other sources of income do you have? (upto 3 in order of priority)	1 2 3		
	Remittance amount and season		Amount (Ksh/week or month

3.2.3. Do you get remittances from relatives or friends? Yes/No: if yes state how much and during what times			
3.2.4. Do you save any money? Yes/No If yes state how much and during what times	Amount saved and saving season		Amount (Ksh/week or month
3.2.5. What other financial assets do you own?	Livestock (type)	Number	Market value (Ksh)
	1 2 3		
	Fixed assets	Number	Market value (Ksh)
	1 2 3		
3.2.6. How much do you spend on the following items?	Education (Ksh/month or year)	Health (Ksh/month or year)	Food (Ksh/month or year)

3.3. Human assets

3.3.1. Level of education	Primary	Secondary	College/university
	Household head (tick)	Household head (tick)	Household head (tick)
	Others (give number)	Others (give number)	Others (give number)
3.3.2. How easy does your household access the following education facilities?	Schools	Bursaries	Books
	Easily Moderate Not easily		

3.4. Social assets

3.4.1. Are you a member of any local associations/group? Yes/No	If Yes: Association name/type	If Yes: Main activity	If Yes: Role
	1 2 3		
3.4.2. Gender issues: What roles and rights do men and women have over land resources?	Land resource ownership		
	Wife /girls rights and roles	Husband/boys rights roles	
	…… …… ……	…… …… ……	
	Land resource use decision		
	…… ……	…… ……	
3.4.3. How are the youth entitled to land and what role do they	Land ownership …… …… …… ……	Conservation and farming activities …… …… …… ……	

play in land based conservation activities?	Land use decision	General opinion on the youth involvement in resource management	
3.4.4. What rules and regulations exist on the use and/or access of forest/land resources.....		Who makes the rules and what is your role?.....	
Physical assets			
How far is your hmestead from the nearby road (km)		Road type	distance
How far is the nearby market center (km)		Market value to the respondent	Market distance (km)
Part 4: Project interactions with the livelihood assets			
4.1. Project engagement: introduction and implementation			
4.1.1. How did you know about the project?			
4.1.2. What does the project do/ how do you understand the project/ What problems does the project solve?			
4.1.3. How did you learn about the problem being solved by the project and what is your experience with the problem?			
4.1.4. How are you involved with the project? (project group member, project committee member etc.)			
4.1.5. What role did you play in deciding the project activities before it started and during its operations?			
4.1.6. Which problems do you experience in engaging with the project?			
4.2. Impacts of assets on project's work **4.2.1.** How do your livelihood assets affect your engagement with the project? Please rank the livelihood assets in terms of how much they affect your engagement with the project both positively or negatively			

Asset base	Impact : positive effect (+) negative effect (-)	Important impact and reason	Rank
Land tenure ownership	+		
	-		
Land size and use	+		
	-		
Land productivity	-		
	+		
Communal or on-farm forest cover	+		
	-		
Economic activities	+		
	-		
Income level	+		
	-		
Level of education	+		
Employment status	+		
	-		
Water access	+		
	-		
Market access	+		
	-		
Traditions and local forest and land use rules	+		
	-		
Local associations	+		
	-		
Gender land rights	+		
	-		

4.2.2. From the above assets, which of the three assets have the most influence on the project's efforts to protect forests **(rank in order of priority)** 1 2 3			
4.3. Project impacts			
4.3.1. What do/did you expect from the project?			
4.3.2. How does or how do you expect the project to benefit your land, water, income, local network, literacy status? Please rank the livelihood assets in terms of how the project impact on them either positively, negatively or state if there is no effect , probe for figures where possible			
Asset base	Effect : positive effect (+) No effect (0) negative effect (-)	Important impact and reason	Rank
Land ownership, size and use	+		
	-		
Land size and use	+		
	-		
Land productivity	+		
	-		
Economic activities	+		
	-		
Income level	+		
	-		
Education level	+		
	-		
Employment	+		
	-		
Water access	+		
	-		
Market access	+		
	-		
	+		

Traditions- local forest and land use rules			
	-		
Household associations	+		
	-		
Gender rights	+		
	-		
Others (name)	+		
	-		
Part 5: Households' expectation and perceptions of the project			
5.1. Are the benefits meeting your expectations (explain)?			
5.2. Suppose your expectations are not met in the next five years, what will you do?			
5.3. How are the benefits shared among various households? And how was the sharing out procedures agreed upon?			
5.4. Are you happy with the benefit sharing procedures? Explain your answer?			
5.5. Does the project prohibit you from accessing any resources land, forests, income activities or traditional ways If yes, explain how			
5.6. What other livelihoods			

issues affect your lives but are not addressed by the carbon project?		
5.7. What do you think should have been done better/considered in the project?		
5.8. What risks, fears or uncertainties do you have with the project?		
5.9. How does the project help create networks and resolve conflicts within your group?		
5.10. Any other impacts of the project?		
5.11. How do you expect to benefit from the project in future?		
5.12. Suppose the project does not meet these future expectations, what will you do?		
5.13. Suppose the project does not benefit you directly, would you still engage with it ?		
Part 6: Project interaction with layered history of land uses and livelihood interventions/ governance (also addressed in FGDs and interviews with project staff)		
6.1. Past resource management regimes		
6.1.1. Which government and nongovernmental agencies managed land based resources	Government (names)	Non government (names)

around this area in the past?		
6.1.2. What other projects or programmes have you been engaged in the past or currently?	Government: names and engagement	Nongovernment: names and engagement
6.2. Fitting the carbon project into the land use and livelihood governance history		
6.2.1. How are the engagements of the carbon project comparable to the initial/other current ICDP programmes/projects?	Similarities	Differences
6.2.2. How did you benefit from the ICDP projects/programmes? other government initiatives in the area?		
6.2.3. Do you think the carbon project is different from the past ICDP project? If yes how?		
7. Overall opinion of the respondent about the project and livelihood experiences in the area.		
END: THANK YOU FOR YOUR TIME @atela		

Appendix 3: Focus group guide

Guide to Focused Group Discussion

Background

The main purpose of the FGDs is to triangulate household data with communal perspectives. One FGD will be held with each of the following groups (FGD groups) within each of the case project area.

FGD participants

1. Representatives of community groups working with particular project and extension staff
2. Village elders
3. Ranch shareholders/land owners from various villages
4. Women and youth members from various groups

General guide

Question	Target FGD group
Seasonal calendar of vulnerability including perception of exposure and sensitivity in relation to land and forest resources. Matrix to be derived indicating components of (time, shock, exposure, sensitivity-damages, cause of shock, responses) and how the project interact with these seasonalities of vulnerabilities	All FGD groups
How do various groups within the community understand the projects and what narratives emanate from this understanding?	representatives of various groups, Women members of various groups and youth members of various groups
What past interventions were in place to manage forest/land resources in the project area and how did these interventions involve and benefit the community?	village elders, ranch shareholders, extension staff, representatives of various groups
How does the project fit in this layered history of forest/land resource use and management	village elders, ranch shareholders/land owners, extension staff, representatives of various groups
How do gender roles and rights implicate the project activities and what roles have the youth and women in the project implementation?	Women members of various groups and youth members of various groups
How do the project activities interact with livelihood assets (both beneficial and adverse interactions to be discussed)	All FGD groups