

**Governance of infrastructure
megaprojects, the role of the special
purpose entities**

Tristano Sainati

Submitted in accordance with the requirements for the degree of Doctor of
Philosophy

The University of Leeds

Institute of Resilient Infrastructure

School of Civil Engineering

June 2018

The candidate confirms that the work submitted is his/her/their own and that appropriate credit has been given where reference has been made to the work of others.

This copy has been supplied on the understanding that it is copyright material and that no quotation from the thesis may be published without proper acknowledgement.

© 2018 The University of Leeds and Tristano Sainati

The right of Tristano Sainati to be identified as Author of this work has been asserted by Tristano Sainati in accordance with the Copyright, Designs and Patents Act 1988.

List of Publications

The following papers were produced to disseminate the concept and results of the work undertaken by the author during the course of this PhD research.

Sainati, T., Brookes, N.J., Locatelli, G., 2017. Special Purpose Entities in Megaprojects: Empty Boxes or Real Companies? *Project Management Journal* 48, 55–73.

Sainati, T., Locatelli, G., Smith, N., Brookes, N., 2017. How Special Purpose Entities (SPEs) Affect The Governance of Infrastructure Megaprojects. Presented at the Joint conference 15th Engineering Project Organization Conference, 5th International Megaprojects Workshop, Stanford Sierra Camp, California.

Naomi, B., Ivanisevic, N., Lukasiewicz, A., Sainati, T., lo Storto, C., 2015. Special Purpose Entities in Megaprojects. *Megaproject COST Action*.

Sainati, T., Brookes, N., Locatelli, G., 2015. Special Purpose Entities and their role in Megaprojects: a new focus for understanding megaproject behaviour. *International Journal of Project Management*.

Sainati, T., Locatelli, G., Brookes, N., 2015. Organisational forms in Megaprojects: Understanding the “Special purpose Entities,” in: *Proceeding of the 1 EURAM 2015 Annual Conference*. Warsaw.

Sainati, T., Brookes, N., Locatelli, G., 2014. Special purpose entities and their role in megaprojects: a new focus for understanding megaproject behavior, in: *Proceeding of the 1 EURAM 2014 Annual Conference*. Valencia.

Acknowledgements

I express my sincere gratitude to all my supervisors: Dr Giorgio Locatelli, Prof Nigel Smith and Prof Naomi Brookes.

I want to thank all interviewees that supported the research. In particular, I am deeply grateful to Mr Graham Olver who supported actively the research like he was a sort of “industrial supervisor”; his support has been essential for this research.

I would like to express my gratitude to the internal and the external reviewers who are going to read the thesis, I hope they will enjoy it.

Last but not least, thank you Manu for supporting me during this long period.

Abstract

Following on from the EU Megaproject COST-Action research, which suggests a correlation between SPE's and Megaproject performance, this thesis focuses on the roles played by SPEs for the Formal Governance of Infrastructure Megaprojects (FGIM).

The financial and accounting aspects are the primary focus of the of the explicit knowledge on SPEs. Governance is under-investigated and often implied by expert negotiators and designers of SPEs. This research focused on the critical role of SPEs for the FGIM. The thesis makes explicit the complex governance mechanisms under which infrastructure megaprojects operate.

The first part of the research describes what SPEs are and what are they for. The existing knowledge about SPEs is scattered in different knowledge domains, e.g. the understanding of what is an SPE in the real estate is different to the one in infrastructure megaprojects, or in transfer pricing. The thesis provides a universal definition of SPEs integrating different perspectives and uses: *“The Special Purpose Entity is a fenced organisation having limited pre-defined purposes and a legal personality.”* The thesis distinguishes between various types of SPEs, and it focuses on the ones that are most relevant to the FGIM: the project companies and the industrial vehicles.

The second part of the research extends the unit of analysis, from the SPE toward the extended contracting network in megaprojects. SPEs are part of a wider governance architecture involving critical megaproject stakeholders, including sponsors, lenders, off-takers, key supplier and contractors. Consistently, the SPE's influence on FGIM cannot be instigated in a vacuum, but it requires a systemic consideration of several formal instruments complementing the SPEs. The research gives consideration to the systemic contracting structure to highlights how investors control SPEs, and how SPEs govern a relevant portion of the contracting network in megaprojects.

Table of Contents

List of Publications	iii
Acknowledgements	iv
Abstract	v
Table of Contents	vii
List of Tables	xv
List of Figures	xvii
List of Abbreviations	xix
1. Introduction	21
1.1. Background	21
1.2. The Special Purpose Entity	21
1.3. Identification of gaps in the literature	24
1.4. Research aim and objectives	26
1.5. Scope of the research and limitation of the Study.....	27
1.6. Structure of the thesis.....	28
2. Literature Review (A). Megaprojects and their performance	31
2.1. Chapter Overview	31
2.2. Megaprojects	32
2.2.1. Economic Size.....	32
2.2.2. Physical infrastructure.....	33
2.2.3. Impact on the context.....	34

2.2.4. Government involvement and political relevance.....	34
2.2.5. Organisational complexity and heterogeneity.....	36
2.2.6. Long-time commitment.....	37
2.2.7. Vast Uncertainty and Risk	37
2.2.8. Challenging Investment	38
2.2.9. Megaprojects as programmes.....	39
2.3. Megaproject performance	39
2.4. The Megaproject COST Action – The relevance of the Special Purpose Entities (SPEs).....	45
2.5. Summary	47
3. Literature Review (B). What we know and what we do not about SPEs in Megaprojects.....	49
3.1. Chapter Overview	49
3.1.1. History of SPEs	50
3.1.2. Uses of the SPEs in projects.	51
3.2. Pros and Cons derived from the use of SPEs in megaprojects.	54
3.3. Relevant gaps in the SPE literature.....	55
3.4. The three domains of SPE: legal, financial and project management.....	57
3.4.1. SPE in the legal domain	57
3.4.2. SPE in the financial domain.....	57
3.4.3. SPE in the project management domain	58
3.4.4. Comparison between the three domains of SPEs.....	58

3.5. The universal definition of SPE	61
3.6. Summary	66
4. Literature Review (C). The governance of infrastructure megaprojects.....	69
4.1. Chapter Overview	69
4.2. Governance and governance traditions	70
4.3. Governance Theories	71
4.3.1. Institutional Theory	72
4.3.2. Shareholder theory	73
4.3.3. Stakeholder Theory	73
4.3.4. Rational choice theory.....	74
4.3.5. Agency Theory.....	74
4.3.6. Transaction Cost Theory	75
4.3.7. Contingency theory	76
4.4. Project organising.....	77
4.5. Project governance	78
4.5.1. The transactional perspective applied to the project governance.....	79
4.5.2. The inter-organisational perspective applied to the project governance..	80
4.6. The formal governance of megaprojects.....	81
4.6.1. Governance challenge 1: the proliferation of project stakeholders and the multiplicity of roles	85
4.6.2. Governance challenge 2: governance dynamicity and long planning horizons	86

4.6.3. Governance challenge 3: the reliance on public governance mechanisms	87
4.6.4. Governance challenge 4: the tight financial control	93
4.7. Summary of the Chapter	94
5. Research methodology	95
5.1. Chapter Overview	95
5.2. Research Aim and Objectives	96
5.2.1. The gap in knowledge	96
5.2.2. Research aim, objectives	99
5.3. Philosophical assumptions	99
5.3.1. Ontological level	100
5.3.2. Epistemological level	101
5.3.3. Axiological Level	101
5.4. Research Design	102
5.4.1. Selection of the research strategy	104
5.4.2. Selection of the Method for Data Collection	105
5.4.3. Research approach	106
5.5. Research Method	108
5.5.1. Step 1: Sampling	109
5.5.2. Step 2: Data Collection	121
5.5.3. Step 3: Analysis	129
5.5.4. Step 4: Review	134

5.6. Ethical considerations	140
5.7. Summary of the Chapter	141
6. Results (A). Types and functions of SPEs in megaprojects.....	143
6.1. Chapter Overview	143
6.2. Answers to the semi-structured interviews	144
6.3. Evolution of the unit of analysis	149
6.4. General classification of SPEs	157
6.4.1. Legal Status.....	158
6.4.2. Purposes	161
6.4.3. Functions	162
6.4.4. Lifetime	168
6.4.5. Capabilities, assets, and liabilities.....	169
6.4.6. Financial structure.....	171
6.4.7. Risk characterisation	172
6.4.8. Ownership and control	175
6.4.9. Venue	177
6.5. Types of SPEs specific to infrastructure megaprojects.....	178
6.5.1. Project Companies	179
6.5.2. Industrial Vehicles	184
6.5.3. Intermediate SPEs	188
6.5.4. Jurisdictional Shell Companies	190

6.6. Summary	193
7. Results (B). How SPEs influence the FGIM.....	197
7.1. Chapter Overview	197
7.2. Proposition 1: the relevant SPEs for the FGIM	198
7.3. Proposition 2: how SPEs influence the FGIM	198
7.4. Proposition 2.A: the project roles assumed by critical SPEs	201
7.4.1. Determinant N.1: The roles of the SPEs as part of the SPE-network	206
7.4.2. Determinant N.2: The integration of multiple roles into a single SPE. .	207
7.5. Proposition 2.B: the governance of SPEs	214
7.5.1. Proposition 2.B.i: How the Project Company (PC) is governed.....	214
7.5.2. Proposition 2.B.ii: How the Industrial Vehicle – Contractor (IVC) is governed.....	233
7.5.3. Proposition 2.B.iii: How the Industrial Vehicle – Operator (IVO) is governed.....	234
7.6. Proposition 2.C: the governance of the SPE-network.....	236
7.6.1. Proposition 2.C.i: How critical SPEs govern part of the SPE-network and the megaproject	237
7.6.2. Proposition 2.C.ii: How the Industrial Vehicle – Contractor (IVC) governs part of the SPE-network of the megaproject.	241
7.6.3. Proposition 2.C.iii: How the Industrial Vehicle – Operator (IVO) governs part of the SPE-network of the megaproject.	243
7.7. Summary of the theoretical propositions and reflection	243
8. Conclusion	254

8.1. Chapter Overview	254
8.2. Gap in knowledge, research aim and objectives	255
8.3. Summary of the results	256
8.3.1. RO1 - To provide a classification of the existing types of SPE.....	256
8.3.2. RO2 - To identify which types of SPE play a role in the FGIM.....	257
8.3.3. RO3 - To identify the functions provided by SPEs for infrastructure megaprojects	257
8.3.4. RO4 - To develop a theory that explains how SPEs influence the FGIM	258
8.4. Concluding remarks	260
8.5. Research Rigour: reliability, and internal and external validity	263
8.6. Contribution to knowledge and theoretical implications	263
8.7. Practical implications	265
8.8. Relevance of the research.....	266
8.9. Further Research	267
References	269
Appendix 1	300
Appendix 2.....	319

List of Tables

Table 1-1: Different types of partnership.....	24
Table 2-1: Types of sublime in megaprojects	36
Table 2-2: Thresholds for failure	41
Table 3-1: Comparison between different types of partnership.....	52
Table 3-2: Summary of the pros and cons derived from the use of SPEs in megaprojects	54
Table 3-3: Comparison between Legal, Financial and Megaproject Domain	60
Table 5-1: Selection of the research strategies.....	104
Table 5-2: Selection of data collection methods	106
Table 5-3: Evolution of the theoretical sampling topics	113
Table 5-4: Sample of the experts interviewed.....	115
Table 5-5: Background of the experts interviewed	116
Table 5-6: Experience of the experts concerning the SPEs in megaprojects	119
Table 5-7: Infrastructure sector	121
Table 5-8: List of the interviews with the experts on SPEs in megaprojects.....	123
Table 5-9: Questions asked to interviewees.....	124
Table 5-10: Rigour criteria for the positivist and interpretative worldviews.....	135
Table 6-1: Coded answers from the interviewees	148
Table 6-2: Classification of the existing SPEs.....	159
Table 6-3: Function of PCs in quality of legal constructs.....	181

Table 6-4: Function of PCs in quality of elements of SPE-networks 182

Table 6-5: Function of PCs in quality of organisations 182

Table 6-6: Function of IVs in quality of legal constructs 185

Table 6-7: Function of IVs in quality of elements of SPE-networks..... 185

Table 6-8: Function of IVs in quality of organisations 186

Table 6-9: Function of intermediate SPEs in quality of legal constructs..... 189

Table 6-10: Function of intermediate SPEs in quality of elements of SPE-networks
..... 190

Table 6-11: Function of intermediate SPEs in quality of organisations 190

Table 6-12: Function of JSCs in quality of legal constructs 191

Table 6-13: Function of JSCs in quality of elements of SPE-networks..... 191

Table 6-14: Function of JSCs in quality of organisations..... 191

Table 10-1: List of interviews 302

List of Figures

Figure 1-1: Knowledge domain sets associated with the SPE and defining characteristics.....	24
Figure 1-2: Gaps in the literature concerning SPEs.....	27
Figure 3-1: Mapping the SPE literature, relevant disciplines and topics.....	58
Figure 3-2: Knowledge domain sets associated with the SPE and defining characteristics.....	61
Figure 5-1: State of the art of literature concerning connections between SPEs, FGIM, and megaproject performance	99
Figure 5-2: main research approaches, modified figure.....	109
Figure 5-3: Theory generation, testing and elaboration	109
Figure 5-4: Research phases and steps.....	110
Figure 5-5: Data Analysis.. ..	132
Figure 6-1: Paths toward the definition of the unit of analysis	152
Figure 6-2: The SPE- Network	155
Figure 7-1: How PCs influence the governance of SPE-networks	203
Figure 7-2: Critical roles of the SPE-network and supply chains connected to them	206
Figure 7-3: Possible configurations of the SPE-network.....	210
Figure 7-4: Hinkley Point C contracting network.....	214
Figure 7-5: How the PC is governed.....	218
Figure 7-6: How the PC governs part of the SPE-network.....	240

List of Abbreviations

BOT	Built Operate Transfer
CNS I	First Convention on Nuclear Safety
EPC	Engineering Procurement Construction
FEED	Front End Engineering Design
FET	Fisher Exact Test
FGIM	Formal Governance of Infrastructure Megaprojects
FOAK	First Of A Kind
RAIGT	Research Approach Informed by the Grounded Theory
IV	Industrial Vehicle
IVC	Industrial Vehicles Contractor
IVO	Industrial Vehicle Operator
JSC	Jurisdictional Shell Company
LNG	Liquefied Natural Gas
MCA	Megaproject COST Action
MPA	Major Project Association
OECD	Organisation for Economic Co-operation and Development
PC	Project Companies
PF	Project Finance
PFI	Private Financing Initiative
PPP	Public Private Partnership
RB	Regulatory Body
RCT	Rational Choice Theory
SPE	Special Purpose Entity
SPV	Special Purpose Vehicle
TCS	Time Cost Scope
TCT	Transaction Cost Theory

1. Introduction

1.1. Background

Infrastructure megaprojects are large-scale investment projects having a significant impact on the economy, society and environment (Section 2.2). Their performance extensively depends on the quality of their governance (Sections 4.5). Typically, the FGIM is framed by formal instruments and institutions such as contracts, public concessions, financial securities and *ad hoc* organisations (Section 4.6). This thesis focuses on the so-called Special Purpose Entities (SPEs), also called Special Project Vehicles (SPV), as they play critical roles in the FGIM. SPEs are extensively used to support joint ventures or structured financial transactions.

The existing literature considers SPEs almost exclusively for their financial, legal and accounting functions (Chapter 3). This thesis addresses a relevant gap in knowledge concerning the role that SPEs play for the FGIM.

This thesis acknowledges that there is vast implicit and undisclosed knowledge about the FGIM of megaprojects and SPEs. This knowledge is essential for the appropriate negotiation and design of the FGIM of “off-balance sheet” infrastructure megaprojects (Section 1.5). The research critically evaluates the core principles underlying the FGIM of off-balance sheet infrastructure. The theory formulated in this thesis facilitates the negotiation and design of infrastructure megaprojects and, subsequently, it improves their likelihood of success.

1.2. The Special Purpose Entity

The term “SPE” refers to many types of organisations. Usually, SPEs support sophisticated financial transactions. For instance, SPEs are used extensively in “structured finance”, including: securitisation, leasing, factoring (Basel Committee on Banking Supervision, 2009). Additionally, SPEs are employed for tax and accounting purposes. The SPEs are also used as incorporated vehicles to support projects; in particular, project finance and Public Private Partnerships (PPPs).

This thesis highlights the inconsistency between the existing definitions of SPEs. Depending on the specific application considered (e.g. securitisation, tax

considerations, project finance), the existing definitions tend to be specific and empirical. This thesis includes an extensive literature review to define and describe the SPEs (Chapter 3). The research identifies three main perspectives corresponding to the legal, financial and project management knowledge-domains. Each domain tends to employ a different perspective and focuses on defining and describing the SPEs.

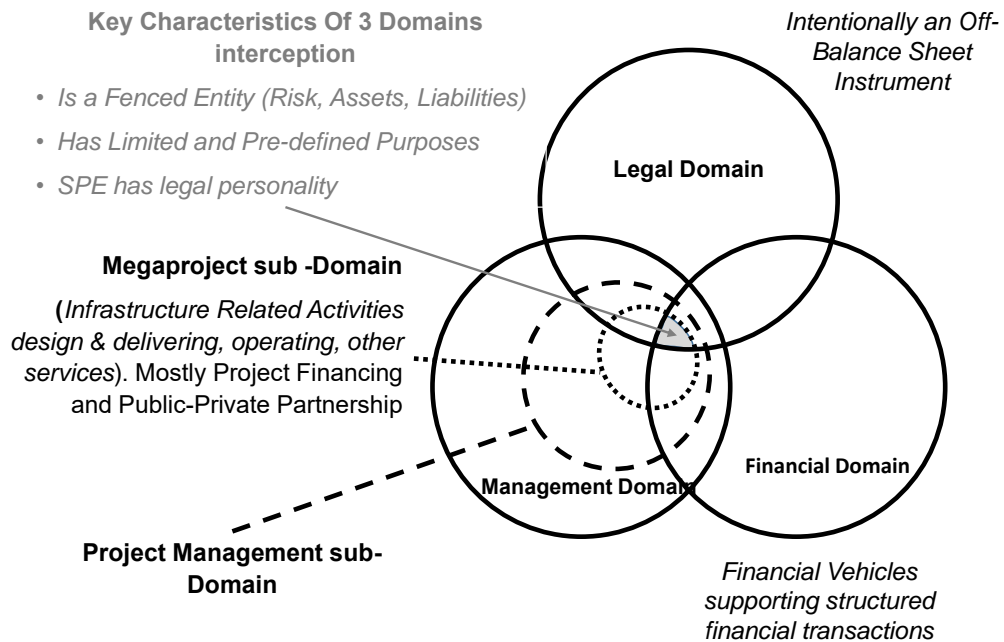


Figure 1-1: Knowledge domain sets associated with the SPE and defining characteristics (Sainati, Brookes & Locatelli, 2017)

The literature review compares these domains and introduces a unifying definition of SPE. Figure 1-1 summarises the comparison of the three domains and the rationale used to filter the key features of any SPEs. The comparison enabled the author to identify essential, cross-cutting features of any SPEs, i.e. the ones that are recognised by all knowledge domains. Consequently, an SPE can be defined as: "a fenced organisation having limited pre-defined purposes and a legal personality" (Sainati, Brookes & Locatelli, 2016).

The SPE is an organisation having three distinctive features:

1. Fenced entity: SPEs are “Self-Fenced organisations” or “Orphan Entities” having their ownership share settled on a trust (Basel Committee on Banking Supervision, 2009; United Nations Economic Commission for Europe (UNECE), 2011). There are legal mechanisms to isolate assets, liabilities, and risks associated to the SPE; which

are essential for most of the SPE activities including: securitisation (Fabozzi, Kothari & others, 2008) and Project Finance (PF). Another key aspect is the “bankruptcy remoteness” principle, isolating SPEs from the risk of bankruptcy arising from its originators (Sewell, 2006).

2. Limited and pre-defined purposes: SPEs are instrumental to achieve specific objectives determining their lifetime. Once the SPE performs the predefined purposes, it ceases to exist; e.g. it becomes another type of organisation (which can also happen in PPP megaprojects). In legal terms, SPEs have “scope limitations” in accordance with their article of incorporation and contractual provisions (Caselli & Gatti, 2005). Usually, in megaprojects, the “shareholders agreement” sets the predefined purposes of the SPE.

3. Legal personality: SPEs are incorporated companies (Basel Committee on Banking Supervision, 2009). Depending on the jurisdiction, they can assume one of the possible legal forms: e.g, trusts, partnerships, limited liability partnerships, corporations and limited liability companies (Basel Committee on Banking Supervision, 2009; Feng, Gramlich & Gupta, 2009). The legal personality is an essential status to enable the other distinctive features.

In megaprojects, SPEs are employed for two main purposes, which are sometimes combined, namely: Project Finance (PF) and project partnering.

PF is: *“the raising of funds on a limited-recourse or nonrecourse basis to finance an economically separable capital investment project in which the providers of the funds look primarily to the cash flow from the project as the source of funds to service their loans and provide the return of and a return on their equity invested in the project”* (Finnerty, 2013). PF gives financial advantages for the project shareholders increasing their capability to raise more capital at a lower cost (Finnerty, 2013). PF transactions require lengthy due diligence and negotiation processes at the beginning of the project (i.e. conceptual design, planning). This is necessary because external financiers want sufficient guarantees to legitimate the increase of leverage and decrease the cost of debt. Risk identification and transfer are the most important aspects. These aspects are addressed by specific contracting mechanisms (e.g. offtake contracts) supporting the

viability of the project. In PF, SPEs are used to isolate the project risks and to create a central point of responsibility.

	Duration of the partnership	Incorporating vehicle
Partnership (general meaning)	Either short-medium-long term	It can be either incorporated or not. It can be based on a variety of options including contracts, SPEs, fiduciary relation.
Corporate Partnership/ Joint Venture	Medium-long term	It is based on an incorporated company. In can involve a variety of ownership models, including, co-ownership of a subsidiary, mutual exchanges of shares, mergers and acquisitions. Usually, it is based on shareholder agreements (i.e. a contract).
Project Joint Venture	Short-medium term (e.g. design of a new product, construction of an infrastructure)	It is based on an incorporated vehicle, namely the SPE.
Public-Private Partnership	Short-medium term (e.g. design of a new product, construction of an infrastructure)	It can be either incorporated or not; it depends on the specific case considered. The term PPP is generic. However, often PPPs are based on incorporated companies, namely SPEs.
Consortium	Short-medium term (e.g. construction of an infrastructure)	The consortium alone does not require an incorporated vehicle. However, the consortium can be combined with an incorporated vehicle to realise sophisticated attribution of risks and responsibilities among partners. The consortium is based on two layers of agreements: internal agreements (between the parties involved in the consortium) and external (between the consortium and the external stakeholders, e.g. client). The consortium implies different forms of joint liability that partners have in the eyes of external contracting agents. Expressions such as “join liability”, “several liability” indicate different consortium approaches.

Table 1-1: Different types of partnership

Project partnering focuses on the synergies among project stakeholders by aligning their interests (Clifton & Duffield, 2006). There are several types of partnerships: PPP, corporate partnership, joint venture, consortium (Grimsey & Lewis, 2007). Table 1-1 presents the main differences according to two main drivers: duration of the partnership and incorporating vehicle. In megaprojects (and in infrastructure projects in general), the public and private agents might establish a partnership leading to so-called Public-Private- Partnerships (PPPs). In PPPs, the SPEs are the legal entities incorporating the joint ventures between the public and private agents.

1.3. Identification of gaps in the literature

At the beginning of the research, the author employed an extensive bibliometric analysis to identify the gap in the literature (Sainati, Brookes & Locatelli, 2017). This

approach involved identification and analysis of 2166 journal papers, based on a set of keywords as further described adopting (Pittaway *et al.*, 2004) approach, and the papers were filtered and ranked according to their title and abstract. The most relevant documents were then reviewed. A significant sample (i.e. about fifty) of relevant documents was used to map existing literature. Using their abstract, title, and keywords, the author classified them into two main dimensions: discipline and topic. Discipline refers to the journal, for example when papers were published in the International Journal of Project Management they were classified as project management disciplines. Topics refer to specific themes, often cross-disciplines. The topics were determined from the open-coding (Corbin & Strauss, 2015). Figure 1-2 summarises the reviewed literature.

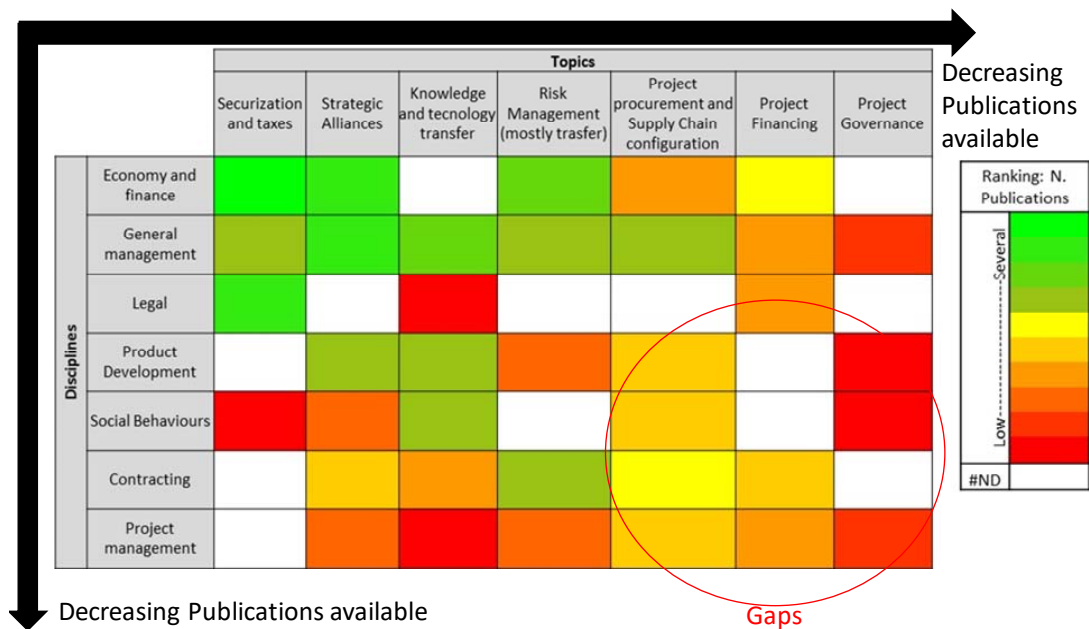


Figure 1-2: Gaps in the literature concerning SPEs

The bibliometric analysis enabled the author to map and identify existing gaps in the literature (Sainati, Brookes & Locatelli, 2017). There are numerous publications concerning the legal, financial and accounting proprieties of SPEs, particularly for commoditised transactions such as mortgage securitisation. In project management, SPEs are often mentioned concerning PF and procurement. The literature review (Chapter 3) confirmed that SPEs are well known for their financial and accounting characteristics.

The most significant gap is about governance. Governance is defined as “*the processes of interaction and decision-making among the actors involved in a collective problem that leads to the creation, reinforcement, or reproduction of social norms and institutions*” (Hufty, 2011). The gap is also relevant because some SPEs have a critical role in the FGIM (Section 5.2.2). In PF, SPEs regroup the most relevant enforcing instruments, including: public concession and guarantees, licenses and environmental permits, loan agreement, EPC contract, offtake agreement, and supply agreement. Taken together, these instruments shape the FGIM.

The FGIM is a crucial determinant of project performance (Miller *et al.*, 2001). Megaprojects involve several stakeholders working towards common objectives. FGIM provides a shared decision-making framework, allowing them to cooperate effectively. It also assigns roles and responsibilities to project stakeholders.

1.4. Research aim and objectives

The literature review led to the identification of the research aim and objectives. Starting from the input of the Megaproject COST Action (Section 2.4), the initial purpose was to understand why and how the incorporation of SPEs leads to improved construction performance in megaprojects. The formal governance was identified as a potentially important variable affecting the performance of megaprojects. Consequently, the author focused on the formal governance of SPEs in megaprojects.

The focus on SPEs and their implications for the FGIM is consistent with the gap identified in the literature. The preliminary bibliometric analysis (Sainati, Brookes & Locatelli, 2017) showed that SPEs are widely investigated in financial and accounting terms while there are limited publications as far as the FGIM is concerned. The literature review highlighted the relevance of formal governance for megaproject performance. Therefore, the author decided to focus on the role of SPEs for the FGIM.

Research Aim: To identify how SPEs influence the Formal Governance of Infrastructure Megaprojects (FGIM).

Research Objectives (ROs)

The research aim is broken down into four detailed objectives:

1. Provide a classification of the existing types of SPE;
2. Identify which types of SPE play a role in the FGIM;
3. Identify the functions provided by SPEs for infrastructure megaprojects;
4. Develop a theory that explains how SPEs influence the FGIM.

1.5. Scope of the research and limitation of the Study

The research investigates the role played by SPEs for the FGIM. The scope considers the contracting and organisational structures of SPEs and the enforcing instruments (e.g. securities, contracts, concessions, licenses) associated with them. The infrastructure analysed encompasses different sectors including transportation, power, oil & gas, telecommunication and waste. The research focuses mainly on the oil & gas and nuclear industries because these sectors are particularly informative for the research area considered.

The research has three main limitations. Firstly, it focuses exclusively on the formal governance of off-balance sheet financed megaprojects. Off-balance sheet financing is defined as: *“If the investor has to raise the debt and then inject it into the project, this will clearly appear on the investor's balance sheet. A project finance structure may allow the investor to keep the debt off the consolidated balance sheet, but usually only if the investor is a minority shareholder in the project-which may be achieved if the project is owned through a joint venture. Keeping debt off the balance sheet is sometimes seen as beneficial to a company's position in the financial markets, but a company's shareholders and lenders should normally take account of risks involved in any off-balance-sheet activities, which are generally revealed in notes to the published accounts even if they are not included in the balance sheet figures; so although joint ventures often raise project finance for other reasons (discussed below), project finance should not usually be undertaken purely to keep debt off the investors' balance sheets.”* (Yescombe, 2013)

Off-balance sheet megaprojects involve SPEs having a relevant impact on FGIM. Consistently, the author focused solely on this type of megaprojects.

The research scope focused on the phenomenon under investigation (i.e. how SPEs influence the FGIM). Initially, the research focused on the connection between the fundamental constructs, namely megaproject, governance, and SPE. The unit of analysis evolved during the research consistently with the RAIGT (Section 6.3). Section 6.3 describes more in detail the evolution of the unit of analysis, outlining the research scope and its limitations.

The research focuses exclusively on formal governance for pragmatic reasons, as further explained in Chapter 5. Consistently a significant limitation in scope concerns the “informal” or “soft” aspects of governance.

1.6. Structure of the thesis

The thesis includes the following Chapters:

1. Introduction;
2. Literature Review (A). Megaprojects and their performance;
3. Literature Review (B). What we know and what we don't about SPEs in Megaprojects;
4. Literature Review (C). The governance of infrastructure megaprojects;
5. Research methodology;
6. Results (A). Types and functions of SPEs in megaprojects;
7. Results (B). How SPEs influence the FGIM;
8. Conclusion.

Chapter 1 “Introduction” provides an overview of the dissertation.

Chapter 2 "Literature Review (A): Megaprojects and their performance" describes the Megaproject characteristics and their performance. Chapter 2 introduces the results of the Megaproject COST action that paved the way for the current doctoral research.

Chapter 3 “Literature Review (B). What we know and what we don't about SPEs in Megaprojects” focuses on the concept of SPE. Chapter 3 presents the literature review concerning the adoption of SPEs in infrastructure megaprojects. Chapter 3 describes

the different understandings of SPEs according to the legal, financial and project management domain. Chapter 3 includes a comparison between these domains and provides a unifying (or universal) definition of SPE.

Chapter 4 “Literature Review (C). The governance of infrastructure megaprojects” provides an extensive literature review concerning the governance. Chapter 4 introduces basic definitions from two relevant theoretical traditions, namely public governance and corporate governance. Chapter 4 summarises the most relevant governance theories for the current study; most of these theories were formulated in the context of cooperate governance. Chapter 4 describes the state of the art of project governance, which is an emerging literature stream that is grounded in the concepts and theories developed in corporate governance. Chapter 4 describes the peculiarities and challenges of project governance in megaprojects.

Chapter 5 “Research methodology (A), general design” describes and justifies the research methodology. Chapter 5 summarises the gap in knowledge introduced by the literature review Chapters (Chapters 2- 4), and it introduces the research aim and objective. Chapter 5 includes the philosophical assumptions, method selection, research design and the rigour criteria. The research employs a pragmatist-interpretative paradigm, with an inductive strategy and Research Approach Informed by the Grounded Theory (RAIGT).

Chapter 6 “Results (A). Types and functions of SPEs in megaprojects” addresses RO1 to RO3. In particular, Chapter 6 describes the classifications for the SPEs and the SPE-functions. The classifications of SPE enabled the author to identify four main types of SPEs that are employed to support infrastructure megaprojects, namely: project companies, industrial vehicles, intermediate SPEs and jurisdictional shell companies. Chapter 6 describes in detail the features of these types of SPE including their functions and their relevance for FGIM. Chapter 6 concludes that only two types of SPEs have a relevant influence in the FGIM, namely the project company and the industrial vehicle.

Chapter 7 “Results (B). How SPEs influence the FGIM” addresses RO4. Chapter 7 describes and discusses the governance theory describing how SPEs influence the FGIM (RO4). The theory integrates the results that have been described in Chapter 6.

Chapter 8 “Conclusion” highlights the contribution to knowledge of the PhD research. Chapter 8 reflects on the original gap in knowledge, research aim and the objectives. Chapter 8 summarises the research results and describes how these contributed to the research objectives, and ultimately to the overarching research aim. Chapter 8 highlights the conclusion of the research including the theoretical and practical implications, the relevance of the research, and further research.

2. Literature Review (A). Megaprojects and their performance

2.1. Chapter Overview

The current Chapter introduces megaprojects and their performance. Section 2.2. describes the key features of megaprojects, i.e.:

- Economic size (Section 2.2.1);
- Physically-tangible outcome (Section 2.2.2);
- Impact on the context (Section 2.2.3);
- Government involvement and political relevance (Section 2.2.4);
- Organisational complexity and heterogeneity (Section 2.2.5);
- Long-time commitment (Section 2.2.6);
- Vast uncertainty and risk (Section 2.2.7);
- Challenging investment (Section 2.2.8);
- Megaprojects as programmes (Section 2.2.9).

Section 2.3 describes the literature concerning the performance of megaprojects. Section 2.4 describes a relevant research on the megaproject performance. The study was significant because informed the current thesis.

2.2. Megaprojects

According to Wee, there are various synonymous to megaproject including: major, large engineering, and giant projects(Wee, 2007). There are several definitions of megaproject, which are empirical and empirically based (Ruuska *et al.*, 2011). An example of definition is: “*a mega-project is an investment of \$1B or more to build the physical infrastructures that enable people, resources, and information to move within buildings and between locations throughout the world*” (Davies, Gann & Douglas, 2009).

Nowadays, the megaproject can be considered as an emergent literature stream in the project management domain (Shen, Zeng & Tam, 2017). Most scholars agree that some relevant examples of megaprojects are: Channel Tunnel (Chang, 2013), Big Dig (Greiman, 2013), Panama Chanel (van Marrewijk *et al.*, 2016; van Marrewijk & Smits, 2016), Olkiluoto NPP, Flamenvielle NPP (Ruuska *et al.*, 2011), Nabucco Pipeline (Baev & Øverland, 2010), high-speed rail (Flyvbjerg, 2014). During the last decades, scholars provided different definitions to cluster these examples in a unique family of projects. This clustering was due because megaprojects shared unique challenges that cannot be resolved with traditional and operative project management tools (Miller *et al.*, 2001). Megaprojects require specific capabilities and techniques to overcome their associated challenges.

The current literature review considered nine features characterising megaprojects: (1) economic size, (2) physical-tangible outcome, (3) impact on the context, (4) government involvement and political relevance, (5) organisational complexity and heterogeneity, (6) long-time commitment, (7) vast uncertainty and risk, (8) challenging investment, (9) megaprojects as programmes. The following subsections describe these nine features.

2.2.1. Economic Size

Some popular definitions of megaproject focus on the economic size. Often 1B\$ of capital cost is considered the threshold discriminating megaprojects to smaller projects (Davies, Gann & Douglas, 2009; Merrow, 2011). Some authors disagree with the 1B\$ cost threshold. Wee considers the threshold of 500M\$ instead of 1B\$ (Wee, 2007).

Other authors consider megaprojects as multi-billion projects (Koppenjan, 2005; Turner, 2009). On the contrary, Flyvbjerg implied that megaprojects can be smaller including a project costing 1,5 million \$ in a megaproject dataset (Flyvbjerg, 2003).

2.2.2. Physical infrastructure

Another point of disagreement is whether the outcome of megaprojects is limited to physical infrastructure. Some authors argue that megaprojects are necessarily physical infrastructures (Davies, Gann & Douglas, 2009). Similarly, Flyvbjerg describes megaproject as “physical animals” (Flyvbjerg, 2003). Often, this limitation is implied since megaprojects are described for their vast impact on the environment (Orueta & Fainstein, 2008). According to Gellert & Lynch, there are four types of megaprojects: infrastructure, extraction (e.g. mineral, oil & gas), production (i.e. complex and large facilities), consumption (e.g. real estate developments, attraction parks), (Gellert & Lynch, 2003)

Conversely, there are intangible projects that cost more than either 100M\$, 500M\$ or 1B\$. Some product development projects cost more than 1B\$, e.g. some research and development project, in the pharmaceutical (Jacob & Kwak, 2003), defence (e.g., Manhattan Project) or in the aerospace industry. These projects are often considered megaprojects. In reality, these megaprojects can be considered only partially intangible. Although their ultimate deliverable is intangible (e.g. design, software, event), these megaprojects require special infrastructure, facilities, equipment, laboratories. The Olympic games are similar examples where the outcome is effectively a mega-event, but most of their budget is spent on infrastructure and urbanisation projects (Müller, 2011).

This thesis considers only infrastructure megaprojects. Infrastructure is a special class of asset described by the following features (Della Croce & Gatti, 2014):

- *“Long-term assets with long economic life;*
- *Low technological risk;*
- *Provision of key public services;*
- *Strongly non-elastic demand;*
- *Natural monopoly or quasi-monopoly market contexts;*

- *High entry barriers;*
- *Regulated assets;*
- *Frequent natural hedge against inflation;*
- *Stable, predictable operating cash flows;*
- *Low correlation with traditional asset class and overall macroeconomic performance.”*

2.2.3. Impact on the context

Megaprojects are not just a larger version of projects (Flyvbjerg, 2014). They are designed to change the structure of society, economy and environment (Flyvbjerg, 2014; Grün, 2004; Miller *et al.*, 2001). This justifies the direct involvement of governments or other relevant institutions.

There are several examples showing the impact that megaprojects have on context. For instance, the Big Dig was a massive re-urbanisation project having profound economic, environmental and social implications for the city of Boston, in Massachusetts USA (Greiman, 2013). Another remarkable example was the Olympic games in Athens in 2004 (Kasimati & Dawson, 2009). Nowadays, the Athens's games are considered as a big failure for the economic implications that led Greece almost to the default.

Megaprojects have the potential to change the context in which they are placed, having implications for the population and territory, usually at a national or international level (Merrow, 2011). This feature makes megaproject radically different to smaller projects. The impact on the context is particularly relevant for the notion of performance that is discussed in Section 2.3. In particular, the impact on the context is an essential determinant to justify the extension of the traditional project performance framework towards something broader in scope and time as described in Section 2.3.

2.2.4. Government involvement and political relevance

The Government is almost always involved in megaprojects (Koppenjan, 2005; Turner, 2009). Additionally, megaprojects are under public scrutiny, and public acceptance influences their timing and performance (Klakegg, Williams & Shiferaw,

2016; van Marrewijk *et al.*, 2008). Some megaprojects can involve multiple governments, for example, the oil & gas pipelines (Ciarreta & Nasirov, 2012; Hill, 2004; Rui *et al.*, 2017), or large transportation projects such as the “Western Europe-Western China International Transit Corridor” (Gatev & Diesen, 2016).

Theoretically, there could be purely private megaprojects. In practice, megaprojects usually involve governments for their relevant impact on the economy, society, and environment. Merrow scrutinised 318 industrial megaprojects, many of them were private, but the Governments of the countries involved always played a critical role, (Merrow, 2011). Sometimes, the oil & gas infrastructures are promoted, financed and owned by private institutions. Even in these cases, the Government played a central role, e.g. in the petroleum concessions (Open Oil, 2012). Similarly, the Hinkley Point C project is supposed to be privately financed and owned, but in practice, it requires the strong support from the Government (Ansar & Flyvbjerg, 2016; Flyvbjerg, 2017). The British government support Hinkley Point C by (Černoch & Zapletalová, 2015):

- Ratifying bilateral agreements;
- Regulating the new build in the UK;
- Securing the price of electricity for the project employing mechanism called “contract for difference”;
- Providing a guarantee scheme to private lenders in case of project default.

The involvement of the Government is not only justified by the public relevance of megaprojects, but also for their symbolic nature. Megaprojects tend to be captive for policymakers. They are symbolic because of their colossal size and the technical challenges they overcome (Priemus, Flyvbjerg & Wee, 2008). This symbolic feature is called “technological sublime” (Nye, 1996). Flyvbjerg identifies the other types of sublime and for each of them he provides a definition, as summarised in Table 2-1. These sublimes explain the rhetoric discussion polarising the political parties in public policies and debates (Priemus, Flyvbjerg & Wee, 2008). The sublimes make megaproject captive for policymakers and for public debates.

Type of Sublime	Characteristic
Technological	The excitement engineers and technologists get in pushing the envelope for what is possible in longest-tallest-fastest types of projects
Political	The rapture politicians get from building monuments to themselves and for their causes, and from the visibility, this generates with the public and media
Economic	The delight business people and trade unions get from making lots of money and jobs off megaprojects, including money made for contractors, workers in construction and transportation, consultants, bankers, investors, landowners, lawyers, and developers
Aesthetic	The pleasure designers and people who love good design get from building and using something very large that is also iconic and beautiful, such as the Golden Gate Bridge

Table 2-1: Types of sublime in megaprojects, (Flyvbjerg, 2014)

2.2.5. Organisational complexity and heterogeneity

A key feature always emphasised is the organisational complexity. Megaprojects are (Koppenjan, 2005; Turner, 2009):

- “A multibillion-dollar infrastructure”;
- “Usually commissioned by governments”;
- “Usually delivered by private enterprises”;
- “Characterized as uncertain, complex and politically sensitive”;
- “Involving large number of partners.”

Scholars emphasise organisational complexity both in structural and inherent terms.

Structural complexity considers two factors: the number of actors and their interdependence (Baccarini, 1996; Williams, 1999). Megaprojects are delivered by several private and public institutions, which are mutually interrelated by different layers of interdependence. Usually, the concept of structural complexity is applied to the project network, which is the temporary organisation made of different institutional stakeholders. **Inherent complexity** refers to the intrinsic complex nature of organisations. According to Gidado, there are three main dimensions of inherent complexity: technical complexity, task difficulty and analyzability (Gidado, 1993). Complex organisations are inherently complex if they require exceptional skills, knowledge, and equipment to be represented or understood. This definition of complexity considers the uncertainty as a determinant of complexity, which is not the case in structural complexity. Megaprojects are characterised by large uncertainty, also

concerning the relationships among the project stakeholders (Miller *et al.*, 2001; Ruuska *et al.*, 2011). This uncertainty makes them inherently complex in organisational terms.

The organisational complexity of megaprojects has significant implications for project management. **Firstly**, organisational complexity implies a multifactor and multi-stakeholder decision-making process (Aaltonen & Kujala, 2010). Different stakeholders tend to have different objectives. Successful megaprojects require an appropriate decision-making framework minimising the detrimental effects of conflict of interests (Aaltonen & Kujala, 2010). They also require the reconciliation and harmony of the different cultures and values expressed by the variety of stakeholders (Ruuska *et al.*, 2011). **Secondly**, organisational complexity provides challenges for project management: "*too many stakeholders and stakeholder fragmentation; cost overruns and the risk of accidents and attacks; massive externalisation of costs to third-party stakeholders; concentration of wealth and corruption; and inflated expectations and biased projections*" (Van de Graaf & Sovacool, 2014).

Organisational complexity and heterogeneity are fundamental concepts for this research. Chapter 4 builds on the organisational complexity and further discusses the topic of project governance and organising in megaprojects.

2.2.6. Long-time commitment

Another feature of megaprojects is the long-time commitment (Brookes *et al.*, 2017). Megaprojects usually necessitate years for their conception, planning and negotiations (Eweje, Turner & Müller, 2012). Then, their construction can last decades (Flyvbjerg, 2003; Grün, 2004), and the operative lifecycle of megaprojects can last generations. Often megaprojects last for a longer than their stakeholders, or average type of organisations (Brookes *et al.*, 2017). Although the time dimension of megaprojects is quite extended, their planning and execution are often characterised by a context of urgency (Hassan, Mccaffer & Thorpe, 1999).

2.2.7. Vast Uncertainty and Risk

Many scholars emphasise the considerable risk and uncertainty characterising megaprojects (Chapman & Ward, 2003; Hall, 1982; Miller & Lessard, 2001; Wee,

2007). Uncertainty refers to the lack of certainty, in project management is usually associated to forecast, design and logistic, objectives and priorities, and about the relationship between project partners (Chapman & Ward 2003). Not surprisingly, most risk management tools & techniques were initially developed for megaprojects and later extended to smaller ones. Relevant examples are PERT, Network Theory, Monte Carlo (Burke, 2013; Chapman & Ward, 2003). Indeed, megaprojects involve large risk and therefore require appropriate risk management (Floricel & Miller, 2001; Flyvbjerg, 2017; Miller & Lessard, 2001; Sanderson, 2012). In the project management literature, the risks can have either favourable or adverse effect on project performance (Hillson, 2002). However, megaprojects are often exposed to the so-called “black swans”, which are catastrophic events for the megaproject performance (Flyvbjerg, 2013a; Taleb, 2011).

2.2.8. Challenging Investment

From the financial point of view, megaprojects provide unique challenges. Megaprojects are characterised by high capital cost (Hassan, Mccaffer & Thorpe, 1999) and rarely a single organisation can provide all the finances for a megaproject, except governments. In the past, the Governments were the main financier of megaprojects in many countries, where infrastructures were nationalised (Miller *et al.*, 2001). However, the 20th century was characterised by a wave of privatisation in many sectors (Miller *et al.*, 2001). Nowadays, most megaprojects combine different sources of finance ranging from: private loans, bonds, import-export financing, institutional investors, private sponsors, public investors, public guarantees (Tan, 2007; Underhill, 2010).

Megaprojects “*require large, irreversible commitments with large potential downside loss but limited upside gain*” (Floricel & Miller, 2001). Megaproject investments require very long repayment period, for example, 10 years of upfront commitment during the construction and 20-30 years of repayment during the operation (Floricel & Miller, 2001). This results of common financial over-commitment at the early stage resulting in “lock-in” or “capture” of the project finances (Ansar *et al.*, 2017; Cantarelli *et al.*, 2010; Drummond, 1998; Flyvbjerg, 2014; Ross & Staw, 1993). Megaprojects investments are so critical that their success or failure is likely to determine the success or failure of critical sponsors (Merrow, 2011).

2.2.9. Megaprojects as programmes

Megaprojects are often managed as programmes because can be broken down into sub-projects (Pellegrinelli *et al.*, 2007; Rijke *et al.*, 2014). For example, in the Olympic Games or the urbanisation projects involve different sub-infrastructures. Often these projects involve programme management approaches. Transportation megaprojects, such as the High-Speed Rail in Italy are also decomposed into sub-projects, i.e. stations and links (Locatelli *et al.*, 2016). Often, the distinction between megaproject and programme is not straightforward.

2.3. Megaproject performance

Traditionally, project management performance lies the so-called “iron triangle” considering three main dimensions: Time, Cost and Scope (or Quality) TCS (Atkinson, 1999; Turner & Zolin, 2012). According to this view, the project is successful if it can meet the original requirements concerning being on-time, on-budget and to deliver a product/service satisfying the agreed quality specifications. According to this traditional approach, the project success lies in the comparison between estimations (Expected/budgeted TCS) and final (i.e. at the completion of the project) TCS metrics.

Several studies demonstrated that in megaprojects there is a systematic error in TCS estimations; e.g. (Dimitriou, Ward & Wright, 2013; Flyvbjerg, 2003; Megaproject COST Action, 2014; Merrow, 2011). These studies present empirical distributions of estimation error concerning megaproject performance; which do not comply with the basic statistical principles of estimation error just introduced. In particular:

- They are neither symmetric or normally distributed: implying that megaprojects are more likely to deliver worse performance than estimated initially;
- The expected value is different from zero: implying that there is a systematic prediction error in megaproject performance.

Flyvbjerg analysed a dataset consisting of transportation megaprojects, mainly railways, tunnels, bridges and roads. His research shows that the average cost over budget is 44.7% in rail, 33.8% in tunnels & bridges and 20.4% in roads (Flyvbjerg, 2007a). In rail, passenger forecast is overestimated by a factor of 51.4%. Inroads, traffic forecast, is systemically overestimated by an average of 9.5%. According to

Flyvbjerg the inaccuracy in megaproject TCS estimation has not improved for 70 years despite all claims of improving forecasting approaches (Flyvbjerg, 2006, 2003; Flyvbjerg, Holm & Buhl, 2002). Flyvbjerg claimed that this systematic estimation error is: “*The Iron Law of Megaprojects*” (Flyvbjerg, 2014).

Morrow analysed the performance of a sample of 318 industrial megaprojects of the following sectors: Oil & gas production (130 megaprojects), petroleum processing and refining (66 megaprojects), mineral and metals (47 megaprojects), chemicals (31 megaprojects), Liquefied Natural Gas (LNG) (24 megaprojects), power generation (8 megaprojects), pipelines (7 megaprojects) and others (5 megaprojects), (Morrow, 2011:p.35). According to this study, “megaprojects fail too often” and “*results are frequently seriously short of the expectations of the sponsor-investors*” (Morrow, 2011:p.28). In summary, only 35% of megaprojects succeed and most megaprojects deliver very poor performance; on average: 40% of cost overrun, more than 28% of delay, and 60% of the capacity factor during the first year of operation. Morrow observed that TCS performance are often awful, sometimes they are good, and rarely they are mediocre. The so-called Jemima principle summarises this unexpected performance distribution: “*projects seem to fall naturally into outstanding projects and inferior projects, with only a very few in the middle*” (Morrow, 2011:p.46). This principle allows simplifying the evaluation of project success, which is defined as lack of inferior TCS performance. In particular, Morrow introduced a threshold for TCS performance failure threshold as shown in Table 2-2. Some of these thresholds refer to the previous comparison logic (comparison among different projects), while others refer to the comparison within the single projects (i.e. planned vs consumptive values), as indicated in Table 2-2. These thresholds include the inherent inaccuracy of estimations and the tendency to underestimate TCS of industrial megaprojects.

2.Literature Review (A). Megaprojects and their performance

Comparison Logic	Dimension considered	Megaproject performance	Description	Threshold for failure
Comparison between past estimation and consumptive values	Cost	Cost Overrun	Cost overruns are measured as the ratio of the actual final costs of the project to the estimate made at the full-funds authorisation (sanction) measured in escalation-adjusted terms	>25%
	Time	Slip in execution schedules	Execution schedule is measured from the start of production (sometimes called detailed engineering) until mechanical completion of facilities. Slip is defined as the actual schedule divided by the schedule forecast at full-funds authorisation.	>25%
	Scope	Production versus plan	The metric is measured as the capacity factor of the industrial facility. The metric is relatively easy to calculate when the outcome of the megaproject facility is a commodity such as: oil, gas, mine ores etc.	Significantly reduced production into the second year ¹
Comparison between different projects	Cost	Cost Competitiveness	Competitiveness measures how much the project spent (in constant dollars adjusted to a common location) relative to other projects with similar scopes.	>25%
	Time	Schedule competitiveness	Schedule competitiveness is the length of the execution relative to similar projects.	>50%

Table 2-2: Thresholds for failure, content derived from (Merrow, 2011:p.38)

Ansar et al. analysed a database consisting of 245 dams megaprojects built between 1934 and 2007 in over 65 countries (Ansar *et al.*, 2014). Their study shows that three out of four of these megaprojects suffered severe cost overruns, on average 96% of over-budget. These results are consistent across different countries, periods and technologies. The study shows that the severity of cost overruns increase with the dam size, which emphasises that bigger the megaprojects, worse are their performances (compared to the original estimation).

The Omega Centre (University College London – the Bartlett school) considering 30 transportation megaprojects, in ten developed countries (The Omega Centre, 2017). Their performance shows an average over-budget of 22% (Dimitriou, Ward & Wright, 2013). Compared to (Flyvbjerg, 2007a; Merrow, 2011), the megaproject considered achieved singly better performance. Half of the megaprojects achieved an over-budget lower than 10% and a delay lower than one year (Dimitriou, Ward & Wright, 2013). In only one megaproject (i.e. the Big Dig in Boston) the over-budget was unusually

¹ (Merrow, 2011) argues that is not possible to generalise in terms what constitute a “significant reduced production”. For example, O&G megaprojects can cope with a capacity factor of 70%. Differently, LNGs are very capital-intensive investments, which implies that their capacity factor needs to be significantly higher than 80%; otherwise, the investment wouldn’t repay itself.

severe: 150% of the original estimation (Dimitriou, Ward & Wright, 2013). In summary, “*only one-third of the OMEGA case studies achieved more than 75% of their initial objectives*” (Dimitriou, Ward & Wright, 2013). Consistently with (Morrow, 2011), the Jemima principle applies to the sample of megaprojects considered by the Omega Centre.

The Megaproject COST Action (Megaproject COST Action, 2014) analysed a dataset consisting of 44 megaprojects, most of them were European megaprojects (Locatelli *et al.*, 2017). The megaprojects were grouped in three main sectors: energy, transportation and cross-sectoral. The sample of megaproject confirmed the performance trends: most of them were delayed and over-budget. Section 2.4 describes in detail the approach employed by the Megaproject COST Action.

Rui *et al.* analysed a DataBase (DB) of 200 public oil & gas projects in a wide geographical area (Rui *et al.*, 2017). Most of these projects were megaprojects. On average, the projects suffered 18% of cost overruns with a standard deviation of 29%. The research concludes that greater is the project, worse are the performance, which indicates that cost over-budget was more severe for megaprojects.

To summarise, several studies highlighted a systematic estimation error in the TCS megaproject performance (Ansar *et al.*, 2014; Dimitriou, Ward & Wright, 2013; Flyvbjerg, 2007a; Megaproject COST Action, 2014; Morrow, 2011; Rui *et al.*, 2017). These researchers show a similar performance patterns in different sectors, and in particular: transportation (Dimitriou, Ward & Wright, 2013; Flyvbjerg, 2007a; Megaproject COST Action, 2014), industrial (Morrow, 2011), oil & gas (Morrow, 2011; Rui *et al.*, 2017), large dams (Ansar *et al.*, 2014), energy (Megaproject COST Action, 2014; Morrow, 2011). Other researchers confirm similar performance trends for other sectors, such as defence (Kwak & Smith, 2009) or IT (Patanakul & Omar, 2011; Patanakul, 2014).

Usually, megaprojects fail to achieve the original expectations both regarding time, cost and scope. There are exceptions, which generally achieve good performance in the three TCS dimensions. Some authors showed that rarely megaprojects achieve mediocre performance: they are either predominantly good or bad. Project

performance worsens with the increase in size and complexity (Jørgensen, Halkjelsvik & Kitchenham, 2012).

There are several theoretical explanations concerning the systemic estimation error in megaprojects. Some of the most relevant are:

1. **Technical inaccuracies** refer to the of “unreliable or outdated leading to inaccurate TCS estimations” (Flyvbjerg, 2006; Vanston & Vanston, 2004).
2. **The optimistic bias** provides the cognitive and psychological explanation of the systemic error in human forecasts (Flyvbjerg, 2014; Flyvbjerg, Garbuio & Lovallo, 2009; Lovallo & Kahneman, 2003; Stiglitz, 1989; McRaney, 2012; Flyvbjerg, 2006).
3. **Strategic misinterpretation** describes the practice of manipulating the performance estimations intentionally, in order to get a practical advantage (Cliffe, Ramsay & Bartlett, 2000; Lindley, 1980; Flyvbjerg, Holm & Buhl, 2002; Flyvbjerg, 2007a; Frick, 2008).
4. **Corruption** is an unethical, intentional and malicious form of manipulation of the competitive context surrounding the megaproject. It entails different types of behaviour, including (Locatelli *et al.*, 2016): bribery, extortion, fraud, abuse of power, embezzlement, conflict of interests, and nepotism.
5. **Winner course** is a phenomenon that inherently applies to selective processes, which lead to select the most optimistic TCS estimations (Eliasson & Fosgerau, 2013).
6. **Poor quality Front End Engineering Design (FEED)** is claimed by many scholars as common determinant of megaprojects failure (Ahola *et al.*, 2008; Artto, Ahola & Vartiainen, 2016; Davies, 2004; Gil & Pinto, 2016; Williams & Samset, 2010; Samset & Volden, 2016; Aaltonen & Sivonen, 2009; Edkins *et al.*, 2013; Matinheikki *et al.*, 2016; Merrow, 2011).

The traditional notion of project performance based on the iron triangle received several critics by the project management community. These critiques are especially relevant for megaprojects because of their unique features: “*effective management of projects is more than just execution-oriented project management*” (Miller & Hobbs, 2009:p.39). Dimitriou, Ward & Wright, 2013 emphasise the quality of megaprojects to be open system and agent of change for implementing context (Dimitriou, Ward &

Wright, 2013). This view is opposed to the iron triangle that considers the project as closed systems. Consistently, the authors claim for more holistic and coherent notion of megaproject success and performance. This is consistent with the recent trend in project management that was discussed in Section 2.3

Megaprojects have a broader impact on the society, the economy and the environment that go far beyond their immediate completion (Eweje, Turner & Müller, 2012). The iron triangle fails to consider these aspects that account for the most relevant performance dimensions in megaprojects (Turner & Zolin, 2012).

Megaproject performance can be considered from two main perspectives: micro and macro level (Lim & Mohamed, 1999). The micro level is based on the iron triangle, and it concerns actors such as consultants and contractors. The macro level answers to more general and strategic questions, such as: "*does the original concept tick?*" (Toor & Ogunlana, 2010). Samset & Volden distinguish between the tactical and strategic performance of megaprojects, which can be referred back to the macro and micro levels (Samset & Volden, 2016). They consider the strategic performance regarding relevance, effectiveness and sustainability, and the tactical ones in terms of TCS. Samset & Volden argue that the strategic focus accounts for the FGIM, while the tactical one accounts for the project management. A similar conceptualisation is provided by (Ika, 2009), which distinguishes between project success (macro or strategic level) and project management success (micro or tactical level).

Some scholars emphasise the strategic relevance of megaprojects for the different stakeholders, (Atkinson, 1999; Han *et al.*, 2012; Toor & Ogunlana, 2010). This combined view enables to consider at least three relevant performance aspects (that complement the iron triangle):

- The impact on the organisational/corporate success: i.e. how the megaproject impacts on the stakeholders;
- The impact of the final costumers of the megaproject, e.g. electricity consumers in the case of power plants;
- The strategic option provided by the megaproject for the stakeholders, for example how the megaproject prepares its competitive advantage in the future.

These extensions of the concept of performance can provide a proper justification for megaprojects, which is rarely considered by the media and by the public opinion. The megaproject performance is a highly controversial topic, which divides and polarised several communities, including: policymakers, academics, media and the public opinion (Frick, 2008; Merrow, 2011; Turner & Zolin, 2012). Merrow advocates for the industrial megaprojects asserting that “*without the industrial megaprojects in the extractive and manufacturing sectors, global competition for resources, which is already very intense, would become unmanageable*” (Merrow, 2011:p.27). Additionally, Merrow claims that megaprojects provide millions of jobs and without such projects, the price of commodities would be significantly higher. Similarly, Dimitriou, Ward & Wright emphasise the need of transportation megaprojects in modern societies because of the vast positive potential they can generate (Dimitriou, Ward & Wright, 2013).

Other authors are more sceptics or even opposed to megaprojects (Zidane, Johansen & Ekambaram, 2013). Van de Graaf & Sovacool emphasise that all megaprojects suffer similar problems: “*too many stakeholders and stakeholder fragmentation; cost overruns and the risk of accidents and attacks; massive externalization of costs to third-party stakeholders; concentration of wealth and corruption; and inflated expectations and biased projections*” (Van de Graaf & Sovacool, 2014).

According to Hirschman if decision-makers were able to foresee the real impact of megaprojects, they wouldn't approve them; their ignorance allows to initiate these “money holes” (Hirschman, 2014).

2.4. The Megaproject COST Action – The relevance of the Special Purpose Entities (SPEs)

In the last decade, scholars advocated for an extended notion of performance in megaprojects (Section 2.3). Regardless of this significant trend, the traditional TCS performance metrics are still relevant, and they are widely employed to make statistics concerning the megaprojects' performance. Their simplicity and standardisation enable to compare different megaprojects and to obtain statistics even for a reduced sample of projects. Among the existing statistical studies, the Megaproject COST Action played a central role in this thesis and paved the way for the current research.

The COST action is an EU funded temporary initiative (4 years) to establish a research community around a specific topic, which in this case was the performance of infrastructure megaprojects in Europe (Megaproject COST Action, 2014). During the early stages, the Megaproject COST Action's participants developed a collection of forty-four case studies prevalently around Europe (Locatelli *et al.*, 2017; Megaproject cost action, 2014). During the later stages, scholars applied different methods to analyse the sample of case studies. One method was particularly informative, i.e. the Fisher Exact Test (FET) (Brookes & Locatelli, 2015; Locatelli *et al.*, 2017; Locatelli, Invernizzi & Brookes, 2017).

The FET is a quantitative statistical method able to reveal correlations between two sets of binary variables called the independent and the dependent variables. The FET assumes that there is no correlation between the independent variables (Brookes, Locatelli & Mikic, 2015; Locatelli, Invernizzi & Brookes, 2017). The test ignores multiple correlations, i.e. those correlations that consider multiple independent variables vs one (or more) dependent variable.

The independent variables described specific features of megaprojects, including:

- The megaproject involves turnkey contracts (True/ False);
- The Megaproject is in the energy sector (True/ False);
- The Megaproject involves first of a kind technology (True/False);
- The Megaproject involve one or more SPEs (True/ False);
- Etc.

A narrower set of dependent variables were selected for simplicity, namely:

- The planning phase² is on time (True/False);
- The construction³ is on time (True/False);
- The construction is on budget (True/False).

² The planning phase considered by this research starts from the beginning of the negotiation, due diligence and it ends at the beginning of the construction.

³ The construction starts at the beginning of the construction, including the preparatory works at the site. It concludes at the beginning of the commercial operation of the infrastructure megaprojects.

The scholars of the Megaproject COST Action applied the FET to identify the correlations between the independent and dependent variables. For each of these correlations, the methods returned the p-value (a measure of the statistical reliability of the given correlation) (Locatelli, Invernizzi & Brookes, 2017; Locatelli *et al.*, 2014; Pasian, 2016:chap.29).

During the later stages of Megaproject COST Action, the original sample of cases was expanded. Particular important was the cooperation with the OMEGA centre-Bartlett school – University College London. After the application of the FET, additional quantitative methods were applied to the “coded” case studies, i.e. more specifically, with the adoption of machine learning techniques (Locatelli *et al.*, 2017) in collaboration with the University of Belgrade.

Few correlations were considered statistically relevant. One of the most relevant focused on the presence of the Special Purpose Entities (SPEs). In particular, when the one or more SPE is involved in the delivery or operation of the megaproject:

- The planning phase is less likely to be on time;
- The construction is more likely to be on time;
- The construction is more likely to be on budget.

Therefore, the COST Action paved the way for this research, showing the relevance of the SPEs for the megaprojects performance. What the COST Action did not investigate in-depth was “how” SPES influence the megaproject performance.

2.5. Summary

The Chapter introduced the infrastructure megaprojects, which are characterised by nine main features: (1) economic size, (2) physical-tangible outcome, (3) impact on the context, (4) government involvement and political relevance, (5) organisational complexity and heterogeneity, (6) long-time commitment, (7) vast uncertainty and risk, (8) challenging investment, (9) megaprojects as programmes. For each feature, the Chapter described the current state of knowledge in the literature. The second part of this Chapter discussed the topic of the megaproject performance. The traditional TCS metrics were introduced and considered in the context of megaprojects. The Chapter summarised the theoretical explanations about why megaprojects are usually delivered late and over-budget. The Chapter described the current trend in megaproject

literature to extend the notion of performance beyond the tradition TCS metrics. Finally, the Chapter described the contribution of the Megaproject COST Action for this thesis. The COST Action showed that use of SPEs is statistically correlated with better cost and time performance during the planning and delivery of megaprojects, which paved the way of the current research. This Chapter of literature review is important for the research for three main reasons. Firstly, the Chapter introduced essential concepts for this research such as “megaproject”. Secondly, Section 2.2 introduced some crucial characteristics for megaprojects. These characteristics were further considered in Section 4.6 to analysis the challenges for the FGIM. Furthermore, the characteristics of megaproject informed the selection of the methodology as described in Section 5.4. Thirdly, the consideration of the megaproject performance (Section 2.3); in particular, the Megaproject COST Action (Section 2.4) was the starting point for the research. The COST Action highlighted a relevant area to investigate, paving the way for this research.

3. Literature Review (B). What we know and what we do not about SPEs in Megaprojects

3.1. Chapter Overview

The current Chapter describes the state of knowledge concerning SPEs in different contexts. Section 3.1.1 introduces the history of SPEs and their first uses. Section 3.1.2 describes in detail the common use of SPEs for megaprojects, namely project finance and project partnering. Section 3.2 summarises the general pros and cons derived from the use of SPEs in megaproject as described in the project management literature. Section 3.3 highlights the relevant gaps in the literature. Section 3.4 presents and compares three different understandings of SPEs, looking at the legal, financial, and project management domain. Section 3.5 introduces a unifying definition of SPE integrating the three understandings associated with the three knowledge domains considered.

3.1.1. History of SPEs

SPEs have been first used in 70's when the "Government National Mortgage Association" (Ginnie-Mae) introduced the first securitisation instruments for government-insured mortgages (Ketz, 2003). At that time, the regulations regarding SPE were almost inexistent. In the 90's, the International Accounting Standard (IAS) started to recognise and regulate SPEs.

Originally, one of the first fundamental accounting standards (the so-called "IAS 27") required corporations to report and "consolidate" subsidiaries on their books (e.g. balance sheet, income statement); SPEs were not considered explicitly. The IAS 27 was neither detailed or prescriptive, leaving large margins of interpretation to corporations. Therefore, it was relatively easy to create an off-balance sheet instrument to avoid the accounting consolidation. This flexibility led to the lack of accountability of SPEs; there are examples of misuses of this instruments such as hiding profits for tax optimisation purposes or hiding debt. Some of the most remarkable examples include the Enron Bankruptcy in 2001 (Schwarcz, 2012, 2006; Smith, 2011) and the Subprime crisis in 2008 (Schwarcz, 2008).

In July 1998 IASC-SIC (Standing Interpretations Committee) recognised the vast ambiguity associated to SPEs, and it introduced a bespoke standard called Draft Interpretation 12 (DI-12). For the first time, this standard included "pragmatic guidelines" for the accounting recognition of SPEs (IASC, 1999). In particular, the DI-12 proposed that firms must report SPE in the balance when they control the SPE and obtain the majority of the benefits from the SPE's activities (Larson, 2008).

Several Institutions, banks, consultancy firms and industrial operators opposed to this interpretation and claimed technical reasons for avoiding the report of SPEs into the balance sheets. (Larson, 2008). Most of those organisations have been later involved in SPE scandals, like the Enron bankruptcy (2001).

In the investigation following the improvise Enron bankruptcy, it was found that SPEs were used to create account statements containing false and misleading information and hiding a vast debt (Smith, 2011). Enron leveraged the weak legislation with ad hoc

transactions (e.g. the so-called “commodity prepay”) and SPEs (Smith, 2011). These accounting tricks enabled Enron to inflate virtually its business and to hide a massive debt (Smith, 2011). The scandal of Enron and similar others pushed the accountancy standard organisations and legislators to work on a redefinition of the accounting principles, with special emphasis of what should be reported in the official statements and what can be left off- balance sheet.

3.1.2. Uses of the SPEs in projects.

SPEs have their provenance in companies’ financial desires to take transactions off-balance sheet and to gain other financial and fiscal advantages. The financial techniques involving SPEs were initially developed for securitisation in the real estate (Fabozzi & Kothari, 2008). In projects, SPEs have two primary uses: PF and project partnering, which are often combined.

Project Finance (PF)

PF is defined as: “*the raising of funds on a limited-recourse or nonrecourse basis to finance an economically separable capital investment project in which the providers of the funds look primarily to the cash flow from the project as the source of funds to service their loans and provide the return of and a return on their equity invested in the project*” (Finnerty, 2013). PF provides financial advantages for sponsors increasing their financial capacity at a lower cost compared to the traditional “corporate financing” (Finnerty, 2013). PF requires a lengthy due diligence and negotiation process at the beginning of the project (i.e. conceptual design, planning) (Vinter, Price & Lee, 2013). This is necessary because external financiers want sufficient guarantees to legitimate the increase of leverage and decrease of cost of debt. Risks identification and transfer are the most important aspects (Caselli & Gatti, 2005). These aspects are addressed by specific contracting mechanisms (e.g. offtake contracts) supporting the viability of the project (Nevitt & Fabozzi, 2000). Typically, SPEs are used to isolate the project risks and to create a central point of responsibility (Esty, 2008).

Project Partnering

Project partnering is a general term describing the collaborative relationship between two or more project stakeholders establishing a “partnership”. The partnership has a formal significance as it is usually supported by contracts; sometimes, one or more organisational vehicles support the partnership. Alternately, the partnership might involve a fiduciary relationship between partners, having legal implications as prescribed by the equity of law in common law jurisdictions. Project partnering focuses on the synergies among project partners by aligning their interests (Clifton & Duffield, 2006).

	Duration of the partnership	Legal instrument
Partnership (general meaning)	Either Short-medium-long horizons	Can be based on a variety of options, e.g. contracts, SPEs, shareholder agreement, or other types of agreement. It can be based on the notion of fiduciary relationship. It can involve ad-hoc organisations underlying the partnership, either incorporated or not.
Corporate Partnership/ Corporate Joint Venture (JV)	Medium- Long-term horizon	Usually based on contracts, e.g. shareholder agreement, framework agreement. In case of unincorporated JVs, there are no organisational vehicles. Conversely, the incorporated JV involves a dedicated organisation having legal personality. Often these vehicles lack sufficient specificity to be considered SPEs; i.e. the requirement to have limited and pre-defined purposes is less stringent.
Project Joint Venture	Short-term horizon (e.g. design of a new product, construction of an infrastructure, etc.)	If incorporated, they are usually based on SPEs, together with other contracting instruments.
Public-Private Partnership	Short- medium term horizon (e.g. the infrastructure lifetime, the concession period, etc.)	If incorporated, they are usually based on SPEs, together with other contracting instruments and public concessions.
Consortium	Usually short-term horizon (e.g. delivery of a project)	Based on two layers of agreements: internal agreement (between the parties involved in the consortium) and external (between the consortium and the external stakeholders, e.g. Client). The consortium does not involve dedicated companies (e.g. SPEs). The consortium is based on the notion of joint liability for its members. The extent by which the parties are jointly liable may change depending on the type of consortium and on the legal and contractual framework applied.

Table 3-1: Comparison between different types of partnership

In infrastructure projects, partnerships often include a combination of both private and public stakeholders; this specific assembly is called Public-Private- Partnerships (PPP) (Clifton & Duffield, 2006; Grimsey & Lewis, 2007). There are other types of partnership, are usually referred as: corporate partnership, joint venture, or consortium

(Grimsey & Lewis, 2007). These terms can confuse because they were originated adopting different and inconsistent rationales. As a result, the types of partnership previously listed cannot be considered a taxonomy because they are not mutually exclusive.

Another ambiguity arises from different levels of generalisations that can be implied in different contexts. For example, the term “consortium” can have either a generic or a very detailed meaning. According to the Oxford Dictionary, the term can be described as “*an association, typically of several companies*” (Oxford Living Dictionary, 2016), which is a general interpretation. In some jurisdictions, the term consortium assumes a specific meaning because it is a legally recognised form of association.

Table 3-1 summarises the general meaning of the key project partnering terms. The specific meaning is country specific, and this thesis does not consider it. Table 3-1 compares the key terms adopting two main perspectives: the duration of the partnership, and the legal instrument to establish and enforce it.

SPEs in megaprojects

In the project context, SPEs are primarily used for megaprojects because their set-up and due diligence are particularly expensive, time-consuming and it requires advanced financial and legal expertise (Clifton & Duffield, 2006; National Audit Office, 2013). Consistently, the set-up of SPEs is usually prohibitive for small and medium projects. There are exceptions in contexts where project finance is facilitated due to a favourable legal framework, including the availability of contractual and financial standards dedicated explicitly to these transactions.

For example, the UK has a long tradition in project finance for public infrastructure. Most public infrastructures are developed according to the PFI approach (National Audit Office, 2013, 2011b, 2011a). In the UK the long tradition in project finance permitted to develop almost standardised transactions and models. Depending on the type of infrastructure considered (e.g. roads, hospitals, schools, prisons, power) there are standard models of PFI to be applied. These standards simplify the due diligence and set up of SPEs providing confidence to the parties involved. They also permit to

reduce the burden regarding time and cost. Other countries having a long-lasting tradition in project finance are: Australia, Netherlands, South Africa, Canada, Japan, etc. (Grimsey & Lewis, 2005).

3.2. Pros and Cons derived from the use of SPEs in megaprojects.

The adoption of SPEs in megaprojects is justified by several factors including: the ability to attract external financial resources, the alignment of actor's interests, the stakeholder integration during life-cycle, the effective risk sharing, and lower taxes and smoother transfer of assets among companies (Basel Committee on Banking Supervision, 2009; De Nederlandsche Bank, 2004; OECD, 1996:p.199). Conversely, the use of SPEs can provide some disadvantages for the project, namely: limits the flexibility, tends to created monopoly, implies a longer negotiation process (Finnerty, 2013).

Advantages	Ability to attract external financial resources	SPEs permits to invest on off-balance sheet basis and apply PF. Consistently, SPEs enable to increase the indebtedness capacity at lower cost. (Finnerty, 2013).
	Alignment of actor's interests	SPEs are employed as incorporated JV enabling to align the sponsor's objectives (Clifton & Duffield, 2006; Nisar, 2013).
	Stakeholder integration during life-cycle	SPEs are used to design, develop and operate infrastructure projects. Sometimes, SPEs enable to integrate more project phase under a single point of responsibility (Clifton & Duffield, 2006; Nisar, 2013).
	Effective Risk Sharing	SPEs enable to design sophisticated risk-sharing transactions. One of the main principles in such designs is to share risks to those agents that either is in the better position to control them, or they are in the can bear their consequences. Usually, the former solution is preferred. However, some risks are exogenous to every agent. In such circumstances, the risks are assigned to agents better able to cope with the negative consequences of risk occurrences, e.g. the Government (Grimsey & Lewis, 2002).
	Lower Taxes	SPEs are widely employed for tax-optimisation purposes, e.g. off-shore corporations (Basel Committee on Banking Supervision, 2009).
	Easier Transfer of assets among companies	SPEs enables higher flexibility in the transfer of assets (or liabilities) between agents. All assets available by the SPE can be transferred by relocating the control of SPE; i.e. by transferring SPE shares among companies (OECD, 1996)
Disadvantages	Limit Flexibility	Longer stakeholders' commitment to the infrastructure has the downside of lower flexibility. Lower flexibility take the forms of: longer contract amortisation time, rigid offtake contract conditions, etc. (Viegas, 2010), (Medda, Carbonaro & Davis, 2013)
	Creation of Monopoly	SPEs are usually associated with monopolies. In infrastructure projects, SPEs hold the required licenses and concessions, which are often temporary monopolies granted by the state. Additionally, SPEs might alter the open bidding process in favour of closer forms, e.g. preselected, negotiated approaches. Consistently, SPEs might be associated with monopolies by increasing the barrier to entry into specific markets (Demirag <i>et al.</i> , 2011).
	Lack of transparency	Often SPEs are used as off-balance sheet investment vehicles. From the accounting perspective, the off-balance sheet vehicles limit the access to information and public accountability (Hood <i>et al.</i> , 2006; Lander and Auger, 2008).
	Longer Negotiation Process	The negotiation and design of SPEs require lengthy due diligence at the beginning of the project. These activities are expensive and time-consuming (Finnerty, 2013).

Table 3-2: Summary of the pros and cons derived from the use of SPEs in megaprojects

Table 3-2 summarises the main contributes from existing literature, regarding advantages and disadvantages associated with the adoption of SPE in Megaproject. Table 3-2 also highlights the “uncertain areas”: drivers affected by a degree of uncertainty and ambiguity (for instance the transaction cost).

3.3. Relevant gaps in the SPE literature

The bibliometric analysis employed at the beginning of the research permitted to investigate further the gaps in the literature (Sainati, Brookes & Locatelli, 2017). In particular, the pertinent documents were counted considering two primary attributes: their associated disciplines and topics. **Disciplines** are the general fields such as: economy and finance, management, legal, product development, social behaviours, contracting, project. Discipline refers to the journal, for example when papers were published in the International Journal of Project Management they were classified as a project management disciplines. **Topics** refer to specific themes, often cross-disciplines; for example: securitisation and taxes, strategic alliances, knowledge and technology transfer, risk management (mostly transfer), project procurement and supply chain configuration, project financing, project governance, games theory applied to partnerships. The topics were determined using the open-coding approach (Corbin & Strauss, 2015).

Figure 3-1 displays the number of SPE’s related documents corresponding to different disciplines and topic. Figure 3-1 maps the state of the art of the literature concerning SPEs. The two axes adopt a decreasing order, so the top left corner of the matrix displays the topics and disciplines having an abundance of literature. The bottom-right corner shows the disciplines and topics with scarceness of literature.

Figure 3-1 shows that most of the existing literature on SPE refers to the economics & finance subject, in particular: securitisation and taxes, strategic alliance, risk management. Conversely, the figure identifies relevant gaps for the contracting and project management disciplines. These gaps are particularly relevant for some relevant topics, including: strategic alliance, knowledge and technology transfer, Risk management, project financing and project governance. A more detailed analysis highlighted further gaps, including:

3.Literature Review (B). What we know and what we do not about SPEs in Megaprojects

- The barriers and the enabling factors to the adoption of SPEs in megaprojects;
- The governance of the SPE;
- The role played by SPEs during the FEED;
- The dynamic evolution of SPEs;
- The relevant trade-offs are characterising the design of SPEs.

The few papers available in project management are prevalently based on either surveys or single case studies. The project management papers dealing with SPEs analyse them the in civil and construction industry (especially by considering the PPP) or from the product development perspective.

This analysis highlighted some areas where little literature is available. This was an essential but preliminary step toward the identification of the relevant gap in knowledge. The analysis permitted to guide the intended contribution to knowledge of this research strategically. In particular, the analysis identified the general area of interest for the research, i.e. the role of SPEs for the FGIM. The review of the governance literature (Chapter 4) provided more profound insights and permitted to formulate more precisely the research aims and objectives.

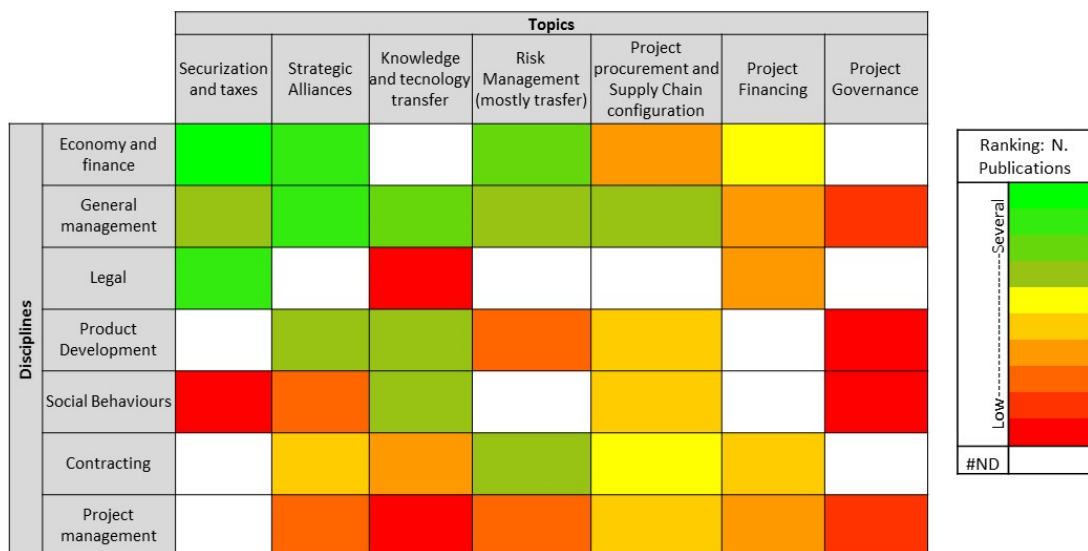


Figure 3-1: Mapping the SPE literature, relevant disciplines and topics

3.4. The three domains of SPE: legal, financial and project management

The current Section presents the common understanding of SPEs according to the legal, financial and project management domains. These understandings derived from a bibliometric analysis conducted by the author at the beginning of the research (Sainati, Brookes & Locatelli, 2017).

3.4.1. SPE in the legal domain

The legal domain sees the SPE as an intentional off-balance sheet instrument, which is used to hive off specific businesses from the originator. The legal domain focuses on the technicalities required to make this operation effective.

Legislators attempt to regulate the evolving applications of SPEs (e.g. securitisations, financial derivate, PF, etc.) to maintain sufficient transparency and accountability. However, the SPEs evolved in a deregulated context. Their abuse led to significant scandals like in the bankrupt of Enron and Lehman Brothers (Smith, 2011). Following from these scandals, the legislator intensified the effort to keep under control the use of the SPE. Consequently, they introduced specific regulatory frameworks qualifying the SPE directly or indirectly. **Directly**, the regulatory frameworks qualify the SPEs according to a list of prescriptive requirements. For example, the SPE can own only a specific class of assets (e.g. real estate), or liabilities (e.g. mortgages), or can perform only specific activities, e.g. issue securities and manage the cash flows. **Indirectly**, the regulatory frameworks focus on the relationship between SPEs and their sponsors and originators. In specific circumstances, sponsors avoid consolidating controlled entities, including SPEs.

3.4.2. SPE in the financial domain

In the financial domain, SPEs are financial vehicles permitting four main types of transactions: securitisation, project finance transactions, leasing transactions and leverage buyouts (Caselli & Gatti, 2005). SPEs may vary significantly depending on their original purposes; i.e. risk management & sharing, funding and liquidity, accounting, increasing credit risk, regulatory capital, asset transfer, property investing, other regulatory reasons, other motivations (Basel Committee on Banking Supervision, 2009). Sometimes, SPEs are “auto-managed” (also known as “autopilot

entities” or “synthetic entities”) by a set of sophisticated controlling rules govern their behaviour (De Nederlandsche Bank, 2004).

3.4.3. SPE in the project management domain

In project management, SPEs are incorporated organisations devoted exclusively to perform their contracts pre-defining their purposes. SPEs are used primarily in large projects because their set-up and due diligence are particularly expensive. There are two primary uses of the SPEs in megaprojects, and usually, they are overlapped, namely project finance and project partnering, as previously described in Section 3.1.2.

3.4.4. Comparison between the three domains of SPEs

Table 3-3 summarises the differences and similarities between the three knowledge domains: legal, financial, and project management. Table 3-3 adopts a double entry matrix structure. The main diagonal identifies the SPE’s specific characteristics in each domain; the upper-triangular cells describe the similarities between domains and the lower-triangular cells describe their differences.

The key messages emerging from the analysis presented in Table 3-3 are:

- The legal domain focuses on intentional off-balance sheet SPEs. The financial domain focuses on SPEs supporting advanced financial products and transactions. The project management domain focuses on concessionaire companies, project financing vehicles and construction Joint Venture, in megaprojects;
- Some SPE’s features are consistent across the three domains. The types of SPE considered in the legal and financial domains share more characteristics compared to the ones described in the project management domain;
- Some types of SPE considered in project management are well documented in the financial domain, as a specific class of financing vehicles, e.g. in PF. Conversely, the overlap between the project management and legal domain is relatively small;
- The managerial and organisational aspects are particularly relevant in the project management domain and not in the other ones.

Figure 3-2 highlights the characteristics in common between the three knowledge domains. In particular, three main features are common to all examples of SPEs

analysed: (1) legal personality, (2) pre-defined purposes, and (3) fenced entities. The identification of these three characteristics was essential to determine the universal definition of SPE further described in Section 3.5.

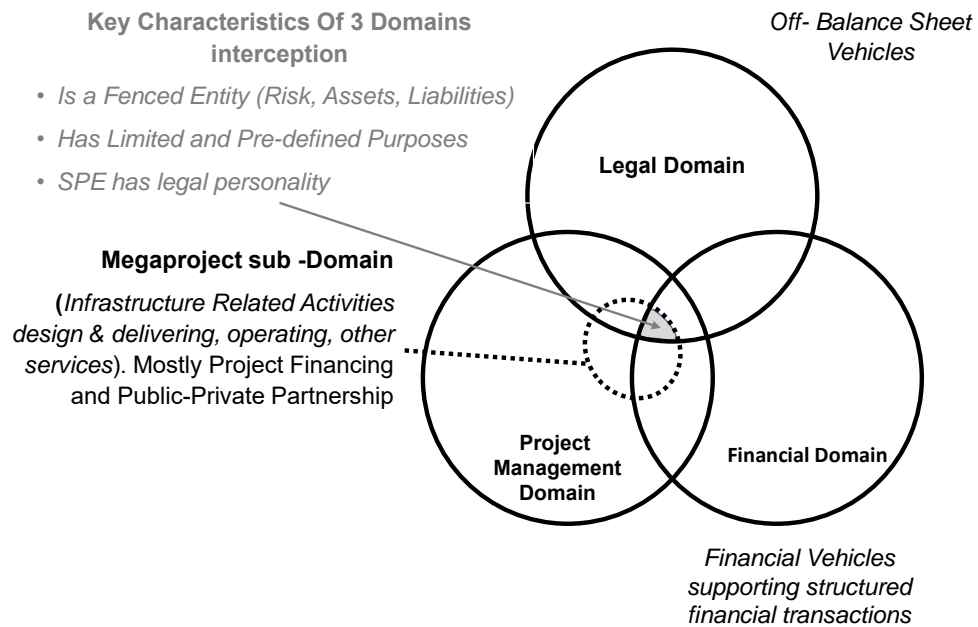


Figure 3-2: Knowledge domain sets associated with the SPE and defining characteristics

3.Literature Review (B). What we know and what we do not about SPEs in Megaprojects

	Legal Domain	Financial	Megaproject
Legal	<p>Legal - The SPE is considered as an Intentional Off-Balance Sheet Instrument. The domain focuses on the legal provisions addressing the accounting recognition of SPEs. Similarly, to the financial domain, the SPE is usually an empty box registered in fiscal paradises for fiscal optimisations, arbitrages, structured finance and balance sheet management operations.</p>	<p>SIMILARITIES - The SPE is an off-balance sheet instrument used for insulating (and sometimes hide) risks, assets and liabilities. The SPE is an empty box, usually in off-shore jurisdictions, with passive or external management. Its lifetime can be either limited or perpetual. Its typical activities encompass: Insulation of Risk, Assets, Liabilities or Cash Flows, Risk Transfer, sharing and spreading, Securitization (assets & liabilities), PF, Leasing, Factoring, Commercial or fake transaction, Channelling, retention and exchanging of rights, licenses, permits, Channelling cash Flows.</p>	<p>SIMILARITIES - The SPEs can be employed as off-balance sheet vehicle for the megaproject investors. For example, the Private Finance Initiative (PF) involves the SPEs as off-balance sheet vehicles for the public administrations. Sometimes, the SPE is also used to manage concessions and licenses associated with the infrastructure megaprojects.</p>
Financial	<p>DIFFERENCES - There are deregulated financial instruments that are legally recognised and not considered by the legal domain. Furthermore, there are classes of financial SPEs that are not off-balance sheet instruments. This is in contrast to the understanding of the legal domain that focuses on accounting recognition of SPE and associated information disclosure.</p>	<p>Financing – The SPE is considered as a financial vehicle permitting the structured finance transactions (i.e. securitisation, PF transactions, leasing transactions, leveraged buyouts) SPE is a Bankruptcy remote entity with a low probability of insolvency.</p>	<p>SIMILARITIES - SPEs are designed for PF. They involve a complex contracting network to secure, to the possible extent the project risk; e.g. offtake agreements, supply agreement, etc. The SPEs are designed to give confidence to the financial institution to make bankable the investment. This requires a long due-diligence and typically permit to increase the financial leverage (e.g. 80-90%) of the SPEs.</p>
Megaproject	<p>Megaproject SPEs do not focus primarily or on off-balance sheet related issues; which is the central topic in the legal domain. megaproject SPEs have a public and clear venue, typically in the same jurisdiction where the infrastructure is developed. Sometimes, the jurisdictions are selected because they have “friendly”, and enforceable banking law (usually common law). Conversely, the legal domain focuses on the SPEs that are intentionally settled-up in jurisdictions having favourable legislation regarding taxes and information disclosure.</p>	<p>DIFFERENCES – The financial domain considers a broader range of uses for the SPEs. Usually, the financing domain focuses on ‘mailbox’ companies that are virtual companies. In such cases, the SPE is auto managed and does not involve physical assets or people (i.e. it is just financing vehicles). By contrast, the megaproject’s SPEs enable partnering the key SPE's stakeholder by pooling their assets and workers into a joint company.</p>	<p>The megaproject-SPE are physical organisations (with staff, facilities, etc.) having defined and limited lifetime. Usually, the shareholders are industrial organisations (contractor, utilities) and sometimes public institutions (e.g. PPP). These SPEs design, deliver, operate large/megaprojects. The SPEs are used for PF and project partnering.</p>

Table 3-3: Comparison between Legal, Financial and Megaproject Domain

3.5. The universal definition of SPE

The current literature review highlights that there is not a single and widely accepted definition of SPE (Sainati, Locatelli & Brookes, 2015a; Sainati, Brookes & Locatelli, 2014). The existing definitions of SPEs are empirical and empirically based. Often, they definitions include exemplifications, lists of purposes and features. All the definitions considered are open, in the sense that they acknowledge the reader that may exist other types of SPEs or different interpretations. Often, definitions focus on specific uses of the SPEs.

Box 3-1 - Box 3-4 present some of the most relevant definitions of SPEs. These definitions are used by the OECD, European Commission, EUROSTAT and Cabinet Office in the UK. These definitions describe slightly different types of organisations. These official definitions focus on the financial and accounting aspects of SPEs, in particular:

- The **OECD** definition (Box 3-1) focuses on the accounting rules to recognise SPEs. The definition focuses on the ability of SPEs of being off-balance sheet instruments;
- The **European Commission** definition (Box 3-2) is very detailed. Some features are too specific to be inclusive for all types of SPEs. The definition focuses primarily on those SPEs engaged in international transactions (i.e. between different countries and jurisdictions). Consistently, the definition focuses on the so-called "multinational enterprises";
- The **EUROSTAT** definition (Box 3-3) recognises the difficulty of generalising and specifying precisely what is an SPE. Consistently, the definition provides a possible description of SPES. Similarly to the definition of the European Commission, it focuses on off-shore enterprises;
- The **UK- Cabinet Office** definition (Box 3-4) focuses on the financial perspectives and infrastructures. This is consistent with the Private Financing Initiative (PFI) that is the standard approach for developing infrastructure in the UK.

3.Literature Review (B). What we know and what we do not about SPEs in Megaprojects

Special purpose entities (SPEs) are:

1. *generally organised or established in economies other than those in which the parent companies are resident, and*
2. *engaged primarily in international transactions but in few or no local operations.*

SPEs are defined either by their structure (e.g., financing subsidiary, holding company, base company, regional headquarters), or their purpose (e.g., sale and regional administration, management of foreign exchange risk, facilitation of financing of investment).

SPEs should be treated as direct investment enterprises if they meet the 10 per cent criterion. SPEs are an integral part of direct investment networks as are, for the most part, SPE transactions with other members of the group.

Context: *For SPEs that have the sole purpose of serving as financial intermediaries:*

- *All transactions except those with affiliated banks and affiliated financial intermediaries should be recorded in the direct investment data.*
- *Transactions with affiliated banks and affiliated financial intermediaries should be excluded from the direct investment data, except transactions in equity capital and permanent debt*

Box 3-1: Definition of SPE (OECD, 2017a)

A special-purpose entity, abbreviated as SPE and sometimes also called special-purpose vehicle (SPV) or financial vehicle corporation (FVC), is:

- *a legal entity (an enterprise or sometimes a limited partnership or joint venture) formally registered with a national authority and subject to the fiscal and other legal obligations of the economy in which it is resident,*
- *established to perform specific functions limited in scope or time, with one or a few primary creditors,*
- *having no or few non-financial assets and employees, little or no production or operations and sometimes no physical presence beyond a "brass plate" confirming its place of registration,*
- *related to another corporation, often as a subsidiary and often resident in a territory other than the territory of residence of the related corporation (lacking any physical dimension, the residence of an SPE is determined by the economic territory under whose laws it is incorporated or registered),*
- *its core business function consists of financing its group activities or holding assets and liabilities of its group, that is the channelling of funds from non-residents to other non-residents, and with only a minor role for managing and directing activities.*

There can be different reasons for setting up an SPE:

- *to protect a company from financial risk, often in the context of a large project;*
- *to separate different layers of equity infusion in complex financing operations;*
- *to own and more easily dispose of assets and associated permits and rights;*
- *to engage in a public-private partnership relying on a project-finance structure.*

As there is no universally accepted definition of a special-purpose entity yet, not all abovementioned characteristics or reasons have to be applied to call such.

A multinational enterprise (MNE) often diversifies its investments geographically through an SPE; examples are financing subsidiaries, conduits, holding companies, shell companies, shelf companies and brass-plate companies."

Box 3-2: Definition of SPE (European Commission, 2017)

3.Literature Review (B). What we know and what we do not about SPEs in Megaprojects

A number of institutional units may be described as special purpose entities (SPEs) or special purpose vehicles. There is no common definition of an SPE, but some of the following characteristics may apply.

Such units often have no employees and no non-financial assets. They may have little physical presence beyond a "brass plate" confirming their place of registration. They are always related to another corporation, often as a subsidiary, and SPEs, in particular, are often resident in a territory other than the territory of residence of the related corporations. In the absence of any physical dimension to an enterprise, its residence is determined according to the economic territory under whose laws the enterprise is incorporated or registered.

Remark

Entities of this type are commonly managed by employees of another corporation which may or may not be a related one. The unit pays fees for services rendered to it and in turn charges its parent or other related corporation a fee to cover these costs. This is the only production the unit is involved in though it will often incur liabilities on behalf of its owner and will usually receive investment income and holding gains on the assets it holds.

Whether a unit has all or none of these characteristics, and whether it is described as an SPE or some similar designation or not, it is treated in the SNA in the same way as any other institutional unit by being allocated to sector and industry according to its principal activity unless it falls into one of the three following categories:

- a. Captive financial institutions,*
- b. Artificial subsidiaries of corporations,*
- c. Special purpose units of general government (SNA 2008, § 4.55, 5.56, 4.57 and 4.58).*

Box 3-3: Definition of SPE (Eurostat, 2017)

A special purpose vehicle (SPV) is a legal entity that is created solely for a particular financial transaction or to fulfil specific objectives. Forming an SPV is a common approach when contracting with a group of entities in public-private partnerships.

SPVs can play an enabling role in the legal, financial and operational structure of a social impact bond. Investor's funding is channelled into the SPV which enters into a contract with the commissioner. The SPV then acts as the delivery body for the intervention and SIB through an appointed director by:

- contracting providers;*
- providing working capital to the contracted providers;*
- managing contracts and monitoring performance of providers; and*
- receiving outcomes payments and paying investors.*

An SPV is appropriate when there are multiple investors and providers as it mitigates the need for each party to contract individually with one another. Furthermore, it minimises the level of on-going engagement required of each of the parties involved in the SIB as the SPV manages all finance.

Delivering a SIB through an SPV provides clarity over the roles and relationships between each party and ensures that incentives are clearly defined. However, the transaction costs of setting up an SPV are high.

Box 3-4: Definition of SPV, (Cabinet Office UK, 2017)

The definitions presented are empirically based and mainly descriptive. These definitions fail to identify precisely, and formally, the essential features characterising SPEs. Most of the features presented might describe general types of SPE but do not include all types. Conversely, SPEs are widely employed in a variety of context for their flexibility. Therefore, under the name of SPEs exist a variety of heterogeneous organisations which are challenging to be regrouped under a "universal definition" of SPE.

SPEs can have several purposes ranging from fiscal optimisation to construction of infrastructure megaprojects. SPEs can be either mailbox companies (i.e. intangible organisations without people or offices) or large organisations involving hundreds of people. In the past, this ambiguity has caused major problems such as:

- Lack of transparency, e.g. in some countries, SPEs are not reported in the balance sheet or other official corporate documents (United Nations Economic Commission for Europe (UNECE), 2011; Schwarcz, 2006);
- Tax optimisation: sometimes SPEs are incorporated in low fiscal jurisdictions while their operations (if existing) take place elsewhere (United Nations Economic Commission for Europe (UNECE), 2011). The ambiguity in the definition of SPEs enables companies to take advantage of “grey areas” (Basel Committee on Banking Supervision, 2009; Larson, 2008);
- Ineffective policies: SPEs are difficult to regulate and traditionally occupy a deregulated field. Several scandals and crisis originated from the misuse of SPEs, (e.g. Enron bankrupt, 2008 subprime crisis, etc.) forcing the legislators to issue more appropriate laws (Smith, 2011).

This ambiguity is particularly challenging for this thesis. The SPEs is a central concept for the study; the author believes that a precise and formal definition is essential for the research.

Figure 3-2 summarises the prevalent understating of SPEs in the legal, financial and project management domains. The legal domain considers SPEs as off-balance sheet vehicles (Section 3.4.1). The financial domain considers SPEs as an independent investment vehicle (Section 3.4.2). The project management domain considers the SPEs as a technical vehicle allowing project financing and some types of project

partnering (Section 3.1.2). The project management domain focuses on large infrastructure projects, particularly megaprojects. The overlap between the three knowledge domains identified the essential characteristics of SPEs, allowing to formulate the universal definition. All SPEs considered have three essential characteristics in common: (1) SPEs are fenced entities, (2) SPEs have limited and pre-defined purposes, and (3) SPEs have legal personality.

Universal definition of SPE

Grounded in the body of literature analyses, the definition of SPE is: *“The Special Purpose Entity is a fenced organisation having limited pre-defined purposes and a legal personality”* (Sainati, Brookes & Locatelli, 2017).

The proposed definition focuses on three essential characteristics:

1. **SPEs are fenced entities:** SPEs are “self-fenced organisations” or “orphan entities” (Basel Committee on Banking Supervision, 2009; United Nations Economic Commission for Europe (UNECE), 2011). There are legal mechanisms to isolate SPEs from their sponsors and originators. For example, the sponsors can assign their ownership share to a trustee by a trust. This “fencing characteristic” is essential for most transactions involving SPEs, including securitisation and project finance (PF) (Fabozzi, Kothari & others, 2008). A key principle connected to the “fencing characteristic” is the so-called “bankruptcy remoteness”. According to this principle, the bankruptcy process (involving either the SPE or its sponsors) doesn’t involve the ownership relationship between the SPE and its sponsors (Sewell, 2006). Therefore, if the sponsors bankrupt, the assets of the SPEs are kept isolated from the bankruptcy process, i.e. they are protected from the creditors of the sponsors. Similarly, if the SPE bankrupt, the assets of the sponsors are not affected, except their security interests on the SPE, if any;
2. **SPEs have limited and pre-defined purposes:** SPEs focus exclusively on specific objectives. In legal terms, the SPEs have “scope limitations” by their article of incorporation, and contractual provisions associated to them (Caselli & Gatti, 2005). In megaprojects, usually the “shareholders agreement” set the predefined purposes (Section 7.5.1);

3. **SPEs have legal personality:** SPEs are incorporated organisations, i.e. legal entities (Basel Committee on Banking Supervision, 2009). Depending on the jurisdiction considered, SPEs can assume one of the possible forms: e.g, trusts, partnerships, limited liability partnerships, corporations and limited liability companies (Basel Committee on Banking Supervision, 2009; Feng, Gramlich & Gupta, 2009). The legal personality is an essential status permitting the previous two fundamental characteristics, i.e. fenced entities and limited and pre-defined purposes.

Synonymous

Often, the following terms are used as synonymous of SPE: project company, special project entity, special project company, special project vehicle, multilateral corporation, shell companies, off-shore vehicles, mailbox companies, etc. However, all these terms shall be instead considered specific types of SPEs. The term SPE is more general and encompasses a wide range of types consistently to the term Special Purpose Vehicle (SPV).

3.6. Summary

This Chapter presented the literature review concerning SPEs in infrastructure megaprojects. The Chapter introduced and defined SPEs in the legal, financial and project management domains. SPEs are flexible organisations that are employed in a wide range of applications. The existing knowledge domains consider SPEs differently; the current Chapter compared aforementioned three knowledge domains and provided a universal definition of SPE.

Concerning megaprojects, SPEs are prevalently used for project financing and project partnering, e.g. PPP, incorporated JV. In particular, the analysis highlighted a gap in knowledge concerning the role of SPEs for megaprojects.

This literature review Chapter was critical for the research for two main reasons.

Firstly, Section 3.3 highlighted the gap in knowledge concerning SPEs, particularly concerning the governance. The gap in knowledge is further discussed in Section 5.2.1. The gap in knowledge permitted to derive the research aim and question (Section 5.2).

Chapters 6-7 presents the results of this research and address the gap in knowledge introduced in this Chapter.

Secondly, Section 3.5 introduced the “universal definition of SPE”. This Chapter presents the challenges in defining and recognising SPEs, which can be easily confused with other types of corporations. SPEs are ambiguous organisations, and different knowledge domains conceptualise them differently. This Chapter defined formally the terms SPE that is essential for this research. Chapter 6 builds on this definition and classifies and differentiate alternative types of SPEs.

4. Literature Review (C). The governance of infrastructure megaprojects

4.1. Chapter Overview

The current Chapter introduces the concept of governance including the key definitions and the concepts developed in two relevant bodies of knowledge: the public and the corporate governance. The Chapter introduces the relevant governance traditions, namely public governance and corporate governance (Section 4.2). The Chapter describes the most relevant governance theories, namely: the institutional theory (Section 4.3.1), the shareholder theory (Section 4.3.2), the stakeholder theory (Section 4.3.3), the rational choice theory (Section 4.3.4), the agency theory (Section 4.3.5), the transaction cost theory (Section 4.3.6), and the contingency theory (Section 4.3.7). These theories provide the theoretical lenses to investigate governance in projects. The Chapter describes how the traditional governance theories are applied to projects. In particular, it describes the key construct of “project organising” (Section 4.4) and the traditional perspectives employed in the project governance (Section 4.5), i.e. the transactional (Section 4.5.1) and the inter-organisational views (Section 4.5.2).

Section 4.6 describes the peculiarities of “project governance” in megaprojects. The FGIM can take different forms depending on the financing and ownership approach. Section 4.6 focuses on the off-balance sheet financing approach as it involves SPEs, which are the focus of this PhD research. In particular, Section 4.6 describes the perspectives considered by the project management, the financial and the legal literature, which are the most relevant for the FGIM that are financed off-balance sheet. The three streams of literature emphasise the complexity of governance arrangements, highlighting four main governance challenges (Section 4.6).

4.2. Governance and governance traditions

The term “governance” originates from the Latin “gubernare”, which means “to steer” (Samset & Volden, 2016). In this research: “*Governance refers to all processes of governing, whether undertaken by a government, market, or network; whether over a family, tribe, corporation, or territory; and whether by laws, norms, power, or language*” (Bevir, 2013:p.14).

The concept of governance evolved in different disciplines, including philosophy, law, political sciences, social sciences, economics and management. Some of the most relevant streams of “governance literature” include the “public governance” and the “corporate governance”. These streams are relevant because they are the oldest, the largest and the most established (Bevir, 2013).

Firstly, **public governance** focuses on the state and its public institutions, and in particular: “*governance is the exercise of political, economic and administrative authority necessary to manage a nation’s affairs*” (OECD, 2017a). Public governance is broader than the term “Government” because it includes the creation of the “*rule and order in social practices*” (Bevir, 2013:p.14). The public governance addresses specific aspects such as democracy, administration of the state, subsidiarity and devolution, constitutional and legal system, etc. Public governance is one of the oldest and most relevant streams of literature, but it is not considered in detail by this thesis. The public governance is mentioned in this literature review only because it has historical relevance and encloses key governance criteria and principles.

Secondly, **corporate governance** is “*the system by which companies are directed and controlled, in the interest of shareholders and other stakeholders, to sustain and enhance value*” (Manzoni & Islam, 2009). Governance is often compared with management. However, these two terms are close in meaning but have different focuses. Governance focuses on the decision-making framework (OECD, 1999), while management refers to the decision-making exercise. Introducing an analogy, governance focuses on the “ruling of the game”, either implicitly or explicitly, while management is about “playing the game”. Often, the corporate governance is viewed as the mean by which organisations are governed, and their managers are held

accountable (OECD, 2001). There are two main dimensions of accountability: internal and external (Arnaboldi, Azzone & Giorgino, 2014). Internal accountability concerns the internal decision-making and motivation of the workforce and management in particular. The external accountability concerns the relationship between the corporation and external agents.

There are two main interpretations about corporate governance, namely the narrow and the general one. The narrow interpretation focuses (only) on the relationship between the shareholders of corporations and the top management; i.e. the “C-suite” and the board of directors (Damodaran, 2010). Conversely, the general interpretation of corporate governance applies to all management levels of corporations (OECD, 2001). In particular, it focuses on the so-called “system of control” or “performance measurement and management system”. Therefore, the general interpretation of corporate governance includes the mechanism for the internal budgeting, reporting and decision-making (Dedman, 2002; Müller, Shao & Pemsel, 2016). This thesis adopts the general interpretation of corporate governance.

4.3. Governance Theories

governance is a hybrid topic encompassing both abstract-theoretical analysis and empirical practices (Bevir, 2013:p.201), and it applies to different “elements” such as organisations, networks, transactions (Müller, Shao & Pemsel, 2016). Because of this heterogeneity and multidisciplinary, governance is usually presented in different ways. For example, Bevir presents the domain as a collection of theories, practices, and dilemmas. The author of this thesis believes that this structure is particularly effective for the topic. The author focused on governance theories as the ultimate deliverable of the research is a theoretical proposition, i.e. RO4.

There are several governance theories that are relevant for this research, namely: the institutional theory (Section 4.3.1), the shareholder theory (Section 4.3.2), the stakeholder theory (Section 4.3.3), the rational choice theory (Section 4.3.4), the agency theory (Section 4.3.5), the transaction cost theory (Section 4.3.6), the contingency theory (Section 4.3.7). These theories are deemed to be the most relevant concerning the governance topic (Joslin & Müller, 2016). A summary of these theories is provided in the next Sections.

4.3.1. Institutional Theory

The institutional theory looks at the institutions (i.e. organisations), their members and their possible interactions. The institutional theory is based on the following three main pillars: regulative, normative and cultural-cognitive (Misangyi, Weaver & Elms, 2008; Orr & Scott, 2008; Scott, 2012, 2005):

- The regulative pillar focuses on the formal determinants of institutions, such as law, ownership rights, legal personality, policies, internal policies, etc.
- The normative pillar focuses on the standard practices, roles, values and conductus characterising the institutions;
- The cultural-cognitive pillar focuses on conceptions, beliefs, symbols, identities and logic of actions affecting the social interactions within organisations.

These pillars enable clustering different individuals into an “institution”. These pillars can be used to study the determinants of stability or disruption of the institution (Scott, 2012). Alternately, they can be used to identify special institutions; for example, those which are not formally recognised but exist as a matter of shared beliefs or practices (Locatelli *et al.*, 2016). The pillars can also be used to explain specific behaviours within organisations (Müller, Shao & Pemsel, 2016; Phillips, Lawrence & Hardy, 2000; Zilber, 2002). Additionally, the institutional theory provides the theoretical lenses to identify the institutions and to discriminate between two types of interactions, either between the members of an institution or between the institution and external agents.

Among the three pillars of the institutional theory, the author decided to focus exclusively on the regulative one because it is the most significant for the actual research. This simplification is frequent in project management research (Miller *et al.*, 2001; Samset & Volden, 2016). The formal pillar of the institutional theory allowed to identify the most relevant institutions devoted to the FGIM, including the SPEs. The author employed the institutional theory to define the unit of analysis of the research (Section 6.3), and the most relevant institutions to focus on. At the beginning of the research, the author focused on the SPEs solely. During the data collection, the author realised that the original focus was too narrow and decided to extend it to the SPE network, which includes the critical stakeholders for the FGIM. The institutional

theory provided the right balance between the need to focus on the SPEs, and the need to extend the scope to include the issue of FGIM. Section 6.3 describes the application of the institutional theory to the unit of analysis of the research.

4.3.2. Shareholder theory

The shareholder theory assumes that the shareholders are primarily concerned with maximising the profits, and the return on equity in particular (Friedman, 2007). The theory is embedded in the rational choice theory (Section 4.3.4). The theory is particularly relevant in corporate governance. In this context, the theory was traditionally applied to the relationship between the shareholders and the board of directors (Clarke, 1998; Davis, Schoorman & Donaldson, 1997; Müller, 2012). The theory assumes that an appropriate governance framework is applied to organisations to align management with the shareholder objectives (Biesenthal & Wilden, 2014; Friedman, 2007; Jensen & Meckling, 1976).

The researcher applied this theory to the shareholders of the SPEs. In this context, the theory needed to be slightly revised. Usually, in infrastructure megaprojects, the shareholders of the SPE are also contractual stakeholders for the SPE (Cartlidge, 2006; Akintoye & Beck, 2009). For example, they can be contractors, technology providers, critical suppliers, off-takers, etc. Their interest on the SPE is not limited to their return on equity, but it includes their vested interest into the megaproject. Consequently, the shareholder theory considered in this research is not limited to the maximisation of the return on equity, but it includes all the determinants of value for the shareholder, which usually include the return on equity and benefit associated with the contract with the SPE.

4.3.3. Stakeholder Theory

The stakeholder theory assumes that the purpose of corporations includes the benefits for the different class of stakeholders, such as: shareholders, employees, local communities, public administrations, etc. (Aaltonen, 2011; Aaltonen, Jaakko & Tuomas, 2008; Aaltonen & Kujala, 2010). The stakeholder theory extends the focus of the “shareholders theory” (Donaldson & Davis, 1991).

The stakeholder theory provides the theoretical lenses for extending the purpose of corporations giving account to additional and complementary objectives respect to the "shareholder theory" (Biesenthal & Wilden, 2014; Müller *et al.*, 2013). This contribution is relevant for this research because the SPEs are not governed solely by the shareholders; other stakeholders might have relevant governance power such as the lenders, as further explained in Section 7.5.1.

4.3.4. Rational choice theory

The Rational Choice Theory (RCT) assumes rationale decision-makers (Glaser, 2010; Gruber & Köszegi, 2001). In particular, the RCT is based on the notion of utility that, in some cases, can be quantified either qualitatively or quantitatively. Often, the utility is modelled in simplistic utilitarian terms, assuming that the purpose of decision-makers is to maximise their economic return (Neumann & Morgenstern, 2007; Rabin, 1993); this focus is consistent with the shareholder theory (Section 4.3.2). Typically, governance scholars employ the RCT as simplifying assumption. The assumption simplifies the analysis of the decision-making by excluding the complex social and psychological aspects. The RCT is widely employed in decision-making sciences, and it is particularly relevant for the field of game theory (Neumann & Morgenstern, 2007). Additionally, many governance theories are grounded in the RCT, such as: the agency theory, the transaction cost theory, the shareholder theory, the stakeholder theory, etc.

The formal governance literature relies extensively on the simplifying assumptions introduced by the RCT. This thesis assumes decision-makers involved in the megaprojects. The RCT is consistent with the theoretical focus employed by this thesis.

4.3.5. Agency Theory

The agency theory focuses on the relationship between the two parties: the agent and the principal (Eisenhardt, 1989b). The agent takes decisions on behalf of the principal. The agency theory explains how the self-interest of the agent can affect his decision-making, leading to sub-optimal decisions from the principal point of view. The agency theory provides the theoretical lenses to study the mismatch between the interests of

the agent and the ones of the principal, and it focuses on the implications that this mismatch has for the agent decision-making (Jensen & Meckling, 1976; Mitnick, 1973; Müller, Shao & Pemsel, 2016; Ross, 1973).

The agency theory was developed in the context of corporate governance looking at the relationship between the shareholder (principal) and the management (agent) (Jensen & Meckling, 1976; Joslin & Müller, 2016). More in general, the agency theory applies to a wide range of governance contexts, namely in any circumstance where one agent decides on behalf of another. Traditionally, the agency theory focused on aspects such as: trust and moral hazard between the parties (Poblete & Spulber, 2012), incentivising mechanisms for the agent (Clegg *et al.*, 2006:p.128) and the controlling exercised by the principal (Jensen, 2003; Müller, 2012). Typically, the agent is in the position to obtain more information concerning its decisions (Wiseman, Cuevas-Rodríguez & Gomez-Mejia, 2012). According to Ahola *et al.*, the agency theory has considerable potential in the project governance; particularly in respect of the separation between project ownership and management (Ahola *et al.*, 2014; Fama & Jensen, 1983; Schleifer & Vishny, 1997).

4.3.6. Transaction Cost Theory

Transaction Cost Theory (TCT) assumes “*that organizations adapt their governance structures to achieve the lowest possible transaction costs*” (Biesenthal & Wilden, 2014). The notion of “adaptation” available in the TCT has similarities with the contingency theory (Section 4.3.7). The TCT focuses on the structural governance, i.e. on the organisational configurations and contractual settings characterising the economic transactions between agents (Williamson, 1979). This structural view is often compared with the process view (Williamson, 1985). TCT originated in the corporate governance domain (Coase, 1937; Williamson, 1985, 1979). The initial formulation of TCT looked at the “make or buy” decisions adopting the perspective of a single corporation (Williamson, 1979). In this context, the decision-maker (assumed rational) identifies the “transaction structure” minimising the overall production cost, which includes the internal cost, the cost of transactions (external costs), as well as any differential cost. Usually, the TCT is associated with the formal governance as it focuses on the contractual and economic transactions. In projects, the

TCT is particularly relevant concerning the project transactions and the contracting approaches (Müller, 2012; Müller, Shao & Pemsel, 2016).

The TCT provides the structural lenses to analyse the research phenomenon object of this study. In conjunction with the institutional theory, the TCT provides the theoretical lenses to identify the most relevant configurations of the SPE-network (Section 7.4). Often, SPEs interpose the critical project stakeholders, and they act as a common interface for the project. Their economic and contractual relationships can be analysed using the TCT. This is the general perspective in the project finance and PPP literature (De Schepper, Dooms & Haezendonck, 2014; Gatti, 2007; The World Bank Group, 2014; van Marrewijk *et al.*, 2008). There is an extensive literature concerning the transaction costs of such organisation and contractual arrangements (Parkhe, 1993; Williamson, 1981). However, the “transaction costs” are primarily focused on the financial and the economic perspective (Section 3.4.2), the literature review revealed that there is a vast gap concerning the structuring of the SPEs that looks as the governance of the project (Section 3.3). To address this gap, the researcher employs the TCT to look at the intra-organisational governance structures (Section 4.5.1). However, this research does not consider the reasoning of the theory entirely. For instance, the research does not focus on the “transaction costs” that are widely debated in the PF and PPP literature. This research employs the TCT in a specific form:

- Assuming that governance structures need to be adapted to the specific megaprojects, and
- Employing the structural view concerning the FGIM; in particular concerning the characterisation of the project network and the external configurations of the SPE-network (Section 7.4).

4.3.7. Contingency theory

The contingency theory focuses on governance as well as the management style in organisations. The theoretical assumption is that governance and management are contingent to the specific conditions of the organisations, including the size, the business activities, the context, etc. (Drazin & Van de Ven, 1985). The contingency theory is widely used in the corporate and project governance fields (Donaldson, 1987). In megaprojects, the theory explains the vast complexity and the limited

standardisation associable to the contracting approaches, and to the project organisational settings (Clegg & Hardy, 1999). This thesis considers the contingency theory as an assumption.

4.4. Project organising

Most of the theories introduced in the previous Section were initially formulated for the corporate governance and later applied in the project context (Ahola *et al.*, 2014; Biesenthal & Wilden, 2014). In particular, the theories were readapted in consideration of the temporary nature of projects (Engwall, 2003; Lundin & Söderholm, 1995; Turner & Müller, 2003). This adaptation process is based on the “project organising”, which is a field of project management focusing on project organisations. Project organising relies extensively on the institutional theory (Section 4.3.1), identifying the project organisations and their interdependencies. According to Winch, project organising is based on three main perspectives that can overlap: project owners, project-based firms and projects as temporary organisations (Winch, 2014).

Firstly, the **project owners** are usually permanent organisations that own and sometimes operate the infrastructure. In many infrastructure projects, owners are the project clients. **Secondly**, the **project-based firms** are those organisations involved in the creation of temporary organisations (Whitley, 2006). Typically, these organisations have advanced project management capabilities (Brady & Davies, 2004; Davies & Hobday, 2005; Winch, 2014). Furthermore, their organisation is designed to operate according to project-oriented business models (Ahola *et al.*, 2013; Artto & Wikström, 2005; Kujala *et al.*, 2010; Mutka & Aaltonen, 2013; Ruuska *et al.*, 2013; Wikström *et al.*, 2010; Winch, 2014). **Thirdly**, the **temporary organisations** are projects and programmes. From the organisational point of view, they are often described as project teams and matrix organisations (Gaddis, 1959; Wilemon & Cicero, 1970).

The terms “owners”, “project-based firms” and “projects as temporary organisations” are simplifications. In real projects, the situation is far more complex. “Owners” might include project owner, client, sponsors and infrastructure operator. The term “project-based firms” entails a wide range of organisations involved in the project business;

e.g. main contractor, sub-contractors, suppliers, technology provider, architect/designer, etc. The temporary organisation representing the project can be broken down into sub-organisations that are devoted to different project aspects, e.g. design or construction.

In summary, project organising provides the foundations to introduce the concept of governance in projects. In corporate governance, the organisational unit is relatively simple to define and characterise, i.e. the corporation. The regulatory pillar of the institutional theory (Section 4.3.1) identifies the boundaries of the organisation; therefore, the institutional theory allows to distinguish the internal aspects of organisations (e.g. their structures and processes), as opposed to the external contracting perspective. In projects, the boundaries of the temporary organisations are more complicated to define. The project organising employs the institutional theory, along with TCT (focusing on the contracting structure) to define the boundaries of the temporary organisations.

4.5. Project governance

The concept of governance is not new for project management; some initial publications can be traced back to the 70ies (Bredillet, 2008). However, it is only in the last decade that the topic has become particularly important (Ahola *et al.*, 2014; Brunet & Aubry, 2016; Miller & Hobbs, 2009; Ruuska *et al.*, 2011; Sanderson, 2012). Some scholars highlight the concept of governance emerged from two leading theories, namely the agency (Section 4.3.5), and the transaction cost theory (Section 4.3.6), that (Bredillet, 2008; Brunet & Aubry, 2016). The initial focus was on project contracting, looking at the relationship between the project client and contractor(s) (Brunet & Aubry, 2016; Wikström *et al.*, 2010).

During the last decade, the concept of governance has been extended considerably to include different organisational perspectives adopting different theoretical lenses (Biesenthal & Wilden, 2014; Clegg *et al.*, 2002; Eccles, 1981; Morris, 1997; Stinchcombe, 1959).

According to Müller governance in the “realm of projects” applies to three elements: the project (project governance), the set of projects (i.e. programmes and portfolios)

and the project management (i.e. the tools and methods), (Müller, 2012). The governance of these three elements differs regarding tools, approaches, practices and institutions. Project governance (also called "governance of project") is one of the main streams in the project literature. This thesis focuses on the project governance solely.

Project governance is defined as: *“the alignment of project objectives with the strategy of the larger organization by the project sponsor and project team. A project's governance is defined by and is required to fit within the larger context of the program or organization sponsoring it, but is separate from organizational governance”* (Project Management Institute, 2013). Project governance describes how project sponsors steer the decision-making for the project management (Samset & Volden, 2016). Project governance is often compared with project management (Biesenthal & Wilden, 2014; Turner, 2006). Project management concerns the "operational control" at the project level (Turner, 2009). The role of project management is to manage the project according to the structures and process defined by the project governance (Too & Weaver, 2014). Project governance defines the organisational structures and processes to govern the project (Biesenthal & Wilden, 2014; Nielsen, 2010). It assigns project roles and responsibilities to the project stakeholders (inter-organisational or transactional perspectives) and to project structures, i.e. organisational units (intra-organisational perspective) (Ahola *et al.*, 2014; Müller, Shao & Pemsel, 2016). Usually, scholars employ two main perspectives to investigate the project governance (Ahola *et al.*, 2014):

- Firstly, the transactional perspective focusing on the intra-organisational governance mechanisms derived from economic transactions (e.g. contracts);
- Secondly, the inter-organisational perspective looking at the organisations internally, and focusing on their structures and decision-making processes.

4.5.1. The transactional perspective applied to the project governance

The transactional perspective focuses on the relationship between two, or more, project stakeholders. This view is grounded in the TCT and focuses prevalently on the economic and formal transactions between agents (Turner & Keegan, 2001; Walker & Rowlinson, 2007:p.101). Traditionally, the transactional perspective focuses on the project contracting (Gilson, 1996; Joslin & Müller, 2016). In its purest form, the

project contracting looks at the contractual relationship between a single client and a single contractor. Often, depending on the specific project context considered, the contracting might include more than two agents (Steen, Coopmans & Whyte, 2006; Williams *et al.*, 2010). For example, in upstream oil & gas infrastructures, the critical agents are the “international oil company”, the “national oil company”, the national Government, and the construction contractor (Open Oil, 2012). In the civil construction sector, the relationship between client, contractor and designer (i.e. an architect or engineer) provides a trilateral relationship with multiple agency relationships (Clough *et al.*, 2015; Eggleston, 2015:p.3; Hughes, Champion & Murdoch, 2015). The three actors are combined in different ways giving rise to various contractual approaches, e.g. design and built, construction contract, management contract, etc. (Harris, McCaffer & Edum-Fotwe, 2013; Whitticks, 2013). Different sectors adopt different terminology and contracting approaches; consequently, the contracting topic is highly fragmented. Sometimes, the terminology can be ambiguous, for example, the term “architect-engineer” has different meanings depending on the sector considered. For example, the nuclear (Ruuska *et al.*, 2011, 2009) and civil construction fields (Clough *et al.*, 2015) define two different approaches using the same name.

The transactional view provides the theoretical lenses for investigating many aspects related to the project governance, e.g. the roles of stakeholders for the project, the relationships between organisations (e.g. sharing of risks, attribution of responsibilities), the systemic configuration the contracting network, etc. The transactional view is one of the prevailing perspective employed by project management scholars to instigate new forms of organisations and management based on modern IT technologies (Lindkvist, Stasis & Whyte, 2013; Whyte, 2016, 2011; Whyte, Stasis & Lindkvist, 2016). The transactional perspective was essential for this thesis as it allowed to define the SPE-network (Section 6.3).

4.5.2. The inter-organisational perspective applied to the project governance

The inter-organisational perspective looks at the internal governance organisations (Bredillet, Turner & Anbari, 2008), in which the prevalent perspective employed is

corporate governance (Section 4.2). According to Müller, the most relevant (internal) institutions either governing, or managing, projects are: the board of directors, the middle management, and the steering group (Müller, 2012),.

The **board of directors** is the highest level of management within the project owner/sponsor. Project sponsors nominate and steer the board of directors. Often, the board of director either formulate or specify the project objectives, leading to some degree of influence toward its governance (Müller, 2012).

The **middle management** of the sponsor is responsible for the implementation of the organisation strategy. Often, middle management focuses on the management of the project portfolios and programmes. Like the board of directors, the middle management does not formulate the project governance directly. However, it has some degree of influence on it (Müller, 2012).

Thirdly, the “steering group”, or “steering committee”, is the institution governing the project and it is ultimately responsible for its success (Müller, Shao & Pemsel, 2016). The steering group provides the interface between the project sponsoring organisations and the project management (Crawford *et al.*, 2008). At the beginning of the project, it sets the project priorities, the organisational structure and the internal decision-making processes. During the project execution, the steering group underwrites the most critical project decisions such as: project budgeting, changes of project scopes, replacement of critical project stakeholders (e.g. contractor, etc.), etc. (Müller, 2012; Müller, Shao & Pemsel, 2016; Vinter, Price & Lee, 2013). Often, the steering group is composed of managers of the sponsoring institutions, and by the project manager. These are appointed by the sponsors, and sometimes by additional project stakeholders, including the financial institutions. In literature, the steering group is usually studied under the lenses of the agency theory (Bredillet, Turner & Anbari, 2008; Müller & Turner, 2005).

4.6. The formal governance of megaprojects

To investigate the FGIM, project management scholars employed the theoretical perspectives introduced in Section 4.3. Many studies employ the transactional perspective focusing on the systemic aspects of the FGIM (Section 4.5.1). In the

project governance literature, the emphasis is given to the strategic aspects of megaproject, and in particular the infrastructure policy, the business case, the financing, and the attribution of risks and responsibility to the contracting parties (Eweje, Turner & Müller, 2012; Flyvbjerg, 2013b; Miller *et al.*, 2001; Miller & Hobbs, 2009; The World Bank Group, 2014). Consistently with the corporate governance tradition, the critical governance actors are the sponsors and promoters of megaprojects.

The ownership of the infrastructure is a critical driver differentiating alternative governance approaches in megaprojects. In particular, the difference between public, private and mixed ownership (i.e. PPPs) creates different governance approaches, (Akintoye & Beck, 2009; Gatti, 2007; Miller *et al.*, 2001). Consistently with the research aim and objectives (Section 1.4), this thesis focuses on those governance approaches involving one or more SPEs. From the literature, SPEs are typically used for PPPs and project finance transactions (De Schepper, Doms & Haezendonck, 2014; Esty, 2008; Pühr *et al.*, 2014; van Marrewijk *et al.*, 2008):

- Some types of PPPs require the incorporation of one or more SPE. Usually, SPEs provide a joint ownership vehicle for the megaproject. Therefore, the public and the private investors co-own and co-govern the SPE, and indirectly the megaproject (Akintoye, Beck & Hardcastle, 2008; The World Bank Group, 2014);
- All PF transactions require one or more SPE withholding and ring-fencing the funds associated with the megaproject (Dewar, 2011; Tan, 2007; Vinter, Price & Lee, 2013).

PPP and the PF transactions employ similar types of SPE. For instance, in both approaches, SPEs are used as an off-balance sheet vehicle for the financing and ownership of megaprojects (Esty, 2008; Vinter, Price & Lee, 2013; Finnerty, 2013). The off-balance sheet is a technical term describing how sponsors and lenders leverage funds for the megaprojects. It describes the scenario where a new company (i.e. the SPE) is incorporated to collect, isolate and convey the funds for the megaproject. The SPE is not reported on the balance sheet of the sponsors; this is due to specific legal and accounting expedients making the SPE an “orphan entity” (Basel Committee on Banking Supervision, 2009). This scenario is opposed to the “on balance sheet” financing (also known as corporate financing), where the sponsors borrow the funds

directly from the lenders. The financial and accounting implications of these two approaches (i.e. off-balance sheet vs on balance sheet) are widely discussed in the literature (Section 3.4).

This thesis focuses on the off-balance sheet scenario as it includes SPEs (Finnerty, 2013; Vinter, Price & Lee, 2013). In this context, the FGIM is scattered in different literature streams; the most relevant ones for this thesis are the project management, the financial and the legal stream (Section 3.4).

The project management literature often adopts a transactional perspective focusing on the roles played by the different stakeholders (Clough *et al.*, 2015; Eggleston, 2015; Miller *et al.*, 2001; Miller & Hobbs, 2009; Turner & Keegan, 2001; Walker & Rowlinson, 2007:p.101; Williams *et al.*, 2010). Some scholars focus on the institutional settings required by countries to run infrastructure programmes. For example, there are several studies concerning the set-up of the Project Financing Initiative (PFI), or similar infrastructure programmes (Bing *et al.*, 2005; Clifton & Duffield, 2006). Often, the general governance principles underlying the PPP and PF transactions, include (Akintoye, Beck & Hardcastle, 2008; Esty, 2008; Vinter, Price & Lee, 2013; Akintoye & Beck, 2009):

- Providing a single point of reasonability for the project;
- Assign the risks and responsibility to the stakeholder that is in the better position to manage it.

There are project management researchers describing single case studies (Esty, 2008; Hueskes, Verhoest & Block, 2017; Parker & Hartley, 2003; Sobhiyah, Bemanian & Kashtiban, 2009; Tserng H. Ping *et al.*, 2012). These case studies describe contingent governance settings and provide lesson learned for similar megaprojects (Dimitriou, Ward & Wright, 2013; Giezen, 2012; Greiman, 2013; Merrow, 2011; Zidane, Johansen & Ekambaram, 2013). Some scholars focus on the inherent governance challenges for megaproject success, and they advocate for new methods and approaches (Ruuska *et al.*, 2013; Samset & Volden, 2016; Sanderson, 2012, 2012).

The financing literature is very detailed about the role of the investors, the financial and risk management mechanisms (Caselli & Gatti, 2005; Finnerty, 2013; Gatti, 2007;

Nevitt & Fabozzi, 2000; Yescombe, 2013). Often, the literature focuses on the following aspects:

- The structural attribution of financial risks between the investors in different financial transactions, e.g. project finance, leasing, etc.
- The dynamic evolution of financial flows during the project development and operation;
- The contingent analysis in different project scenarios (e.g. project delays, the bankruptcy of critical stakeholders, etc.), and their implications for the financing of the megaproject.

Often, the theme of FGIM is not addressed directly (as it is not the primary focus), but many aspects related to the financing have indirect implications for FGIM; for example, the financial structure of the SPE, or the attribution of risk and responsibilities to project stakeholders (Gatti, 2007; The World Bank Group, 2014; Vinter, Price & Lee, 2013; Wood, 1995).

The legal literature about project financing provides an in-depth technical focus on the legal aspects associated with the enforcing instruments; e.g. public concessions, contracts, the difference among jurisdictions, etc. (Dewar, 2011; Vinter, Price & Lee, 2013; Wood, 2007, 1995). An essential aspect characterising the legal literature is the reference to one or more jurisdictions. Some studies describe the critical terms of the enforcing instruments and their interpretation in specific jurisdictions; often they include references to relevant statutes and precedents. Other studies provide a comparative analysis of different jurisdictions or families of jurisdictions; e.g. Common law, Napoleonic law, Islamic law, etc. (Wood, 2007). Some studies provide an international perspective to describe the main legal principles governing the PF and PPP. To address specific matters, they often assume a referring jurisdiction. Often the American and the British common law are preferred because they enclose an established banking law, they are more flexible, and they represent the international standards for the international transactions (Dewar, 2011; Vinter, Price & Lee, 2013).

The three streams of literature emphasise the complexity of the FGIM, particularly in off-balance sheet transactions. The three streams provide distinctive views

complementing each other. The research topic is multi-disciplinary and extensive. From one extreme, meta-studies address abstract principles and basic governance configurations of megaprojects, e.g. in the project management literature. On the other one, there are very detailed legal studies that address the interpretation in different jurisdictions of specific contractual terms. For example, the “force majeure” clause in construction contracts is treated very differently depending on the jurisdiction considered (Abdollah, 2010; Bailey, 2016; Chern, 2016; Glover & Hughes, 2011; McKendrick, 2013). Consistently, off-balance sheet transactions comprise a wide range of detailed aspects (e.g. the specific provisions in the different contracts, their legal interpretations, the jurisdictions involved, etc.) having a systemic relevance for the FGIM. Different streams of literature emphasise governance complexity, some of the common challenges include:

1. The proliferation of project stakeholders and multiplicity of roles;
2. Governance dynamicity and long planning horizons;
3. The reliance on public governance mechanisms;
4. The tight financial control.

These challenges are described in the following subsections.

4.6.1. Governance challenge 1: the proliferation of project stakeholders and the multiplicity of roles

The megaproject represents the biggest and more complex class of projects; consistently, issues such as the proliferation of project stakeholders and the multiplicity of roles are magnified (Ruuska *et al.*, 2011, 2009). Rarely, a single organisation has sufficient capabilities (either financial, experience-based, etc.) to deliver a megaproject entirely. Typically, megaprojects are financed by a multiplicity of investors, developed by several contractors, etc. This stakeholders’ proliferation is different than in smaller projects, where the number of stakeholders and their roles is usually reduced.

The proliferation of stakeholders is a challenge for the FGIM because more interests and perspectives need to be reconciled and aligned. Consistently, the FGIM requires more complex and sophisticated frameworks (e.g. contracting structures) compared to smaller projects. In off-balance sheet financing, more stakeholders participate in the

FGIM compared to on-balance sheet financing, leading to an increased governance complexity.

4.6.2. Governance challenge 2: governance dynamicity and long planning horizons

In megaprojects, during the negotiation phase, it is particularly difficult to make reliable and detailed predictions (Sections 2.3). Megaprojects require many years for their planning, negotiation and due diligence. Additionally, the construction of megaprojects often takes several years (Sections 2.2.6). Usually, the operational life of the infrastructure megaprojects lasts for many decades or is indefinitely long. This is, for example, the case of transportation roads, ports, airports or industrial complexes (Chinowsky, Price & Neumann, 2013; Tassej, 1991:p.2; Tsunokawa & Schofer, 1994). In addition to the long-term forecast, the megaproject risks and uncertainties are magnified (Sections 2.2.7), e.g. because of their vast economic size (Section 2.2.1), their organisational complexity (Section 2.2.5), etc.

The difficulty in forecasting affects many aspects of megaprojects, including the FEED (Eweje, Turner & Müller, 2012), the infrastructure detailed design (Han *et al.*, 2009; van Marrewijk *et al.*, 2008), the megaproject implementation (Davies, Gann & Douglas, 2009; Dimitriou, Ward & Wright, 2013; Merrow, 2011), the financial commitment of megaproject stakeholders (Finnerty, 2013; Gatti, 2007; Nevitt & Fabozzi, 2000), etc. These planning challenges have significant implications for FGIM. The vast uncertainty and risk undermine the stakeholders' ability to define the contractual obligations prescriptively. “Incompleteness of contracts” is a term used in contracting to describe the impossibility to prescribe in detail everything in the contract (i.e. what to do precisely in any possible conditions), making contracts susceptible to uncertain interpretation and incompleteness (Hart, 2003, 1995, 1995, 1988). In megaprojects, this issue is magnified by the complexity of the project endeavour (Clegg *et al.*, 2002; Giezen, 2012; Hu Yi *et al.*, 2015; Kardes *et al.*, 2013).

The “incompleteness of contracts” affects the content and the form of the contracting instruments, but it is not limited to it (Hart, 2003, 1995, 1995, 1988). In turns, it also affects the general megaproject contracting structure, and consequently the

organisational one, i.e. the project network. The contracting instruments introduce obligations between the stakeholders at different levels (i.e. contracting tiers) (Hart, 2003). This view sees megaprojects as a set of enforceable transactions defining complex, multi-layered economic bargains. The difficulty in planning causes the contracting to be more susceptible to amendments and adaptations. Given the long infrastructure lifecycle, the contracting structure evolves dynamically in time. This evolution can be either predefined at the time the contracting instruments are ratified, or triggered by specific events such as the bankruptcy of a contracting party, etc. As a result, the project network is not static but evolves during the megaproject lifecycle.

In the project management literature, the topic of contracting is often oversimplified. In megaprojects, and particularly in project finance, this oversimplification is far to be true; the legal literature considers additional levels of detail and complexity (Chern, 2016; Hughes, Champion & Murdoch, 2015; Vinter, Price & Lee, 2013; Wood, 1995). The contracting instruments involve many implicit or explicit triggering conditions enabling the contracting instruments partly to adapt to the pre-identified scenarios. In addition to that, specific procedures to amend and renegotiate them are widely experienced by stakeholders. Another relevant source of governance dynamicity is the involvement of the policymakers, which is (almost always) the case of megaprojects (Dentons, 2016; Vinter, Price & Lee, 2013; Wood, 1995).

4.6.3. Governance challenge 3: the reliance on public governance mechanisms

Usually, the public governance influences megaprojects in many aspects, including:

1. The interrelation between megaprojects and the law;
2. Public planning;
3. Public procurement;
4. Reliance on the public institutional framework;
5. The democratic principle and the subsidiarity;
6. Public support.

Firstly, megaprojects are subject to the law affecting a variety of aspects, e.g. contracting, corporate law, employer-employee relationship, taxation, tort law and

negligence liability, etc. However, megaprojects are far more susceptible to the law, compared to smaller projects, because:

- Megaprojects are symbolic and strategically sensitive to the policymakers (Section 2.2.4);
- Megaprojects are relevant elements of infrastructure programmes that may require amendment in legislation. For example, the introduction of PPP approach, or the creation of bespoke concession regimes (Dewar, 2011; Hellowell, Vecchi & Caselli, 2015; Miller *et al.*, 2001; Tang, Shen & Cheng, 2010);
- Megaprojects last for a very long period; therefore, they are more susceptible to change in laws during their lifecycle (Section 2.2.6).
- Consistently, the megaprojects and the lawmaking activities often influence each other. This interplay partly explains the extent to which the public governance affects the FGIM.

Secondly, the countries implementing megaprojects need adequate administrative planning (Eweje, Turner & Müller, 2012; Samset, Berg & Klakegg, 2006; Tom Christensen, 2011; van Marrewijk *et al.*, 2008). Megaprojects can be part of a political agenda, and they are publicly debated and scrutinised. Consequently, policymakers and devoted institution are often involved in the planning and decision-making (Flyvbjerg, 2007b; Miller *et al.*, 2001; Miller & Hobbs, 2009; Akintoye & Beck, 2009). Often, ad hoc administrations are committed to support the planning of megaprojects. Examples can be found in any infrastructure sector, such as: public transport administrations, nuclear programme development agencies, petroleum ministers and development administrations in oil & gas extraction programmes, etc.

In some countries (e.g. Italy, France, Spain), the planning of the infrastructure is partly left to private corporations, e.g. power utilities. These utilities are incorporated as private corporations, but they are frequently participated by the public, and their mission entails social and strategic aspects of the country. Historically, the public ownership and control of infrastructures spread in continental Europe, from the end of WWII until the 80's/90's (Miller *et al.*, 2001). After that, many infrastructure sectors were liberalised (e.g. gas, telecommunications), while others remained under the partial control of the state (e.g. shipbuilding, transportation). By contrast, Anglo-

Saxon countries (especially in the last decades) leave more space for the private intervention, and the infrastructure utilities are usually owned by private investors (Bing *et al.*, 2005; Booth & Starodubtseva, 2015; National Audit Office, 2013, 2013). Nonetheless, even in these cases, the public planning applies. Typically, specific administrations and authorities set up general infrastructure requirements (e.g. required services, tariffs, etc.) and targets (e.g. concerning the greenhouses emissions). In most developed countries, the planning of infrastructure megaprojects is subject to special norms derived from the public governance. A relevant example is the prescription to develop a comprehensive cost-benefit analysis that is subject to the approval of devoted public administrations.

Thirdly, the public governance can affect public procurement in different ways. It can affect the procurement procedures directly when a public administration is the project client, owner or both (Akintoye *et al.*, 2003; Alhazmi T. & McCaffer R., 2000; Bovis, 2012; Knight *et al.*, 2012; Thai, 2008). In case of privately incorporated utilities, the infrastructure service can be considered of public interest and therefore subject to specific legal requirements. For example, the procurement is subject to public procedures, including open bidding processes and mechanisms to enhance the transparency of the decision-making and the accountability of decision-makers, etc. Often, the anti-corruption laws and procedures are applied to the procurement of megaprojects at different levels, e.g. first tire-contracting, sub-contracting, etc. Although the issue of corruption is a critical matter in infrastructure megaprojects, there is a very limited project management literature on this topic (Locatelli *et al.*, 2016).

Fourthly, to a certain degree, the FGIM relies on the public institutional framework. As described in the Sections 2.2.4, megaprojects are of public interest. The public affects the FGIM in many aspects; e.g. planning, procurement, etc. This level of influence implies the interrelation between devoted public institutions and the FGIM. Public institutions influence the FGIM in different ways, depending on the constitutional and administrative system, which varies from country to country. For this reason, it is difficult to generalise; however, some types of institutions can be found in almost all countries and infrastructure programmes. The repartition of powers introduced by Montesquieu can be found in most countries (Elliott, 2014; Loveland,

2012; Montesquieu & Varnet, 1748). There are three main institutional bodies: the Government (executive power), the Parliament (legislative power) and the court (judiciary power).

Typically, **the government** expresses a political interest towards the megaprojects. In case the Government supports the megaproject, it can grant subsidies, negotiate with national and international stakeholders, promote specific legislative instruments, etc. The government also controls, either directly or indirectly, administrative agencies. Some of these agencies are directly involved in the FGIM (Bertoldi, Rezessy & Vine, 2006; Glaser, 2010; Koppenjan, 2005; Merkert & O’Fee, 2013; Painter, Isaac–Henry & Rouse, 1997).

The **regulatory bodies** (or authorities) are the technical regulators. They are devoted to regulate and oversight the development and operation of the infrastructure megaprojects (Bredimas & Nuttall, 2008; Delmon, 2009; Grimsey & Lewis, 2007; Larsen *et al.*, 2006; Sainati, Locatelli & Brookes, 2015b). Often a single megaproject is subject to the scrutiny of many specialised regulators, on matters such as: the environment, safety, anti-corruption, anti-trust, etc. Typically, the regulatory bodies are characterised by the legal status of “independence”. Regulatory Bodies (RB) are designed to be independent of others projects stakeholders, including: the Government, other administrations, the private business, and the public. In some countries, the RBs are considered formally part of the Government. However, the Government exercises an indirect control. Often, the Government is only empowered to appoint the chair or the senior managers of the RBs. By contracts, many RBs include check and balance mechanisms to limit the Government powers and to avoid conflicts of interests. The law assigns special powers and responsibilities to the regulatory body. In some contexts, the RBs are critical stakeholders for the megaproject, such as in the nuclear field (i.e. nuclear safety authority), or in the oil & gas in developed countries (e.g. the environmental agency) (Alam, 2013; Koppenjan & Enserink, 2009; Stoiber & Agency, 2010).

The legislative power is exercised by the **Parliament nationally** and by local assemblies (Loveland, 2012). For simplicity, the research only considers the national Parliament. Concerning the specific megaproject, the Parliament is less focused than

the Government. However, it can promote and amend specific legislation connected to the megaproject. Often, the Parliament amends the megaproject-specific law under the input of the Government or the majority party (Loveland, 2012). In some countries, the Parliament is asked to express its vote in relevant aspects, including the approbation of a megaproject. For example, in Finland, the Parliament is involved in the licensing any Nuclear Power Plant (NPP); in this example, the Parliament can decide whether to support or not the construction of an NPP (Litmanen & Kojo, 2011; Strauss, 2010; Vuorinen, 2008).

The courts exercise the **judiciary power**. The extent to which they are involved in the FGIM is contingent to specific civil and penal proceedings. Courts are relevant institutions to enforce the contracting instruments. However, the judicial review is often considered as the solution of last resort. In case of litigation and contractual breaches, private stakeholders often prefer to opt for a private arbitration (Al-Saadi & Abdou, 2016; Blankenburg, 1994; Garcia, Reitzes & Benavides, 2005; Resnik, 2014). Usually, this choice is more efficient, and it keeps the confidentiality concerning specific contracting information and factual events. In relation to crimes, the penal courts cannot be substituted by any other organisations or administrations (Clarkson *et al.*, 2014). The extent to which the courts can affect the FGIM can be very specific and contingent to different types of liabilities and scenarios. These aspects are out of scope for the current research.

Fifth, the democratic and subsidiarity principles influence the FGIM in many developed countries (Loveland, 2012).

The **principle of democracy** is concerned with the power of citizens to elect members of democratic institutions (i.e. the Parliament and the Government) or to vote directly on specific matters, such as in referendums.

The **principle of subsidiarity** focuses on the delegation of power from a central jurisdiction to smaller territorial units. It applies to governments, parliaments (e.g. devolution) and courts (Elliott & Feldman, 2015; Melo Zurita *et al.*, 2015). This principle provides the foundations for multilayers governance structures, e.g. federal states, municipalities, regions, etc.

Both the principles of democracy and subsidiarity introduce guarantees for local institutions and citizens. In practice, these principles are embedded in the

constitutional or mandatory framework, and they provide specific rights, powers or guarantees mechanisms to local governments and citizens. For example, in some countries, the protection of the environment is left to local governments. This is the case of Continental Europe. In these countries, the local institutions are empowered to some decision-making powers concerning the approval of infrastructure megaprojects. Another example is the mandatory public consultation that some countries require for megaprojects. Public consultations are also known as public hearings or public inquiries (Carter, 2015; Li, Ng & Skitmore, 2013). In its basic form, the public consultation allows project stakeholder (i.e. local governments, citizens, private institutions and associations, etc.) to question and be heard by the promoters of megaprojects. Usually, the development agency governs the public consultation. In some countries, the public consultation can introduce additional guarantees to the citizens and the local government. For example, in Switzerland, the development of an NPP required a mandatory referendum of the “county” (i.e. federate state) where the nuclear site is located. These examples show the extent to which the democratic and subsidiarity principles can influence the FGIM (Bredimas & Nuttall, 2008).

Sixth, the public governance influences megaprojects because public institutions (e.g. the Government) are necessarily involved; often, they assume critical roles for the megaproject. The Government and the development agency can act as direct or indirect sponsors of the megaproject and therefore they have a relevant governance role (Alhazmi T. & McCaffer R., 2000; Bertoldi, Rezessy & Vine, 2006; Merkert & O’Fee, 2013; Thai, 2008). In case of direct support, the Government undertakes one or more project roles, e.g. the client, the sponsor, or the owner. There is a wide range of ownership, concession and PPP approach providing different powers and level of involvement of the Government (Grimsey & Lewis, 2007; The World Bank Group, 2014). In other cases, the Government provides subsidies and guarantees to support the megaproject indirectly. In such circumstances, the Government, or the deputy agency, takes part of the negotiation and often impose governance mechanisms to control the megaproject.

4.6.4. Governance challenge 4: the tight financial control

The megaproject governance challenge arises from the investors' need to control their exposure to such a large and risky investment (Section 2.2.8). This challenge is particularly relevant for the off-balance sheet megaproject financing (Della Croce & Gatti, 2014). Theoretically, the off-balance sheet financing is issued on a "non-recourse" basis, meaning that the lenders provide the funds without any collateral (Wood, 1995; Yescombe, 2013). The investment is secured primarily by contracts, including: the off-take agreement (securing the revenue stream), the EPC contract (securing the costs associated with the project development), the supply agreement (securing the availability and cost of input supplies), etc. (Nevitt & Fabozzi, 2000; Wood, 1995). However, the "no recourse financing" is rarely applied to megaprojects because the lenders would be exceedingly exposed to the financial risk, which is not sustainable because they often provide the largest portion of the megaproject funds; e.g. 80%-95% (Esty, 2008; Vinter, Price & Lee, 2013). Conversely, megaprojects often employ the "semi-recourse" financing, meaning that there are partial collaterals associated with the project loans (Vinter, Price & Lee, 2013). Additionally, the public institutions might provide additional forms of guarantees to support the off-balance sheet financing of the megaprojects (National Audit Office, 2015). The lenders' exposure justifies the tight financial control of the megaprojects. At the time of the financial negotiation, the lenders are the primary financial contributors; therefore they have the negotiation power to impose tight control at protection of their loan (Gatti, 2007; Vinter, Price & Lee, 2013).

Rarely, the project management literature addresses the influence that financial institutions have on the FGIM. In addition to the financial institutions, there is a variety of other megaproject investors (Gatti, 2007; Nevitt & Fabozzi, 2000). This proliferation of investors complicates the financial oversight of the megaproject investment as well as its formal governance. The proliferation of investors increases the number of controls and constraints associated with megaprojects. For example, the presence of project bonds implies the involvement of rating agencies scrutinising the financial solidity of the SPE. Other types of investors (e.g. institutional investors) provide further controlling mechanisms for the megaproject.

4.7. Summary of the Chapter

This Chapter introduced the fundamental concepts and theories of governance. This Chapter provided a comprehensive literature review concerning the state of the art of FGIM. The Chapter described the most relevant theories for this research, namely: institutional theory, shareholder theory, stakeholder theory, rational choice theory, agency theory, transaction cost theory, and contingency theory. These theories were developed in the context of corporate governance and subsequently readapted to the project context. This Chapter introduced the fundamental concepts of project governance and the main perspectives employed by project management scholars, i.e. the transactional perspective and the inter-organisational one. The transactional perspective was employed to consider the contracting network involving the SPEs as further described in Sections 6.3, 7.4, 7.5, and 7.5.

The Chapter described the critical challenges of project governance in megaprojects: the proliferation of project stakeholders and the multiplicity of roles, governance dynamicity and long planning horizons, the reliance on public governance mechanisms, and the tight financial control. Although there is a wide range of governance approaches in megaprojects, the Chapter focused on the off-balance sheet megaprojects because it involves SPEs.

This literature review Chapter is critical for three main reasons. Firstly, this Chapter introduced relevant governance perspectives that were employed in Chapter 7, particularly concerning the transaction perspectives associated with contracting networks. Secondly, the literature review about the governance informed the identification of the gap in knowledge described in Section 5.2.1; and consequently, to derive the research aim and objectives (Section 5.2.2). Thirdly, this Chapter introduced the most relevant governance theories applying to projects. Section 7.7 discusses the results of the research and compares them to with the governance theories presented in this Chapter.

5. Research methodology

5.1. Chapter Overview

Chapter 5 describes and justifies the methodology employed for this research. Section 5.2 summarises the gap in knowledge identified by the literature review Chapters (i.e. Chapters 2-4) and presents the aim and objectives of the research. Section 5.3 presents the philosophical assumptions according to three main levels: ontological, epistemological and axiological. Section 5.4 describes and justifies the research design including the data collection (Section 5.4.1), the data analysis (Section 5.4.2) and the research approach (Section 5.4.3). Section 5.5 describes in detail the research method, which is made up of four cyclic steps: sampling (Section 5.5.1), data collection (Section 5.5.2), analysis (Section 5.5.3), and review (Section 5.5.4). Finally, Section 5.6 focuses on the ethical consideration of the research.

5.2. Research Aim and Objectives

5.2.1. The gap in knowledge

The literature review focused on three key concepts: megaproject performance (Section 2.3), SPEs (Chapter 3) and the FGIM (Section 4.6). The literature review presented the state of the art of these three concepts and their connections. Figure 5-1 shows these three key concepts and the links between them. The extent to which these links are proven and discussed vary significantly. To map and summarise the state of the art of the literature, Figure 5-1 identifies two levels associated with the links between two concepts:

1. There are correlation studies, i.e. concept 1 correlates to concept 2;
2. There are explanatory studies focusing on the causation (e.g. concept 1 causes concept 2);

Figure 5-1 indicates if there is “well-established knowledge”, “partial knowledge” or “gap in knowledge”. The author established one of the three available categories. To make more explicit the subjective selection, the following criteria were adopted:

- Well-established knowledge: the link is widely discussed in the literature. The author reviewed several literature documents that address specifically the link and the aspect considered;
- Partial knowledge: the link is partially explored. There is some literature considering the link, but do not focus specifically on that. There is either an incomplete or indirect discussion about the link, which is not fully explored by the literature.
- Gap in knowledge: the author did not find anything specific in the literature (particularly in the peer-reviewed journals). Alternatively, the author judged the existing literature as too remote or generic to address the specific link considered.

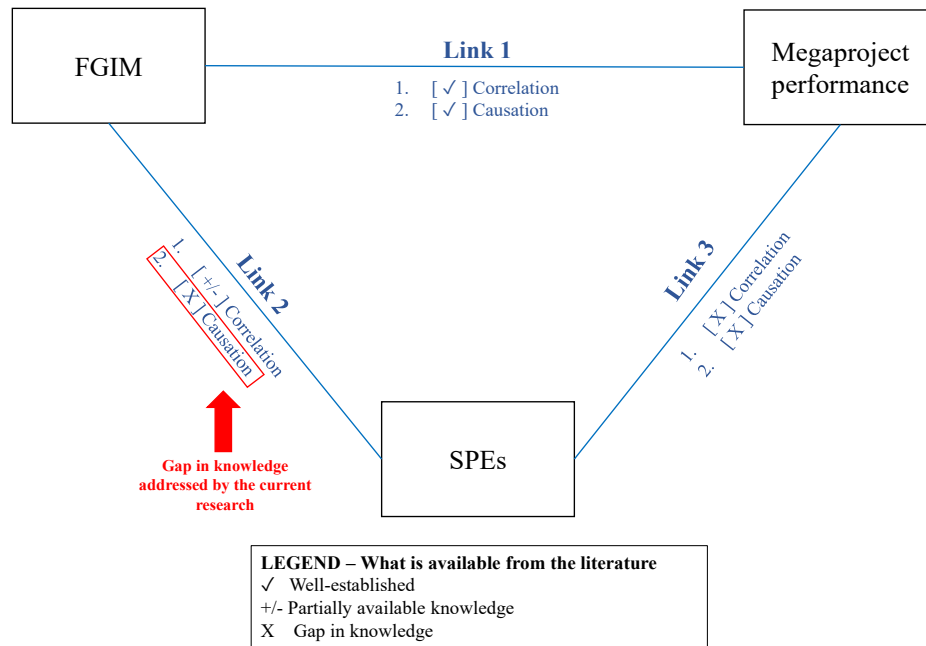


Figure 5-1: State of the art of literature concerning connections between SPEs, FGIM, and megaproject performance

Link 1: between FGIM and megaproject performance

There is vast literature concerning the link between FGIM and the megaproject performance. Examples of correlations studies are (Dai & Wells, 2004; Joslin & Müller, 2016; Mellow, 2011; Musawir *et al.*, 2017; Sovacool & Cooper, 2013; Wu, Wang & Chen, 2017). The project management literature includes alternative casual explanations describing how FGIM have a pervasive role in the performance of megaprojects (Section 4.6). The two concepts (i.e. "FGIM", "megaproject performance") are too generic to develop a unique theory; consistently there are a variety of casual links applying in a variety of contexts. However, it is clear from the literature that FGIM is a critical determinant of the megaproject performance and success (Bernardo, 2014; Gil & Pinto, 2016; Joslin & Müller, 2016; Mellow, 2011; Miller *et al.*, 2001; Müller, 2012; Müller, Shao & Pemsel, 2016; Sovacool & Cooper, 2013).

Link 2: between SPEs and FGIM

There is partial knowledge concerning the link between SPEs and the FGIM. The author found that there are only indirect studies about this link. The author did not find any correlation study. The author believes that this is justified because the SPEs are

used in a very complicated arrangement, and it is difficult to make statistics on their link with the FGIM. Indirectly, it would be possible to draft some statistics to quantify a specific aspect of the link under consideration. For instance, any project finance arrangement requires at least one SPE to set up an off-balance sheet vehicle (Section 3.1.2). There are statistics about project finance showing how often the project finance is used as a project delivery model. These statistics could provide some statistical insights, but they would fail to address the most relevant aspects of FGIM, i.e. the detailed mechanisms on how the SPE can affect the FGIM. Looking at the literature concerning the PPP and PF, it is clear that SPEs play a relevant role in the FGIM (Klijn & Koppenjan, 2016; Osei-Kyei *et al.*, 2017; Osei-Kyei & Chan, 2017; Sarmiento & Renneboog, 2015; Xie *et al.*, 2017; Zhang *et al.*, 2016). However, it is not completely clear from the literature the extent to which SPEs are relevant for the FGIM and vice-versa.

There is a vast gap in knowledge concerning the mechanisms by which SPEs affect the FGIM. The PPP and PF literature provides some referencing example and general principles. However, the clear and direct consideration of “how” SPEs affect the FGIM is not available in the literature (Gatti, 2007; The World Bank Group, 2014; Vinter, Price & Lee, 2013; Wood, 1995). This gap in knowledge is particularly relevant, and it justifies this PhD research. A better understanding of how SPEs influence the FGIM would allow improving the governance, which is a critical element for the megaproject performance. As a result, a better understanding of this “how” would allow delivering megaprojects with better performance.

Link 3: between SPEs and megaproject performance

There is very scarce literature concerning the use of SPEs and their direct link to the megaproject performance. Typically, SPEs are considered very technical instruments. The author believes that this lack of literature is legitimate because it is difficult to link SPEs directly with the megaproject performance. There is a relevant exception to be made that is the research conducted by the Megaproject COST Action, which has been further described in Section 2.4.

5.2.2. Research aim, objectives

The literature review highlighted the gap in knowledge in the existing literature, i.e. how SPEs influence the FGIM. The author derived the following aim and objectives.

Research Aim: *“To identify how SPEs play a role in the Formal Governance of Infrastructure Megaprojects (FGIM)”*

Research Objectives (RO)

The research aim is broken down into five detailed objectives:

- *RO1: “To provide a classification of the existing types of SPE”;*
There are several types of SPEs. RO1 aims to classify the existing SPEs, and in particular, the ones involved in megaprojects.
- *RO2: “To identify which types of SPEs play a role in the FGIM”;*
There are SPEs that are merely mailbox companies (i.e. no personnel, no physical asset, no-board of directors), and usually, their relevance on FGIM is negligible. Conversely, there are SPEs that influence the FGIM. RO2 aims to distinguish the existing types of SPEs in accordance to their influence on the FGIM.
- *RO3: “To identify the functions provided by SPEs for infrastructure megaprojects”;*
SPEs can be established and justified for a wide range of purposes, such as to improve the credit metrics of the sponsors. RO3 aims to classify the functions provided by SPEs in megaproject and to identify the contextual conditions either favouring or discouraging them. Special emphasis is given to those functions directly related to the FGIM.
- *RO4: “To develop a theory that explains how SPEs influence the FGIM”.*
The goal of RO4 is to elaborate a theory concerning the influence of SPEs in the FGIM. RO4 aims to formulate an explanation of how SPEs influence the FGIM. This is the ultimate objective, as it integrates the previous ones.

5.3. Philosophical assumptions

The philosophical assumption defines the stance assumed by the research about the development of knowledge (Saunders, Lewis & Thornhill, 2015:p.107). The philosophical assumption is defined by mean of the research paradigm, defined as “An

organizing framework that contains the concepts, theories, assumptions, beliefs, values, and principles that inform a discipline on how to interpret subject matter of concern. The paradigm also contains the research methods considered best to generate knowledge and suggests that is open and not open to inquiry at the time.” (Powers & Knapp, 2010:p.103).

According to (Saunders, Lewis & Thornhill, 2015), the research paradigm considers three levels:

- Ontological - concerning the researcher’s view on the nature of the reality;
- Epistemological - concerning the researcher’s view on the nature of knowledge, and about the researcher stance of how to develop knowledge;
- Axiological - concerning the researcher’s view on the role played by the value of doing research.

This thesis adopts the “**pragmatist paradigm**”, which assumes that the RQs is the most crucial determinant of the ontological, epistemological and axiological level (Saunders, Lewis & Thornhill, 2015:p.109). These three levels are presented in the following subsections.

5.3.1. Ontological level

To introduce the ontological position, the current Section describes an analogy concerning the nature of contracts. Contracts might seem to have an objective nature as long as there is a sufficient base of mutual understanding between the contracting parties and provided that they are properly written. To some extent, it is possible to assume that contracts include something objective, in the sense that contracts attempt to reduce the ambiguity related to the possible interpretations. However, contracts are always incomplete, and they always include a vast degree of subjectivity and interpretation (Hart, 2003, 1995, 1995, 1988).

This discussion leads to a dilemma concerning the extent to which contracts are objective or subjective. The author believes that contracts fall somewhere in between these two definitions, but the subjective nature always prevails. This dilemma is

relevant because this thesis is about the FGIM. Consistently, the assumption concerning the nature of contracts influenced the ontological stance.

The transposition of this dilemma to the philosophy of science leads to an intermediate position between two ontological stances: critical realism and relativisms.

Critical realists believe that there is a single, not accessible truth. The truth can be derived or interpreted indirectly (Easterby-Smith, Thorpe & Jackson, 2012:p.119). Conversely, relativism states that there are several possible truths that depend on the viewpoint of the observer (Easterby-Smith, Thorpe & Jackson, 2012:p.119). The ontological stance underpinned can be defined as “**weak relativism**”.

5.3.2. Epistemological level

The pragmatism approach permits to employ different ontological and epistemological views, as long as these contribute to achieve the ROs (Saunders, Lewis & Thornhill, 2015). The research combines two epistemological stances: social constructivism and interactionism. **Social Constructivism** assumes that both reality and knowledge are determined by people, rather than being directly observable factors (Easterby-Smith, Thorpe & Jackson, 2012). This philosophical tradition is typically referred to interpretative methods to develop knowledge. Social constructivism focuses on people individually and collectively, looking at their thinking, their feeling and their ways of communication (Easterby-Smith, Thorpe & Jackson, 2012). **Interactionism** assumes that knowledge is created through action and interaction (Fisher and Strauss, 1978, 1979; Geertz, 1973; Strauss, 1991). Interactionism emphasises the evolving and contextual nature of knowledge.

These two traditions are consistent with pragmatists that believe in the accumulation of collective knowledge (Dewey, 2013).

5.3.3. Axiological Level

Axiology focuses on the researcher’s view on the role played by the values in research. The axiology in pragmatist paradigms assumes: “*Values play a large role in interpreting results, the researcher adopting both objective and subjective points of view*” (Saunders, Lewis & Thornhill, 2015:p.119).

5.4. Research Design

The author designed the research methodology to address the ROs, and to overcome the research challenges associated with them. In particular, the author identified the following five main research challenges:

1. Limitation in experiment design;
2. Limited ability to apply statistics;
3. The structural and inherent complexity of the research problem;
4. The confidentiality of the information;
5. A restricted number of experts.

Firstly, it is not possible to do experiments. Megaprojects cannot be replicated in a controlled environment, and the underlying organisations are too big to undertake experiments. Virtual simulations are unsuitable for studying the FGIM because it focuses on complex and interactive phenomena that are difficult to model quantitatively. Sometimes, simulation techniques are applied to the SPEs to study specific phenomena such as their financing. However, this thesis is too holistic to apply such simulation techniques.

Secondly, there is a limited ability to apply statistics. Megaprojects are limited in number worldwide, and they are almost unique in term of technology, context (political, economic, legal, social, environmental, etc.), supply chain, etc. There are researchers about megaprojects that apply statistics, such as (Flyvbjerg, Bruzelius & Rothengatter, 2003; Merrow, 2011; Brookes, Locatelli & Mikic, 2015b). However, these researchers consider standardised variables such as the project schedule and cost, which are available in every megaproject and permit a quantitative comparison. Particularly for those megaprojects that have been completed, where the expected and the actual schedule and cost can be compared and normalised in terms of over-budget and delay. Conversely, this research focuses on the governance structure resulting from the involvement of SPEs in the contracting network. The contracting network is not standard and homogeneous across different megaprojects, and it can have a variety of configurations that can be compared by different perspectives. Therefore, the focus of the research cannot be represented, modelled or investigated by mean of standardised variables. This limitation inhibits the use of statistics.

Thirdly, both the **megaprojects and their contracting and governance framework are complex**. Megaprojects are structurally complex because they are made up of different parts (different physical parts, different institutions, etc.) interrelated by different typologies of interactions (e.g. organizational, information, legal, etc.) (Baccarini, 1996; Ruuska *et al.*, 2009; Williams, 1999; Miller *et al.*, 2001). As a result, megaprojects cannot be conceptualised directly. Studying megaprojects requires the breakdown of the complex phenomenon into sub-phenomena that are easier to investigate. Different rationales can be employed to break such complex phenomenon down, leading to different focuses and perspectives. Therefore, the complexity of the topic inhibits a complete and universal investigation.

Additionally, megaprojects are social phenomena characterised by human interactions bringing uncertainty. Consistently, megaprojects are inherently complex because they are ambiguous and uncertain in many parts (Gidado, 1993, 1996). In megaprojects, the contracting networks are made-up of several stakeholders, entailing different purposes and perspectives.

The complexity of the research topic emphasises the inherent multidisciplinary of the research topic, entailing the managerial, legal, engineering, economic, financial and social domains.

Fourthly, the data collection is undermined by a significant constraint: the **confidentiality of contractual documents**. This represents a significant limitation because the research is about contracting in megaprojects. This challenge is probably the most severe for the research.

Lastly, there are **limited experts in negotiation and design of SPEs in megaprojects**. From one end, there is vast expertise concerning the negotiation and design of SPEs; e.g. lawyers, bankers, accountant, tax experts, etc. However, most of these focus on limited aspects of the negotiation or operation of SPEs. To the other one, few experts have a broad experience in designing and negotiating SPEs for infrastructure megaprojects. In other words, only few experts have the experience of bargain billions of dollars in a single transaction. These are typically senior lawyers.

In light of the above challenges, the author selected and designed the most appropriate research methodology; with a focus on the most suitable research strategy and data collection method.

5.4.1. Selection of the research strategy

According to (Saunders, Lewis & Thornhill, 2015), there are seven research strategies: experiment, survey, case study (either single or multiple case studies), action research, grounded theory, ethnography and archival research. Ethnography was first discharged because it is used to study cultural phenomena, as opposed to the actual research that focuses on regulative and normative ones. The author considered the research challenges to select the most appropriate research strategy as shown in Table 5-1.

		Research challenges				
		(1) Limitation in experiment design	(2) Limitation in statistics	(3) Complexity of the topic	(4) confidentiality	(5) Limited N. experts
Research strategies	Experiment	X	-	-	-	
	Survey	√	-	-	+	-
	Single case study	√	X	√	X	
	Multiple case study	√	+/-	+/-	-	
	Action research	√	√	√	X	
	Grounded theory	√	√	√	+	
	Archival research	√	√	√	X	

Table 5-1: Selection of the research strategies. Legend: X (major limitation), - (minor limitation), +/- (the method can be fitted with the challenge), + (the challenge is not a relevant limitation), √ (the method is suitable for the research challenge)

The author considered the Grounded theory as the most suitable research strategy. The author designed a method informed by the grounded theory as it copes with the five research challenges as shown in Table 5-1. There are two main approaches in grounded theory, the “Glaser” approach (Glaser, 1992, 1998, 1978) and the “Strauss-Corbin” one (Corbin & Strauss, 2015; Strauss & Corbin, 1998). The former is more empirically oriented, and it is based on the minimum intervention of the researcher (Saunders, Lewis & Thornhill, 2015). Conversely, the Strauss-Corbin approach emphasises the reflexive contribute to the researcher (Corbin & Strauss, 2015).

The author selected the Strauss-Corbin approach for two main reasons. Firstly, the author found this approach more natural, practical and in line with his research attitude. Secondly, the research topic is multidisciplinary, implying that different disciplines consider the research phenomenon in different ways. This became clear to the author after having spoken to lawyers, bankers, engineers and managers. They focus on different aspects and assume different perspectives, often implicitly. As a result, the author found essential the contribution of his reflection in reconciling multiple perspectives associated with a single phenomenon of study.

The author introduced a variant with respect to the purely inductive research process characterising the grounded theory (O'Reilly, Paper & Marx, 2012). Although the research is mainly inductive and empirical driven, the author considered some existing governance theories (Section 4.3). Consistently with (Corbin & Strauss, 2015), a soft application of grounded theory can be used to elaborate theories rather than generate new ones from sole empirical data. This is consistent with the purpose of the research, which is to develop a governance theory applicable to the SPEs and the contracting network in infrastructure megaprojects. The resulting approach was prevalently inductive. In summary, the strategy employed for the research can be defined: Research Approach Informed by the Grounded Theory (RAIGT).

5.4.2. Selection of the Method for Data Collection

For the data collection, the following sources/ methods were considered: archives, observations, interviews, secondary and primary documentation. Table 5-2 shows the suitability of these sources/ methods for the five research challenges.

The author selected interviews as the principal method for the data collection because it permitted to overcome all the methodological challenges. In particular, the author selected the semi-structured interview because he thought it was a good trade-off between open interviews and more structured forms of interviews (Saunders, Lewis & Thornhill, 2015). In particular, semi-structured interviews:

- Are sufficiently flexible to be oriented by the interviewees, which are the empirical source of data. This feature is particularly crucial for RAIGT which is the method selected for the analysis as described later in this Section;

- Allow interactive discussions with the interviewees, which permitted to develop deep and rich information concerning the phenomenon of study;
- Are a practical way of collecting data. The author also considered open interviews, but he judged them to be too dispersive, particularly for the complex phenomenon under investigation.

		Research challenges				
		(1) limitation in experiment design	(2) Limitation in statistics	(3) Complexity of the topic	(4) Confidentiality	(5) Limited N. experts
Data Collection Methods	Archives		+	X	X	√
	Observations		√	√	X	√
	Interviews		+	+	+	√
	Secondary Docs		+	+/-	+	√
	Primary Docs		X	X	X	+

Table 5-2: Selection of data collection methods. Legend: X (major limitation), - (minor limitation), +/- (the method can be fitted with the challenge), + (the challenge is not a relevant limitation), √ (the method is suitable for the research challenge)

Secondary documentation (e.g. news, institutional reports, and manuals) **were included in the data collection to supplement the semi-structured interviews.** The interviewees supported the selection of the relevant documentation.

5.4.3. Research approach

There are two main research approaches: deductive and inductive (Saunders, Lewis & Thornhill, 2015:p.124). Figure 5-2 presents these two approaches about the research framework, which involves two main dimensions: the theoretical and the real world.

Deduction starts from a given theory and applies it to the real world. This approach is suitable for testing existing theories (Lee & Lings, 2008). **Induction** works the other way round: it's the study of the real world and the observation of reality resulting in theories (Lee & Lings, 2008). This approach is suitable for generating new theories (Corbin & Strauss, 2015; Saunders, Lewis & Thornhill, 2015). These two approaches can be combined and balanced to elaborate existing theories (Ketokivi & Choi, 2014), as represented in Figure 5-3.

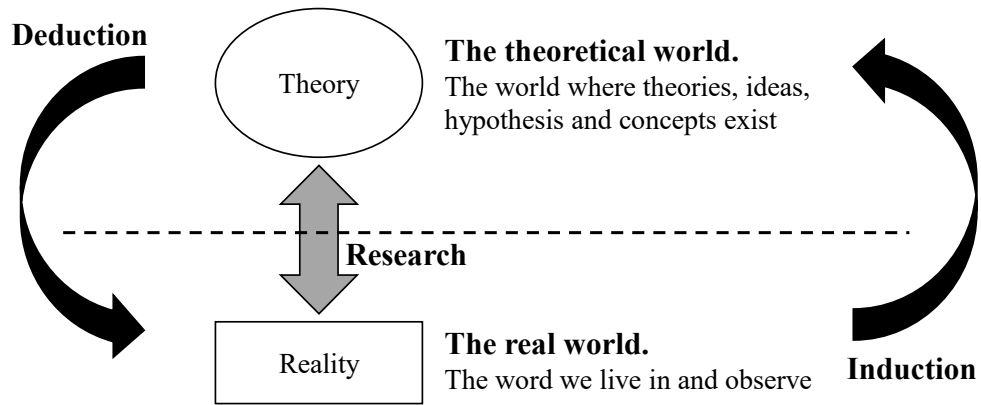


Figure 5-2: main research approaches, modified figure from (Lee & Lings, 2008)

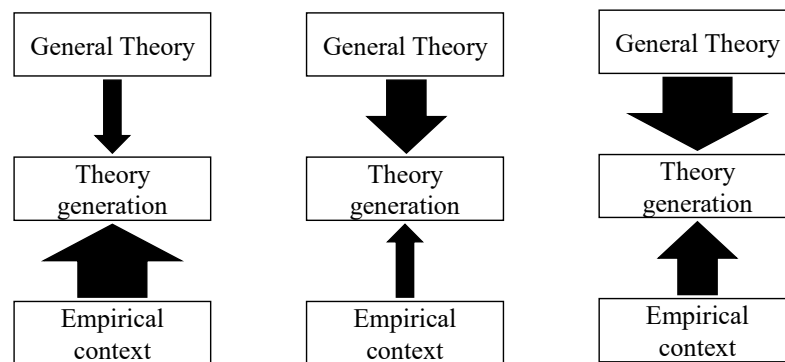


Figure 5-3: Theory generation, testing and elaboration, adapted figure from (Ketokivi & Choi, 2014)

The outcome of this research is a theory; the author was prevalently oriented towards the inductive approach. In developing the theory, the author considered existing governance theories (Section 4.3), and he contextualised them to SPEs and the associated contracting network (Section 6.3). As a result, the research adopts a research approach that is something in between inductive theory generation and the theory elaboration.

The grounded theory is an inductive research method enabling to generate theories from empirical data (Corbin & Strauss, 2015). The method started with the research questions, and with an initial collection of empirical evidence. The analysis and review of the initial data steered the collection of additional data to refine emergent concepts and theories. There are alternative versions of the grounded theory; it can be either “totally inductive” (Glaser, 1998, 1992, 1978) or include some degree of reflexivity and interpretation (Corbin & Strauss, 2015; Strauss & Corbin, 1998). The author

selected and designed the version of RAIGT that best fitted with the research aim and objectives (Section 5.2.2), the methodological challenges (Section 5.4.1) and his personal preferences. The author selected the approach promoted by (Corbin & Strauss, 2015; Strauss & Corbin, 1998), allowing the reflexive contribute of the researcher for the theoretical conceptualisation.

5.5. Research Method

The RAIGT consisted of four steps: (1) sampling, (2) data collection, (3) analysis, and (4) review. Figure 5-4 shows the four steps and their interconnection. After a (1.1) preliminary sampling derived from the RQs, the RAIGT becomes cyclic including the following periodic steps (2) data collection → (3) analysis → (4) review → (1.2) theoretical sampling → (2) data analysis, etc. The (1.2) theoretical sampling steered the evolution of the research by providing a list of concepts to be further investigated. The list of concept was strongly interlinked to the (4) review of the emergent theory developed during the (3) analysis. At each cycle, the author (4) reviewed the status of the research adopting specific assessment criteria as described in Section 5.5.4. The loop ended only once the delivering theory was sufficiently refined to pass the (4) review tests. Each of the five steps is described in detail in the following subsections.

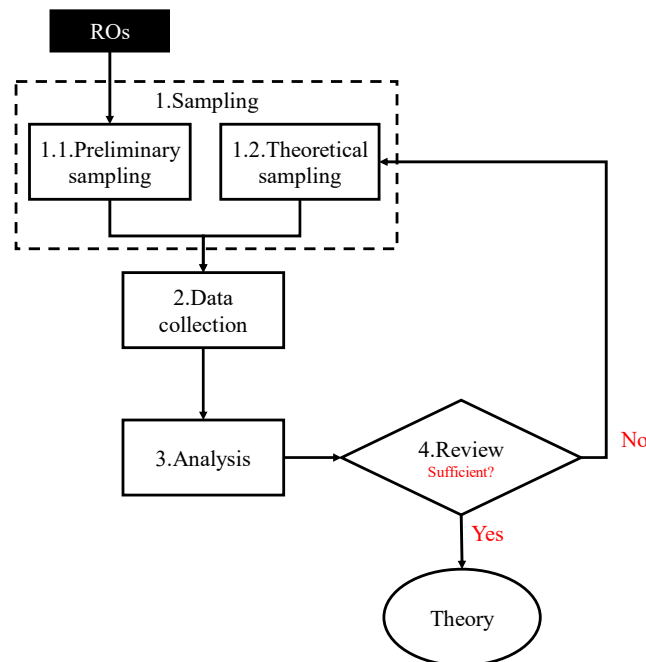


Figure 5-4: Research phases and steps.

5.5.1. Step 1: Sampling

The sampling process was differentiated into two main sub-steps: (1.1) preliminary sampling and (1.2) theoretical sampling. These steps are described in the following subsections.

Preliminary sampling

The starting point of the RAIGT was the literature review and the definition of the research aim and objectives. To initiate the RAIGT it was essential to establish a preliminary sampling consisting of a set of initial questions, and a preliminary sample of experts to interview. The preliminary sampling permitted to initiate the data collection and to trigger the interactive nature embedded in the RAIGT. The preliminary sampling was based on four initial interviews.

The initial questions were sufficiently general to allow the interviewees to focus on the relevant aspects. At the beginning of the initial interviews, the author introduced the research by showing the research aim and objectives. Subsequently, the author asked the following general questions:

1. Are SPEs relevant for the FGIM?
2. If so, how do SPEs influence the FGIM?

The initial interviewees started to present their expert opinion, and complement it with relevant examples. The interviews followed by interactive discussions led prevalently by the interviewees. In practice, the initial interviews were rather open than semi-structured. The two questions presented above constituted the initial questions for all interviews. However, the subsequent interviews (i.e. from the forth until the last one) become more focused on the developing concepts and theoretical propositions. The author determined the preliminary sample of experts to interview consisting of lawyers and managers dealing with the SPEs in infrastructure megaprojects. This initial choice was justified because lawyers are the experts designing SPEs, while managers are the experts directing them.

Theoretical Sampling

Theoretical sampling is defined as “*a method of data collection based on concepts derived from data. The purpose of theoretical sampling is to collect data from places,*

people, and events that will maximise opportunities to develop concepts in terms of their proprieties and dimensions, uncover variations and identify relationships between concepts” (Corbin & Strauss, 2015:p.134). The theoretical sampling concerns the sampling of “concepts” rather than people. The theoretical sampling permitted to explore, expand and refine the concepts to investigate (Corbin & Strauss, 2015).

The theoretical sampling received as input a list of gaps or inconsistencies to address. Starting from these inputs, the theoretical sampling determined a “priority list” of data to collect and concepts to refine. The theoretical sampling can be seen as a practical problem-solving activity, where the author formulated, at each interaction of the RAIGT cycle, a strategy to overcome the existing gaps and inconsistencies. Consistently, the theoretical sampling involved active reasoning of the researcher.

To address the gaps in research, the theoretical sampling was characterised by an evolving focus as described in Table 5-3. Table 5-3 summarises the evolution of topics during the research development. The interviews can be clustered into three main sets depending on their focuses, namely exploratory, development and convergence. The **first set of interviews** (I01-I04) had an exploratory function. The interviewees assisted the author in refining the unit of analysis of the research (Section 6.3). The **second set of interviews** (I05-I19) focused on the development of the critical concepts. Some concepts emerged during the data collection as highlighted by the column "emergent topic" in Table 5-3. The **third set of interviews** (I20-I28) refined and consolidated the results. Additionally, the last interviews focused on the nuclear sector to identify the main challenges and peculiarities of that infrastructure sector compared to the others. For each interview, Table 5-3 highlights the most relevant topics and questions suggested by either the theoretical sampling or by the preliminary sampling (Section 5.5.1). Table 5-3 describes the critical topics and questions using a code (Q1- Q26) as summarised as follows:

- Q1. General question. I.e. Are SPEs relevant for the FGIM? How do SPEs influence the FGIM?
- Q2. Methodological question. E.g. if you were me, how would you investigate this complex research topic?

- Q3. Unit of Analysis. E.g. Which instruments would you consider for the design of FGIM? Do you think this unit of analysis is sufficiently representative to understand how SPEs influence FGIM?
- Q4. Different types of SPEs. E.g. how many types of SPEs do you recognise? Are all these types relevant for the FGIM?
- Q5. Legal features of contracting. E.g. how do these contracts are enforced in practice? Is there any subordination among different contracts in the SPE-network?
- Q6. Dynamic Evolution. E.g. how does the governance of SPEs evolve? Are these changes pre-determined at the time of the incorporation of the SPE?
- Q7. Functions of SPEs. E.g. which functions do SPEs provide for the megaprojects, and in particular for their formal governance?
- Q8. Power and decision-making. E.g. Who controls SPEs?
- Q9. Conflict of interests. E.g. Is there any conflict of interest within SPE? How to limit these conflicts?
- Q10. Configurations of the SPE-network. E.g. Which is the typical configuration, or configurations, of the SPE-network? Which are the critical determinants of the configurations?
- Q11. Difference across sectors. E.g. Concerning the FGIM and the design of SPEs, did you observe any significant differences in different infrastructure sectors? Which ones?
- Q12. Negotiation of SPEs. E.g. How SPEs are negotiated?
- Q13. Flexibility of SPEs. E.g. is the SPE-network more, or less, flexible compared to the traditional contracting framework? How to enhance the flexibility within the SPE and the SPE-network?
- Q14. Procurement. E.g. How do SPEs are procured?
- Q15. Internal policies. E.g. How to negotiate and implement the policies internal to SPEs?
- Q16. Role of banks. E.g. What role do the banks have for the formal governance of SPEs and the megaprojects?
- Q17. Relevance of the shareholder agreement. E.g. To what extent the shareholder agreement influences the formal governance of SPEs?
- Q18. Board of Director. E.g. How does a typical board of directors of an SPE work? How often it is held? Which decisions are taken by the Board, and how?

- Q19. SPEs and the project management. E.g. Are SPEs connected to the project management? How?
- Q20. Shareholding. E.g. How to design the shareholding of SPEs? Is the shareholding significant for FGIM?
- Q21. Agency. E.g. are you aware of relevant agency problem involving the SPEs? E.g. shareholders/ appointed directors, majority/ minority shareholders, shareholders/ lenders, etc.
- Q22. Forum shopping. E.g. Is there any arbitrary selection of the jurisdiction for incorporating the SPEs? Which factors contribute to the selection of the jurisdiction?
- Q23. Political involvement. E.g. How to consider the political influence in the design of SPEs?
- Q24. Context. E.g. In which context are SPEs suitable?
- Q25. SPEs in Nuclear. E.g. Why is project financing uncommon/ exceptional in the nuclear sector? Which barriers inhibit the incorporation of SPEs?
- Q26. Review and cross-confirmation of previous statements. E.g. Some experts told me X, Y, Z. Do you agree with this statement?

Additionally, Table 5-3 highlights those topics emerged during each interview (e.g. suggested by interviewees) that affected the theoretical sampling for subsequent interviews.

5. Research methodology

Code interview/ expert	Priority topics highlighted by the theoretical sampling	Emergent topic
I01/E1	Q1, Q2, Q3, Q8	Dynamic evolution of SPEs, Functions of SPEs
I02/E2	Q1, Q3, Q7, Q8	Policies, Configurations of the SPE-network
I03/E3, E4	Q5, Q7, Q8, Q10, Q11	Security Package, Conflicts of interest, who negotiate and design the SPEs Loan agreement
I04/E1	Q4, Q7, Q8, Q10, Q11, Q13	
I05/E2	Q1, Q2, Q3, Q4, Q5, Q7, Q8, Q9, Q11, Q12, Q13, Q14	Internal policies
I06/E5	Q9, Q11, Q12, Q15, Q17	
I07/E6	Q11, Q12, Q14, Q15, Q17, Q18, Q19	SPEs and partnering, Agencies
I08/E7	Q9, Q12, Q15, Q17, Q21	
I09/E8	Q9, Q11, Q15, Q18, Q19, Q20, Q21	
I10/E9	Q11, Q15, Q19	Relationship between governance the project management
I11/E10	Q9, Q10, Q11, Q14, Q16	Stakeholder engagement
I12/E11	Q12, Q13, Q14, Q21	Multiple jurisdictions
I13/E12	Q16, Q21	Relevance of trust, governance and finance
I15/E14	Q11, Q12, Q16, Q21, Q22	
I16/E15	Q8, Q10, Q12, Q13, Q21, Q23	Relational/ political aspects of SPEs
I17/E16	Q11, Q21, Q23	
I18/E17	Q19, Q21, Q23	
I19/E18	Q18, Q24	
I20/E19	Q24, Q25	SPEs in Nuclear
I21/E2	Q8, Q12, Q14, Q16, Q17, Q18, Q19, Q20, Q26	
I23/E21	Q8, Q16, Q17, Q22, Q23, Q24, Q26	
I24/E22	Q4, Q18, Q21, Q22, Q24, Q26	
I25/E23	Q8, Q18, Q19, Q20, Q24, Q26	
I26/E24	Q4, Q10, Q20, Q22, Q24, Q26	
I27/E25	Q10, Q19, Q20, Q24, Q25, Q26	
I28/E26	Q24, Q25, Q26	
I29/E27	Q24, Q25, Q26	
I30/E28	Q24, Q25, Q26	

Table 5-3: Evolution of the theoretical sampling topics

Sample of the interviewees

The sampling of theoretical concepts described in the previous Sections permitted to determine the experts to interview. Table 5-4 presents the sample of experts interviewed showing their background, their direct experience concerning the SPEs and the infrastructure sector. The most relevant types of interviewees can be summarised into two broad categories.

Firstly, engineers who expanded their background toward finance becoming managers. Usually, these experts were involved in the direction and management of SPEs, rather than their design.

Secondly, the author interviewed several lawyers who expanded their backgrounds toward the financing and accounting. Typically, they are specialised in banking law and project finance. They are experts in contracting, negotiation and design complex project transactions, including the incorporation of SPEs. Often, they have experience in private equity, mergers and acquisitions. They have a vast experience in the FGIM, which is the focus of this thesis. Lawyers tend to work in a variety of sectors (**Appendix 1**: I01-E01, I02-E02, I03-E03, I03-E04, I06-E05, I08-E07, I09-E08, I11-E10, I15-E14, I18-E17, I20-E19, I24-E22, I26-E24). The only exception was the nuclear industry that is unique as it requires specialised nuclear lawyers.

5. Research methodology

Code Expert	Background	Experience concerning SPEs	Infrastructure Sector
E1	Management	Control - portfolio level	Oil & Gas
E2	Law - Finance	Negotiate, design and operate/direct	Infrastructure Widespread
E3	Law	Negotiate and design	Infrastructure Widespread
E4	Law	Negotiate and design	Infrastructure Widespread
E5	Law - Finance	Negotiate and design, control	Infrastructure Widespread
E6	Engineering - Management	Procurement	Oil & gas, Iron metallurgy
E7	Law - Finance	Negotiate and design, control	Energy
E8	Engineering - Management	Operate/direct	Energy
E9	Engineering - Management	Operate/direct. Project management	Transport
E10	Finance	Negotiate, design and operate/direct	Infrastructure Widespread
E11	Law - Finance	Negotiate and design	Infrastructure Widespread
E12	Finance - accounting	Analyst	Energy, Nuclear
E14	Law - accounting	Negotiate and design	Infrastructure Widespread
E15	Management	Negotiate and operate/direct	Oil & Gas
E16	Engineering - Management	Negotiate, operate and direct, project management	Transport, Energy, Nuclear
E17	Engineering management - Finance	Negotiate and operate/direct	Transport
E18	Engineering - Management	Procurement	Oil & gas, Iron metallurgy
E19	Law - Finance	Negotiate and design	Nuclear
E21	Management	Negotiate and control	Infrastructure Widespread
E22	Finance - accounting	Negotiate and design	Infrastructure Widespread
E23	Management	Negotiate and operate/direct	Infrastructure Widespread
E24	Law - accounting	Negotiate and design	Infrastructure Widespread
E25	Finance - accounting	Negotiate, Analyst	Energy
E26	Finance - accounting	Negotiate, control, operate/direct	Infrastructure Widespread
E27	Engineering - Management	Regulation	Nuclear
E28	Finance - accounting	Negotiate, insure	Nuclear

Table 5-4: Sample of the experts interviewed

Background of the interviewees

Table 5-5 presents the backgrounds of the interviewees. For each discipline, Table 5-5 shows the number of interviews, the number of experts interviewed, and the minutes spent for each discipline. Table 5-5 shows that most of the experts have more than one background, which highlights the multidisciplinary of the research topic. The author believes that the sample of the interviewees provided a sufficiently complete and balanced mix of backgrounds. The experts in accounting were limited compared to the other backgrounds due to their limited ability to influence the FGIM.

	Num. Interviews	Num. Experts	TOT minutes
Management (only)	5	4	207
Accounting (only)	0	0	0
Law (only)	1	2	81
Finance (only)	1	1	38
Engineering (only)	0	0	0
Accounting & Law	2	2	65
Accounting & Finance	5	5	183
Law & Finance	7	5	531
Management & Engineering	6	6	359
Finance & Engineering & Management	1	1	52
TOT	28	26	1516

Table 5-5: Background of the experts interviewed

Experience of the experts concerning the SPEs in megaprojects

The current Section summarises “the experience of the experts concerning the SPEs in megaprojects” showing that the sample considered is sufficiently broad to cover the research topic from different perspectives. To classify the various types of experiences, the SPE was taken as the central focus. Consistently, each expert had one, or more, of the following working experiences:

- Analyst: the expert assessed the financial proprieties of the securities associated to SPEs involved in megaprojects;
- Control: the expert controlled the performance of one, or more, SPEs from the perspective of the sponsoring firm;
- Negotiation: the expert negotiated, on behalf of a critical megaproject stakeholder (e.g. contractor, utility, financial institution, insurance, government, etc.), the contractual and financial structure underlying the megaproject. The negotiation led to the incorporation of one, or more, SPEs;
- Design: the expert designed, on behalf of a critical megaproject stakeholder the contractual and/ or financial structure underlying the megaproject. The design includes the structuring of one, or more, SPEs;
- Operate & direct: the expert worked for one, or more, SPEs. The expert undertook a relevant responsibility within the SPE, such as critical manager and director;

- Procurement: the expert managed the tendering process of one, or more, infrastructure megaproject involving at least an SPE. The SPE was a critical stakeholder in the tendering process, either as a client or as a contractor;
- Regulation: the expert worked for a regulatory authority that assessed, one or more SPEs involved in a megaproject.

The interviewees had extensive experience in the field of SPEs and FGIM. Table 5-6 presents the “experience of the experts concerning the SPEs in megaprojects”. For each experience, Table 5-6 shows the number of interviews, the number of experts interviewed, and the total minutes spent. Table 5-6 highlights that the sample of experts interviewed had very different careers. Most of them undertook several responsibilities during their career, and they were able to describe the research topic from different perspectives.

Many experts were involved in the negotiation and design of the SPE. Theoretical sampling derived this tendency. During the interviews, the author discovered that the kind of experts that really understand the governance of the SPEs are those who negotiate and design them. This tendency was confirmed by several experts (Appendix 1: I03-E03, I03-E04, I04-E01, I05-E02, I06-E05, I08-E07, I09-E08, I10-E09, I11-E10, I15-E14). Sometimes, the contracting frameworks are so complex that the experts who designed them are called to clarify why the contracts and the transactions were designed in a certain way. In litigation, the same experts are often engaged to describe the actual meaning of certain contractual structures to the parties involved.

Managers working within SPEs often don't understand the mechanics of the SPEs and their connected contractual structure completely. They understand the implications of specific governance structures on their decisions and operations, but they might lack an overall and complete understanding of how SPEs work. Typically, the directors of the SPEs have practical governance and management experience.

Particularly interesting, and to some extent counter-intuitive, was the role played by project managers. One project manager interviewed stated explicitly that he does not know the connection between the SPEs and the FGIM (Appendix 1: I10-E09). Other

project managers were excluded because they admitted they are not expert on the research topic (Appendix 1: I14-E13, I22-E20). The research highlights how relevant SPEs can be for the FGIM. The reason associated with this mismatch of opinions was clarified during the research development. Often, project managers are focused on the operative planning and development of megaprojects and do not face the technicalities associated with the complex contractual arrangements, and organisational structures of the SPEs. This view was confirmed by the experts of negotiation and contracting (Appendix 1: I05-E02, I15-E14, I17-E16, I18-E17). To clarify this view, particularly useful was also the perspective of a project manager that during his career became a senior manager in his company and was later involved in managing and negotiating of some SPE (Appendix 1: I17-E16). The interviewee (E16) confirmed that often project managers do not have a sense of the relevance played by the SPEs.

For each “experience concerning the SPE” considered, Table 5-6 summarises the number of interviews, experts interviewed, and time spent. Table 5-6 highlights that the interviews were focused on experts who negotiated, designed, operated and managed SPEs. This focus is consistent with the theoretical sampling as discussed above.

	Num. Interviews	Num. Experts	TOT minutes
Analyst	1	1	40
Control	2	1	92
Negotiation	1	1	45
Design	0	0	0
Operate & direct	2	2	74
Procurement	2	2	213
Regulation	1	1	25
Analyst & Negotiation	1	1	28
Control & Negotiation	1	1	40
Negotiation & Design	6	7	257
Negotiation & Operate & direct	4	4	175
Negotiate, design and operate/direct	4	2	427
Negotiate and design, control	2	2	67
Negotiate, control, operate/direct	1	1	34
TOT	28	26	1516

Table 5-6: Experience of the experts concerning the SPEs in megaprojects

Infrastructure sector

The current Section summarises "the infrastructure sector" associated with the experts interviewed to show that the sample considered is sufficiently general and balanced. The Section highlights the number of interviews, the number of interviewees and the minute of interviews dedicated to any background considered. The infrastructure sectors considered are: oil & gas, energy, transport, and nuclear. Some experts worked in all these infrastructure sectors. This is the case of lawyers that represents many clients operating in different sectors. To simplify the statistics, Table 5-7 includes the category "widespread" indicating the interviewees who had experience in all the infrastructure sector considered.

Table 5-7 presents the infrastructure sector associated with the interviewees. For each sector, Table 5-7 displays the number of interviews, the number of experts interviewed and the total minutes spent. Table 5-7 shows the infrastructure sector is sufficiently broad and balanced. Despite the differences among infrastructure sectors, the interviews confirmed that the principles and techniques associated with the negotiation, design, and performance of SPEs are mostly the same (Appendix 1: I03-E03, I03-E04, I04-E01, I05-E02, I06-E05, I07-E06, I08-E07, I10-E09, I11-E10, I12-

E11, I15-E14, I18-E17, I19-E18, I20-E19, I23-E21, I24-E22, I25-E23, I27-E25, I28-E26, I30-E28). Below two interviewees' statements that confirm the above:

"In my experience, there is not a large change of the SPV structures in different types of infrastructure. The big difference is with the oil & gas. They do not need bank debt." (Appendix 1: I03-E04)

"Any difference across the different types of infrastructure?" (Appendix 1: I11-the author) [...] "Broadly, in my experience, no." (Appendix 1: I11-E10)

It is, therefore, possible to generalise about many aspects concerning the governance of infrastructures and SPEs. Conversely, it is important to mention that the nuclear (Appendix 1: I20-E19, I27-E25, I28-E26, I29-E27, I30-E28) and the oil & gas (Appendix 1: I03-E04, I04-E01, I07-E06, I11-E10, I16-E15, I24-E22) sector introduce some relevant differences compared to other infrastructure sectors.

Firstly, project finance is very uncommon in the **nuclear sector**, particularly for the construction of commercial nuclear power plants (IAEA, 2014). Some joint ventures that are comparable to SPEs were used before the Chernobyl accident in 1986. After Chernobyl, the legal and regulatory framework changed worldwide (IAEA, 2004) and imposed many constraints to nuclear operators, as well as a unique contracting regime called "strict and exclusive liability of nuclear operator" (Stoiber *et al.*, 2010, 2003). This principle and other connected ones represented a critical barrier to employ the project finance in nuclear build projects. These barriers were confirmed by the experts in nuclear (Appendix 1: I20-E19, I27-E25, I28-E26, I29-E27, I30-E28). In particular, often SPEs do not match with the capital, experience and ownership requirements imposed by the licensing. The heavily regulated field also influence the security interest of lenders that, differently to other sectors, cannot exploit instruments such as the "step in provisions" in the loan agreement (Dentons, 2016; Vinter, Price & Lee, 2013; Wood, 1995). The peculiarities of the nuclear industry were particularly informative for the research. From one hand, the nuclear industry highlighted some critical barriers to the use of SPEs. To the contrary, the nuclear sector is experiencing

a sharp change in some countries. In particular, in the UK the government is attempting to apply project finance to a nuclear megaproject, i.e. Hinckley Point C (IAEA, 2014).

Secondly, the **oil & gas** sector introduces a relevant financial difference compared to other sectors. Usually, the adoption of project finance implies the reliance on a vast debt, typically based on syndicate banking (Gatti, 2007). This is the typical scenario in most types of infrastructures. Conversely, in the oil & gas, the infrastructure client (the so-called “International Oil Companies - IOC”, such as British Petroleum, Shell, etc.) has the capital to invest directly and limit the recourse to debt financing. This has been particularly true in the recent past, before the drop in the price of crude oil (Dale, 2017). As a result, the financial structure of the SPEs in oil & gas is different compared to the other infrastructure sectors.

Table 5-7 summarises the cumulative values of the number of interviews, the number of experts interviewed, and the total minutes spent. Table 5-7 shows that the infrastructure sectors are relatively balanced. This is because most of the interviews were directed to experts on all types of infrastructures, i.e. the ones labelled as “widespread” (i.e. the experts who had experience in all infrastructure sectors considered).

	Num. Interviews	Num. Experts	TOT minutes
Oil & Gas	5	4	337
Energy	3	3	82
Widespread	13	12	812
Nuclear	3	3	101
Transport	2	2	97
Energy, Nuclear	2	2	87
TOT	28	26	1516

Table 5-7: Infrastructure sector

5.5.2. Step 2: Data Collection

The data collection involved semi-structured interviews. Often the interviewees provided additional material that was analysed together with the transcriptions of the interviews. Table 5-8 presents the list of the interviews, including the code of the

interview, the date, the expert code, the minutes of the interview and the relevant notes. In total, the author interviewed 26 experts in 28 interviews (i.e. some expert was interviewed more than once) for a total of 1516 minutes of conversation. Names of the experts and their organisations are anonymised in line with the ethical regulation of the University of Leeds (The University of Leeds, 2017).

Most interviews followed the following structure: (1) introduction, (2) open discussion, (3) sampled themes question, (4) methodological question, and (5) conclusion. Most of the interviews involved only one expert and were conducted by phone (or Skype). Few exceptions applied to this general structure. Firstly, Interview 03 (I03) involved two experts. Secondly, Expert 02 (E02) assisted the author actively, acting as a sort of industrial supervisor. E02 is a famous barrister and manager that negotiated, design and managed several PPP and PF transactions worldwide. E02 has a vast experience on megaprojects, and he provided several contact details of people suitable for interview. E02 is one of the very few experts that have a general and systemic understanding of these complex deals, according to his words, this kind of experts, worldwide, can be count on two hands. E02 was interviewed more than one time and for a longer time. E02 helped to frame the research and review the results. In particular, after a first engaging interview (I02), E02 participated to a workshop (I05) involving three interviewers, namely the PhD candidate, Prof. Naomi Brookes and Dr. Giorgio Locatelli. E02 also participated to a review workshop (I21). Thirdly, E01 was involved twice in the research, i.e. for a preparatory interview (I01) and one standard one (I04). Finally, two interviews out of thirty were excluded because the author realised that the interviewees were not expert on the topic investigated.

Some experts kindly provided additional content in the form of documentation, either primary or secondary, or a useful reference. This additional information is highlighted in the column “Note” of Table 5-8.

Code interview	Date Interview	Code Expert	Time (Minutes)	Note
I01	21/05/2014	E1	38	
I02	11/11/2014	E2	40	Additional content (AC): written reflection concerning the functions of SPEs in megaprojects (about 10 pages)
I03	26/03/2015	E3	40	This interview involved two experts together. AC: (Bernardello, 2011; Department for Education GOV.UK, 2010; Inderst, 2009; National Audit Office, 2009).
		E4		
I04	21/04/2015	E1	54	
I05	28/04/2015	E2	169	Workshop
I06	22/06/2015	E5	42	
I07	23/06/2015	E6	33	
I08	25/06/2015	E7	25	
I09	26/06/2015	E8	29	
I10	29/06/2015	E9	45	
I11	08/07/2015	E10	38	AC: (Altra Capital, 2012) – Internal report
I12	09/07/2015	E11	45	
I13	14/07/2015	E12	40	
I14	15/07/2015	E13	35	Excluded, not relevant interview
I15	20/07/2015	E14	30	AC: (Vinter, Price & Lee, 2013; Wood, 2007)
I16	21/07/2015	E15	32	
I17	30/07/2015	E16	47	
I18	26/08/2015	E17	52	AC: primary documentation. Contracting and Financing structures, not disclosable
I19	14/10/2015	E18	180	AC: detailed case study, including not disclosable material
I20	19/10/2015	E19	31	
I21	30/10/2015	E2	180	Review workshop discussion
I22	08/04/2016	E20	42	Excluded, not relevant interview
I23	13/05/2016	E21	40	
I24	16/06/2016	E22	35	
I25	17/06/2016	E23	43	AC: Contractual documentation (i.e. original Concession), not disclosable
I26	10/07/2016	E24	35	AC: Contracting, Financing structures, and contractual documents (i.e. shareholder agreement), not disclosable
I27	14/10/2016	E25	28	
I28	01/11/2016	E26	34	
I29	16/11/2016	E27	25	
I30	18/11/2016	E28	45	AC: MBA final report (comparable to a master dissertation) focused on the project finance and accounting in the nuclear sector.

Table 5-8: List of the interviews with the experts on SPEs in megaprojects

Table 5-9 displays the evolution of the questions asked during the development of the research; the list of questions being asked (i.e.Q1-Q26) is available in Appendix II. The questions evolution was consistent with the application of the theoretical sampling characterising the RAIGT. The interviews were semi-structured and interactive and there was not a standardised set of questions asked.

5. Research methodology

Code interview/ Code interviewees	I01	I02	I03	I03	I04	I05	I06	I07	I08	I09	I10	I11	I12	I13	I15	I16	I17	I18	I19	I20	I21	I23	I24	I25	I26	I27	I28	I29	I30
Type of Question	E1	E2	E3	E4	E1	E2	E5	E6	E7	E8	E9	E10	E11	E12	E14	E15	E16	E17	E18	E19	E2	E21	E22	E23	E24	E25	E26	E27	E28
Q1. General question	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
Q2. Methodological question	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
Q3. Unit of Analysis	✓	✓	\	\	✓	✓																							
Q4. Different types of SPEs	✓	✓	✓	✓	✓	✓																							
Q5. Legal features of contracting		✓	✓	✓		✓	✓		✓																				
Q6. Dynamic Evolution		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓																	
Q7. Functions of SPEs		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓															
Q8. Power and decision-making	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓			✓						✓		✓					
Q9. Conflict of interests			✓	✓		✓	✓		✓	✓		✓			✓			✓											
Q10. Configurations of the SPE-network			✓	✓	✓				✓			✓				✓									✓	✓			
Q11. Difference across sectors			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓		✓												
Q12. Negotiation of SPEs						✓	✓	✓	✓			✓			✓	✓		✓	✓										
Q13. Flexibility of SPEs				✓	✓							✓				✓		✓											
Q14. Procurement					✓			✓				✓	✓							✓									
Q15. Internal policies						✓	✓	✓	✓	✓	✓								✓										
Q16. Role of banks						✓		✓			✓	✓	✓	✓				✓				✓							
Q17. Relevance of the shareholder agreement						✓	✓	✓														✓	✓						
Q18. Board of Director							✓		✓										✓					✓	✓				
Q19. SPEs and the project management							✓		✓	✓								✓				✓	✓	✓		✓			
Q20. Shareholding									✓	✓																			
Q21. Agency									✓	✓		✓	✓	✓	✓	✓	✓							✓					
Q22. Forum shopping															✓							✓	✓		✓				
Q23. Political involvement																✓	✓	✓				✓		✓					
Q24. Context																			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Q25. SPEs in Nuclear																				✓						✓	✓	✓	
Q26. Review and cross-confirmation of previous statements																						✓	✓	✓	✓	✓	✓	✓	

Table 5-9: Questions asked to interviewees

The typical interview process followed three steps: (1) engagement, (2) interview, (3) follow-up, which are described in the following subsections.

(1) Engagement

During the early stages of the research, the author engaged the experts by following three main streams. **Firstly**, Prof Naomi Brookes and Dr Giorgio Locatelli provided some initial contacts of lawyers and managers. **Secondly**, Mr Graham Olver, an internationally recognised expert on contracting, provided the contacts of several experts. Mr Olver was initially presented by Prof. Naomi Brookes but soon supported actively the research. Mr Olver helped the author to refine the ROs and the methodology. Furthermore, Mr Olver supervised the evolving results generated by the RAIGT. **Thirdly**, the Major Project Association (MPA) promoted the research encouraging the members to participate in the interviews.

These three initial streams permitted to trigger the interviews. During the research development, three additional engagement streams were included. **Firstly**, as part of the theoretical sampling (Section 5.5.1), the author generated a priority list of relevant topics to consider. During all interviews, the author asked the interviewees to provide additional contacts of relevant experts in the field. This procedure established a self-reinforcing chain of interviews. **Secondly**, the author tried to communicate with some experts directly, for example by searching them on LinkedIn (LinkedIn, 2017). Most of these experts were contacted because they were authors of relevant institutional reports. **Thirdly**, the author participated in various conferences and congresses. These meetings provided further opportunities to engage with additional interviewees.

The different streams provided about a hundred contacts, but only twenty-eight undertook the interview. All experts were approached by an initial email containing a summary of the research and a provisional list of questions. The questions were only provisional during the engagement because some additional questions emerged from the interaction between the author and the interviewees during the interview, as further explained in the next Section. Both the email and the introductory document changed during the development of the research to reflect the evolving nature of the RAIGT.

Appendix 1 presents two versions of the engagement email; the author used the former version for the intermediate interviews and the latter one for the last few interviews. Following the initial email, the author and the interviewees scheduled the interviews. Since the interviewees were particularly busy people, the author provided the maximum flexibility regarding calendar availability, duration of the interview, means of the interview (e.g. by phone, in person) and location. With few exceptions, most of the interviews took place by phone or by Skype (Skype Communications SARL, 2017). Some interviews were re-scheduled several times and required more than four months to be completed. Accordingly, the planned sequence determined by the theoretical sampling (Section 5.5.1), was partially affected by the scheduling of the interviews.

Before any interview, the interviewee confirmed the maximum time allowance. On average, the interviews last for about 54 minutes and a mode of about 40 minutes.

(2) Interview

Most interviews adopted the following five steps: (1) introduction, (2) open discussion, (3) sampled themes question, (4) methodological question, and (5) conclusion. The initial interviews (i.e. the ones started from the preliminary sampling, Section 5.5.1) lacked the third step, as the sampled themes were not available yet. The five steps are briefly described as follows.

Introduction

Every interview started with a brief introduction of the research and with the formal request to record the interview. For all interviews, the author read the short introduction reported by the Box 5-1. Before the second step, the author introduced general questions, namely:

1. Are SPEs relevant for the FGIM?
2. If so, how SPEs influence the FGIM?

*Good morning/ afternoon,
Before we start the interview, let me introduce myself and the research.*

My Name is Tristano Sainati, and I am currently a PhD Student at the University of Leeds. My research is about the role that the SPEs have for the formal governance of infrastructure megaprojects.

The objective is to lay down best practices, principles and rationales for the effective design of the SPEs. Again, by focusing on the governance and project management perspective.

At the beginning of this research, we found out that while the financial and accounting aspects of SPEs are well disseminated the governance ones are not.

My objective is to make explicit what at the moment is tacit knowledge. Because, at the end of the day, there are people that design and engineer the SPEs. Actually, I am conducting several interviews with an expert like you.

My focus is not limited to the SPE but includes the underlying contracting framework.

Before starting the interview properly, let me ask you a question: may I record the interview?

Before you answer, let me explain how the tape will be managed. The tape will be kept confidential, and its purpose is to help me to take notes, and in particular to produce a transcript of the interview. The transcript will be anonymised to avoid reference to existing people, organisations or facts. The transcript will support the analysis of my research, but it will be kept confidential and destroyed at the end of the study. Any alternative use of either the tape or the transcript will be subject to your prior approval.

In the end, any deliverable coming from the research might include direct quotes without references to you or your organisation. By deliverable, I mean the doctoral thesis, the publications and the presentations associated with the research.

I also acknowledge that what you are going to say will be considered your personal opinion, and it won't represent the official view of any organisation associated with you, neither in the present nor the past.

Forgive me for these formalities, but this is part of the ethical procedure required by the University of Leeds, if you have questions about these aspects don't hesitate to ask me.

Having said that, may I record the interview?

Box 5-1: Introduction to the interview

Open discussion

The author left space to open discussions driven by the interviewee. To stimulate the open discussion, the author introduced the following question: “*how do SPEs influence the formal governance of infrastructure megaprojects?*” This permitted to explore and introduce other concepts and themes consistently with the RAIGT.

Sampled themes question

The author asked questions regarding relevant themes emerged from the theoretical sampling (Section 5.5.1). Usually, the questions aimed to detail a specific concept, to confirm previous findings or to fill existing gaps in the theory. The questions were

tailored to the specific expertise of the interviewee. Usually, a standard interview of 40 minutes allowed about 5-6 sampled themes questions.

Methodological question

Close to the end of any interview, the author asked the following methodological question: “*Given all the challenges (e.g. the confidentiality of the information), how would you investigate this research topic?*” This question permitted to find new opportunities for data collection and to validate the methodological approach selected.

Conclusion

The author asked for additional information related to the interview, primary and secondary documents. Some interviewees provided original contracts, contracts templates, organigrams, institutional reports or manuals. These further documents were also included in the research analysis. Section 6.2 summarises the material complementing the interviews. Additionally, step 5 was an opportunity for the author to ask for further experts’ contact details to interview. The author asked for the additional contacts consistently to the priorities established during the theoretical sampling (Section 5.5.1), and the relevant topics emerged during the interview.

(3) Follow-up

Potentially, the interviews provided three primary outcomes: (1) a **tape** of the interview (practically all interviews), (2) **additional documents** (few interviews as described in Section 6.2), and (3) **contacts of relevant experts** to interview (almost all interviews).

These three outcomes were used differently to proceed with the research development. **Firstly**, the **tape** of the interviews allowed the author to develop the transcripts, and to anonymise them. The anonymised transcripts were processed by the research analysis described in Section 5.5.3. **Secondly**, the additional documents collected allowed to expand the data collection in a focused manner. Consistently with (Glaser & Strauss, 1967), these documents were subsequently processed as part of the research analysis. **Thirdly**, in most cases, the interviewee provided other contacts of relevant experts to interview. The contacts were used to engage additional experts as explained at the beginning of the current Section.

5.5.3. Step 3: Analysis

(Corbin & Strauss, 2015:p.58) define analysis as: “*the concept and the thought process that go behind assigning meaning to data. The analysis is exploratory and gives consideration to different possible meanings in data and then keeps a record of the thought that took place before arriving at a possible meaning. The thought process is recorded in a memo. This makes analysis a dynamic and evolving process. Meanings are assigned and reassigned based on comparisons with incoming data. To arrive at meaning, analysts brainstorm, make comparisons, try out different ideas, eliminate some interpretations, and expand upon others before finally arriving at an interpretation.*”

According to (Corbin & Strauss, 2015), the RAIGT analysis requires the reflexive contribute of the researcher. The generating theory is the result of both the empirical data and the reflexive process. Figure 5-5 describes the analysis employing a process-view. Figure 5-5 shows the analysis in comparison to the overarching research method including the preliminary sampling (Section 5.5.1), data collection (Section 5.5.2), analysis (Section 5.5.3), review (Section 5.5.4), and theoretical sampling (Section 5.5.1). Furthermore, Figure 5-5 introduces five main elements of the analysis, namely: (1) inputs, (2) coding, (3) theoretical conceptualisation, (4) supporting tools and methods, and (5) outputs. The following subsections describe these five elements of the analysis.

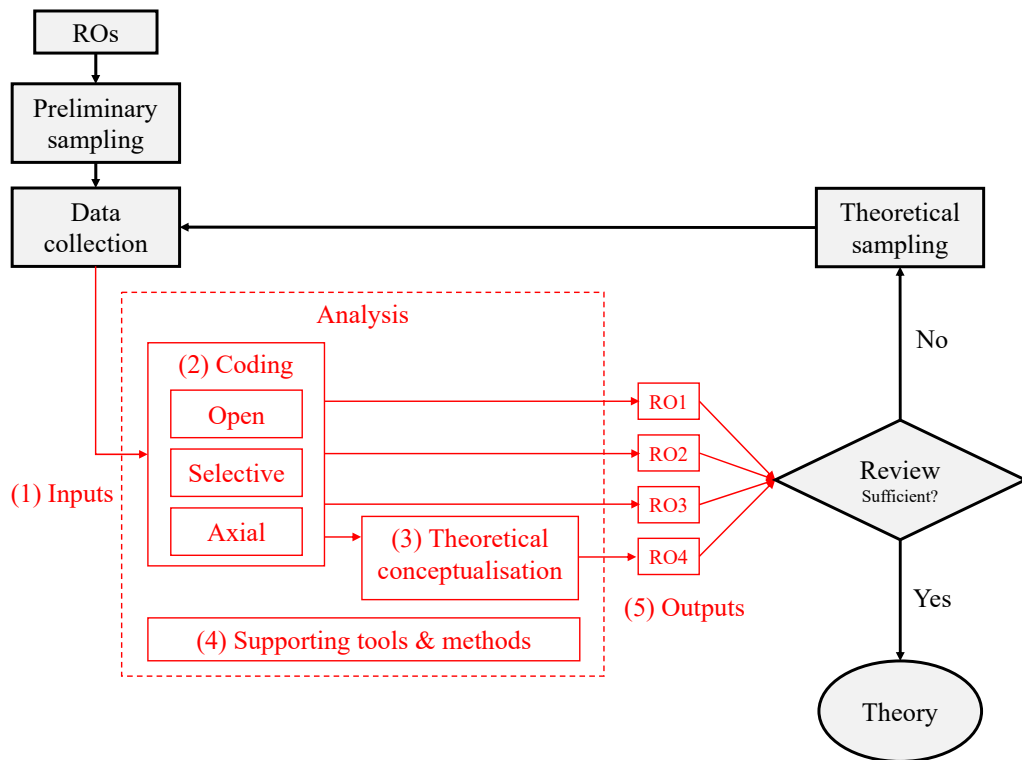


Figure 5-5: Data Analysis. LEGEND: red coloured shapes: the five elements associated with the analysis, black coloured shapes: the other steps composing the research method.

(1) Inputs

The input of the analysis is provided by the data collection (Section 5.5.2), and it consisted of:

- The transcripts of the semi-structured interviews;
- The additional documents complementing the interviews.

(2) Coding

The coding permitted to organise the data into discrete and hierarchical categories (Corbin & Strauss, 2015:p.85). According to the RAIGT terminology, the categories are hierarchical representations of the relevant concepts emerged during the RAIGT. Categories enable to represent concepts into sub-concepts. Consistently, categories enable to “refine” concepts and to select the appropriate level of generalisation for the delivering theory. The research employed three different types of coding: open, axial, and selective (Corbin & Strauss, 2015:p.156).

Firstly, at the beginning of the analysis, the author started with the **open coding**, which is defined as “*data is coded by classifying elements of the data into themes or categories and looking for patterns between categories (commonality, association, implied causality, etc.)*” (Anon, 2004:p.82). Starting from the input text, and drawings, the author firstly derived the key concepts of the research consistently with the theoretical sampling (Section 5.5.1). Subsequently, the concepts were arranged according to hierarchical structures forming the categories (Corbin & Strauss, 2015:p.61). The coding continued until reaching the theoretical saturation, meaning that the various categories were sufficiently detailed and cross-confirmed. The outcome of the open coding consisted of dense and detailed categories that were used as “building blocks” for the theoretical conceptualisation. The dense and detailed categories also permitted to delimit the contexts in which the delivering theories are valid.

Secondly, axial coding is defined as: “*the search for relationships between coded elements of data*” (Anon, 2004:p.83). The axial coding started once the initial theoretical conceptualisation was available and focused on the relationships between categories. These relationships were stratified similarly to the categories.

Thirdly, selective coding “*is the process of integrating and refining categories*” (Strauss & Corbin, 1998). During the later stages of the research, the author looked back to the previous interviews to search for specific codes, which emerged during the later stages of development. Selective coding was also oriented by the theoretical sampling, in dealing with the latest interviews. This coding approach focused prevalently on the gaps and inconsistencies of the categories.

(3) Theoretical conceptualisation

The primary deliverable of the RAIGT is an interpretative theory as previously explained in (Anon, 2004:p.79). According to (Denzin & Lincoln, 2008), theories are human constructions. Theories consist of “*categories (themes, concepts) that are systematically developed in terms of their properties and dimensions and interrelated through statements of relationship to form a theoretical framework that explains something about a phenomenon*” (Hage, 1972).

A fundamental challenge to overcome was to step from descriptions (which is key to theorising) to theory (Corbin & Strauss, 2015). Conceptualising was an essential process permitting to bring the speculative, abstract and conceptual elaboration of the researcher (Charmaz, 2014). Without it, the theory would remain a description.

To elaborate the conceptual theorising, the author made use of various techniques, aiming to stimulate the creativity and to formalise the delivering theory. The conceptualisation was recorded through a series of memo and diagrams, showing how the theory generated and evolved throughout the research development. Memo and diagrams. To organise this progress of conceptualising work and make it accountable, the author relied extensively on the software NVivo 11 (Anon, 2013; Edhlund & McDougall, 2016).

To formalise the theory, the author worked prevalently with conceptual maps by interlinking the relevant categories. Relationships were considered as a special class of category derived from the axial coding. The resulting conceptual maps permitted to manage the consistency between categories at a holistic level. Part of the formalisation of the theory looked at more detail levels; particularly concerning the contextualisation of the theory.

(4) Supporting tools and techniques

To sustain and stimulate the analysis, the author applied a broad use of tools and methods. Some of these were extensively used and are presented in the following Sections; in particular, memo and diagrams, and the software support. Others techniques were used sporadically and are herein only mentioned for completeness: moving rapidly from the abstract to the concrete, matrix for explanatory paradigm, making comparisons thinking about the various meanings of a word, making use of life experience, waving the red flag, looking for words that indicate time, thinking in terms of metaphors and smiles, looking for the negative case. Further explanations of these techniques are available in (Corbin & Strauss, 2015 Chapter 5).

Memos & diagrams

Memo and diagrams were extensively used to support and trace the incremental development of the research analysis. The author classified each memo and diagram by recording the following attributes:

- **Identifier:** composed by the date and a progressive number to identify univocally any memo and diagrams;
- **Title:** one statement summary;
- **Type:** this attribute considered the following values: methodological, literature review, analysis, interview, conceptual theory, contextual, coding, exemplification, analogy, theoretical sampling.
- **Source:** this attribute identified the sources. It was especially important to identify the author contribution to the analysis.
- **Link:** most/ all the memos & diagrams were related to a specific item such as another memo, diagram, code/category, transcript of the interview, literature article, etc. In some cases, links were multiple.
- This recording system permitted to trace the research analysis. In particular, it allowed establishing a line of communication between the various sources.

Software Support

During the analysis, the author relied extensively on NVivo 11 (Anon, 2013; Edhlund & McDougall, 2012). The author selected this software because of the following reasons:

- The university provided the license and the related training;
- Together with Atlas.ti (Friese, 2014) is widely used in the referencing disciplinary area; i.e. project management. Before deciding, the author tried both Atlas.ti and NVivo, and he preferred the latter;
- The author checked the features, particularly the ones concerning the coding. The software was sufficiently developed and satisfied the author expectations.

(5) Outputs

The outputs of the analysis addressed the RO2-RO4. RO1 (to provide a classification of the existing types of SPE) consisted of a category that is presented in Section 6.4. RO2 (to identify which types of SPE play a role in the FGIM) consisted of a small

category described in Section 6.5. RO3 (to identify the functions provided by SPEs for infrastructure megaprojects) presented in Section 6.4.3. RO4 (to develop a theory that explains how SPEs influence the FGIM) consisted of a theory presented in Chapter 7. The theory addressing RO4 was the ultimate deliverable of the research and comprehended the categories associated with the RO1-RO3. The generating theory was the result of both the coding and the theoretical conceptualisation.

During the research development, the categories emerged from the interviews. In case of gaps or inconsistencies, the author asked the interviewees to clarify. The theory emerged from the relevant logic interconnection between the categories. The causal links were emerged from the “axial coding” and relied extensively on the reflexive role of the expert. The “selective coding” permitted to cross-confirm the causal links, and to validate the research. The review of the research was an essential step of the RAIGT that followed the analysis. The review is further explained in the following Section.

5.5.4. Step 4: Review

At the earlier stages of the research, the author focused on the general structure of the categories, and on the preliminary conceptual framework. At the later stages, the author concentrated on the refining of both the categories and the generating theory. Ultimately, the outcome of this research is the generation of a theory addressing the RO4 and the research Aim.

At each iteration of the method (i.e. the sequencing of the steps 1-4), the author applied four main rigour criteria (in the form of reflective questions) to review the status of completeness of the delivering theory. In case of an incomplete theory, the author followed with a further interaction of the research method. Ultimately, after the 30th interaction of the method, the author considered the theory completed. The following subSection describes the rigour criteria employed to review the delivering theory.

Review Tests

Theories consist of “*categories (themes, concepts) that are systematically developed in terms of their proprieties and dimensions and interrelated through statements of relationship to form a theoretical framework that explains something about a*

phenomenon” (Hage, 1972:p.34). Traditionally, theories are characterised by specific quality requirements concerning their “utility” and their “falsifiability” (Lee & Lings, 2008). These requirements derived from the positivistic philosophical tradition (Anon, 2004:p.80), which was not considered for the current PhD. The author adopted a pragmatist- interpretative paradigm, which assumes that the world is subjective and reality is socially constructed (Denzin & Lincoln, 2011:p.97). This paradigm implies that the research phenomenon cannot be defined objectively according to a set of absolute criteria (Anon, 2004:p.80). The interpretative standpoint necessitates a different notion of rigour, which considers different criteria with respect to the positivistic tradition (Denzin & Lincoln, 2011:p.97). Table 5-10 introduces the rigour criteria by comparing the interpretative and positivistic worldviews. The rigour is described by four main issues of concern: representativeness of the finding, reproducibility of the findings, rigour of method and generalisability of the findings. Each of these issues is described in the following subsections.

Issue of concern	Positivist Worldview	Interpretative Worldview
Representativeness of findings	Objectivity: findings are free from researcher bias	Confirmability: conclusions depend on subjects and conditions of the study rather than the researcher
Reproducibility of findings	Reliability: the study findings can be replicated, independently of context, time or researcher	Dependability/ auditability: the study process is consistent and reasonably stable over time and between researcher
Rigor of method	Internal validity: a statistically-significant relationship is established, to demonstrate that certain conditions are associated with other conditions, often by “triangulation” of findings	Internal consistency: the research findings are credible and consistent, to the people we study and to our readers. For authenticity, our findings should be related to significant elements in the research context/ situation
Generalizability of findings	External validity: the researcher establishes a domain in which findings are generalizable	Transferability: how far can the findings/ conclusions be transferred to other contexts and how do they help to derive useful theories?

Table 5-10: Rigour criteria for the positivist and interpretative worldviews. Adapted from (Anon, 2004:p.90)

Representativeness of the finding: Objectivity – v – Confirmability

The RAIGT cannot be entirely objective; the question to ask is: to which extent the theory is confirmable? This notion of confirmability came into place looking at the comparison between the emerging theory and new empirical data collected (Anon, 2004:p.80). To overcome this issue of subjectivity, (Anon, 2004:p.80) suggests to formalise, and to make explicit, the reflexive process underlying the RAIGT.

Reflexivity is “a more active form of self-reflection: a conversation with oneself” (Anon, 2004:p.80), which is described by:

- *“Self-awareness as part of a social context, affecting the phenomena under observation;*
- *Self-awareness as someone who applies biases, prejudices, cognitive filtering and bounded rationality”.*

To test the confirmability of the findings, the author introduced two “operative” questions and their relative answers:

1. Considering the different source of data collected and analysed, was the theory cross-confirmed in any of its concepts and constructs?

Answer: the theory was cross-confirmed in all its concepts and propositions. Each concept and proposition was described by one interviewee, and cross-confirmed by, at least, other two interviewees. The author believes that there is a consensus among the experts interviewed concerning the results of the research. In particular, there is a vast implicit knowledge, which was not entirely captured by the existing literature. The most relevant concepts considered are SPE (Chapter 3), the types of SPE (Section 6.5), SPE-network (Section 6.3), SPE functions (Section 6.4.3). Chapter 7 introduces the theoretical propositions addressing the RO4.

2. Was the reflexive process sufficiently complete and explicit?

Answer: the author believes that the reflexive process was sufficiently complete and explicit. The fundamental concepts of the theory were organised according to coherent clusters and structures; in particular the SPE (Chapter 3), the types of SPEs (Section 6.5) and the functions of the SPE (Section 6.4.3). These concepts required a limited intervention and reflection by the author. Conversely, the SPE-network and its configurations required further reflection, which was documented respectively in Section 7.4. The theoretical propositions introduced in Chapter 7 required deep reflections. While the concepts are mainly “descriptive”, the theoretical propositions are “explanatory” and based on the deep reflection and interpretation of the author. The author exposed the reflection and the governance reasoning alongside the Chapter 7.

Reproducibility of the findings: reliability – v – dependability/ auditability

The positivistic notion of reliability deals to the following question: if two, or more, researchers apply the same method to the same data, do they obtain the same results? This concept of reliability is incommensurable to the interpretative standpoint (Anon, 2004:p.80). Interpretative research cannot answer satisfactorily to this question because the researcher is part of the study and brings his specific knowledge and experience.

Therefore, to ensure “dependable” and “authentic” findings, it is required to establish clear and repeatable procedures showing the researcher position and contribute. It is necessary to: clarify the methods employed in the data collection and analysis, define in detail the result of the methods and document sufficiently them. The reflexivity process needs to be documented (Anon, 2004:p.80):

- To acknowledge the influence of the existing literature;
- To reflect the influence of the author background in forming perception;
- To clarify and record the detailed objectives of the study;
- To authenticate the research findings by explaining how the author get to them.

To test the dependability/ auditability of the findings, the author introduced three “operative” questions and their relative answers:

1. Was the method described in detail?

Answer: the author believes that the method is described in detail in the Chapters 6, 6. Chapter 5 introduced the philosophical assumptions, it justified the method and provided the research rigour criteria.

2. Was the method followed in detail?

Answer: The author assures that he followed the method in detail. To make more accountable the method, some summarising tables, and direct quotations of the interviewees were included.

3. Was the reflexive process described and documented in sufficient detail?

Answer: The research provided a specific account to the reflexive process. The reflective process enabled to formulate the governance theory, which is described in

Chapter 7. The thesis gives account explicitly to the reflection process by mean of the following expressions: “the author believes”, “the author thinks”, etc.

Rigour of the method: internal validity – v –internal consistency

According to (Anon, 2004:p.91): *“It is probably in a rejection of the notion of internal validity that interpretive research garners its most virulent critics. Validity in deductive, hypothesis-based research is ensured by statistically testing correlations between data variables and by ensuring a statistically-significant sample population. Such notions of mathematical proof have no equivalent in qualitative, interpretive research, because (a) collected data represent social constructs, rather than measurable physical phenomena, and (b) data analysis is recognised as subjective and inductive-deductive, rather than as deductively objective.”* Consistently, to have credible interpretative research, it is important to document the connection between the empirical data and the final results. The core issue to tackle is how to communicate, in detail, how the results were generated and cross-tested.

To test the internal consistency of the research, the author introduced two “operative” questions and their relative answers:

1. Was the empirical evidence sufficiently connected to the research results?

Answer: The empirical evidence is firmly connected to the research results. As empirical evidence, the research employed the interview, together with some additional material (e.g. primary data such as examples of contracts). Additionally, the research includes examples (i.e. sort of small case studies) as additional empirical evidence. Most of the empirical evidence came from the interviewees who suggested and cross-confirmed the critical concept and propositions described by the research.

2. Was the inductive process sufficiently explicit and documented?

Answer: The inductive process was sufficiently documented. The research described how the formulation of the theory and the fundamental constructs evolved through the research. At the beginning of the research, the author focused solely on the SPE. The interviews permitted to broaden the scope and to conceptualise the SPE-network. From this point, the research evolved toward a better definition of the key formal instruments of governance, either internal (i.e. the internal corporate governance of SPEs) or external (i.e. the governance mechanisms based on the enforcing instruments

characterising the SPE-network). The inductive process mirrored the theoretical sampling, which is described in Section 5.5.1. Appendix 1 provides a sample of quotes from the experts.

Generalisability of the findings: external validity- v – transferability

Usually, the objective of the positivistic research is to randomly test samples from a large population (Eisenhardt, 1989a). The RAIGT deliberately selects a specific and representative sample of interviewees. The two approaches are consistent with their relative assumptions. The positivist approach seeks to discover “universal laws”. The interpretative approach focuses on “*discerning socially-constructed norms and relationships that are located in a particular culture or context*” (Anon, 2004:p.92). As a result, RAIGT requires different rigour criteria. The external validity can be substituted with the “transferability of the findings”. According to (Anon, 2004:p.97) “*Claims for transferability depend on identifying similarities or differences in the context in which the theory is to be applied*”. This involves a constant comparison between the emergent theory and the data collected.

To test the generalisability of the findings of the findings, the author introduced two “operative” questions and their relative answers:

1. Is the theory representative of a sufficiently large context?

Answer: The theory formulated applies to a large context, i.e. the megaprojects financed on off-balance sheet basis. The theory provides a systemic framework concerning the governance of the SPE-network in different configurations. The theory highlights the role of SPEs in the FGIM, and it describes how they are governed (typically by the investors) and how they control indirectly part of megaprojects. The author believes that the topic under study is incredibly complex and rich of meaningful details. Consistently, the author believes that the balance between the systemic overview compared to the detailed focus on the formal provisions is key for both the comprehension of research phenomenon and its dissemination. The systemic view without the specific details is meaningless, of limited utility and easy to be misinterpreted. Conversely, the local focus can be extremely technical, complex and limiting as it misses the "big picture" about the FGIM. The author attempted different approaches to best address the trade-offs between the systemic and the local focus. In

the end, the author believes the theory provides a balanced trade-off between these focuses.

2. Are the contextual factors sufficiently clarified and formalised?

Answer: The research focuses on those megaprojects involving SPEs, i.e. typically the ones financed off-balance sheet. There is a wide range of contextual variables differentiating these type of megaprojects; for example: the sector, the technology, the organisations involved, the legal context, etc. To consider different contexts, the research (firstly) includes extensive classifications for some concepts, particularly concerning the types of SPE (Section 6.5) and their functions and purposes (Sections 7.4.2, 7.4.3). Thanks to these classifications, the key concepts considered (e.g. SPE, SPE functions) can be adapted to different contexts. Secondly, the research considers different configurations of the SPE-network. The research explores some of the most relevant contextual variables affecting the structure of the SPE-network, and finally, it focuses on the most common configurations. Thirdly, the research describes some peculiarities of specific projects or sectors, e.g. the nuclear and oil & gas (Chapter 7). These three measures permitted to define and address different megaproject contexts. Other contextual variables were not differentiated, for example, the regulatory framework and the jurisdiction. The type of analysis and focus (i.e. the trade-off between the systemic and local focus) employed by the research allowed to remain general, and to avoid the technicalities arising from different jurisdictions and regulatory frameworks.

5.6. Ethical considerations

This thesis is compliant with the ethical standards and the other policies of the University Leeds (The University of Leeds, 2017). The most sensitive ethical aspects associated with this thesis were: (1) the confidentiality of the information collected and (2) the anonymisation of the interviewees and their associated organisations. The Ethics reference provided by the University is MEEC 15-016.

5.7. Summary of the Chapter

This Chapter started describing the gap in knowledge identified by the literature review (Chapters 2-4) and presents the **aim and objectives** of the research.

This Chapter follows describing the **philosophical assumptions**. The research employed a pragmatist paradigm integrating the weak relativism ontology with a combined epistemology, i.e. social constructivism and interactionism.

The Chapter described and justified the **research design**. To do so, the Chapter introduced five main research challenges, namely: (1) limitation in experiment design, (2) limited ability to apply statistics, (3) structural and inherent complexity of the research problem, (4) the confidentiality of the information, and (5) the restricted number of experts. These challenges permitted to compare different research strategies and methods, and to select the most suitable one. The research employs Research Approach Informed by the Grounded Theory (RAIGT). The RAIGT is similar to the grounded theory approach developed by Strauss-Corbin, which allows the reflective contribution of the author.

The Chapter described in detail the **research method** comprising of four cyclic steps: (1) sampling, (2) data collection, (3) analysis, and (4) review. During the initial stages of the research, the (1.1) preliminary sampling steered the (2) data collection. Subsequently, the (1.2) theoretical sampling drove the data collection and analysis interactively. The RAIGT interrupt once the all tests introduced by the (4) review were satisfied.

The (1.1) **preliminary sampling** initiated the RAIGT by focusing on two general questions: (a) are SPEs relevant for the FGIM? (b) if so, how do SPEs influence the FGIM? The questions were directed to experienced lawyers and managers in designing and managing SPEs in megaprojects.

After the initial four interviews, the author employed the (1.2) **theoretical sampling** to prioritise the question to ask, and to determine the type of expert to interview (e.g. lawyer, manager, etc.). The Theoretical sampling focused on the gaps of the emerging theory.

The (2) **data collection** was based on interviews, complemented by relevant documents (e.g. contracts, contract templates, report) provided by the interviewees. The first 3-4 interviews were essentially “open interviews” based on the (1) preliminary sampling. The subsequent interviews were semi-structured, and they included focused questions concerning topics derived from previous interviews and document by the (5) theoretical sampling. In total, the data collection consisted of 28 interviews, with 26 experts, and a total of 1516 minutes of conversation.

The (3) **analysis** was based both on coding and theoretical conceptualisation. The transcripts of the interviews and the documents collected were coded adopting three approaches: open, axial, and selective coding. The open-coding allowed to develop "categories" that are hierarchical representations of concepts. The axial coding provided the empirical information to interlink various concepts. The selective coding permitted to refine both the categories and their inter-links. As part of the theoretical conceptualisation, the author introduced his reflexive role to adopt the information collected in a coherent and meaningful theory.

The (4) **review** introduced a set of questions to assess the status of completion of the research at each cycle of the RAIGT. The author considered four main rigour criteria to determine whether the emerging theory was complete or not. The research considered the following criteria: confirmability, dependability/ auditability, internal consistency, and transferability. At each interaction of the research method, the author reflected on the four rigour criteria using a predefined set of questions. At the 30th research method cycle, the author concluded that the aim of the research (i.e. “To identify how SPEs play a role in the FGIM.”) was achieved by an interpretative theory that satisfies the four rigour criteria considered.

6. Results (A). Types and functions of SPEs in megaprojects

6.1. Chapter Overview

The current Chapter introduces the results of the research. Section 6.2 summarises the answers received through the semi-structured interviews. Section 6.3 describes the evolution of the unit of analysis: from the initial focus on the SPE to the broader scope that includes a portion of the contracting network. The remaining part of the Chapter focuses on the SPEs, which was the initial core topic of the research.

Section 6.4 introduces a general classification for SPEs, including their functions (RO3). The general classification is suitable for any SPEs rather than being tailored to the ones involved in engineering megaprojects. The classification addresses the RO1.

Using the general classification, Section 6.5 classifies the types of SPEs involved in infrastructure megaprojects. In particular, Sections 7.5 addresses both the RO2 and the RO3.

6.2. Answers to the semi-structured interviews

Table 6-1 presents the answers received from the interviewees during the data collection. Table 6-1 highlights the categories (i.e. the more general codes as described in Section 5.5.3) emerged during the data collection. The author observed that despite the questions evolved during the research (Section 5.5.2), the answers converged quite consistently to the key constructs of the research. This was partly due to the style of interview (i.e. semi-structured), by which the interviewees were allowed to discuss their area of expertise. For example, lawyers tended to focus on the contracting instruments, their connection to the functions of SPEs, and the general governance principles. Financiers tended to focus on the role of investors and the “check and balances” they require for non-recourse finance transactions. Always, managers of SPEs mentioned their work in connection with the board of director, the shareholder agreement, and other practical decision-making insights. **Appendix 1** includes partial sample quotes from the interviewees. For confidentiality reasons, the transcripts and the documents collected are not disclosed entirely.

In summary, the following categories emerged. For each category, the following list summarises some of the most relevant information emerged and cross-confirmed by the interviewees.

- Unit of Analysis (the results are presented in Section 6.3)
 - A1. Relevance of SPEs for the governance. Some types of SPEs are critical for the FGIM;
 - A2. Unit of analysis- SPE-network. Considered alone, SPEs are almost meaningless for the FGIM. Their relevance can be understood in connection with other megaproject stakeholders, looking at the formal relations between the SPEs and the key decision-makers for the project. Section 6.3 elaborates on this evidence identifying the most appropriate unit of analysis for the study, which is defined as “SPE-network”;
 - A3. Purposes and functions of SPEs. Different purposes and functions emerged during the interviews. Based on the data collected (i.e. examples of SPEs, indications for the interviewees, primary documents), the author structured the purposes and functions as presented in Sections 7.4.2, 7.4.3.

- A4. Different types of SPEs. There are very different types of SPEs. The main difference exists between real organisations (i.e. the ones characterised by people and a tangible venue and assets) and intangible ones (also known as “shell company”). The interviewees suggested differentiating the SPEs by considering their purposes and functions. The author identified four main types of SPEs as described in Section 6.5.
- Governance Rationales (Chapter 7)
 - A5. Configurations of the SPE-network. SPE-networks (Section 7.4) are contracting networks that can have a variety of configurations. At the systemic level, the governance structure of megaprojects is relatively stable and consistent across alternative SPE-network configurations. Section 7.4 describes alternative configurations. Chapter 7 describes the governance theory (RO4) assuming one reference configuration;
 - A6. Incompleteness of contracts interpretation. The formal governance of SPEs and megaprojects involves a variety of enforcing instruments. The governance associated to SPEs depends extensively on prescriptive norms and formal instruments. The formal governance allows scope for interpretation. SPEs provide the organisational structure to work within the formal governance structure and involves people interpreting the formal governance and governing the megaproject or part of it;
 - A7. Single point responsibility. SPE can be used to integrate multiple responsibilities, e.g. designing, building, operating, maintaining;
 - A8. Conflict of interest and remedies. Conflict of interest is one of the critical problem affecting the governance of SPEs. Section 7.5.1 (How the Shareholding influences the governance of critical SPEs) describes the problem and the remedies usually employed to limit conflicts of interest;
 - A9. Procurement. Interviewees described the main phases and rationales associated with the procurement of megaprojects involving SPEs;
- Check and balances
 - A10. Negative control of investors. Investors, particularly lenders control “negatively” the critical SPEs. They either appoint shadow directors with veto power or retain relevant powers to eventually block the decisions-making of SPEs;

6. Results (A). Types and functions of SPEs in megaprojects

- A11. Trust and reputation. Trust and reputation are key in non-recourse financing transactions. Usually, SPEs are used for joint venturing and project finance. The reputation and trust provide essential guarantees to investors and partners. This thesis acknowledges the relevance of trust and reputation, but it does not investigate these concepts in detail as the scope is limited to FGIM;
- A12. Security package. Usually, “SPE- networks” are back by appropriate mechanisms (e.g. direct contracts), which are triggered in case of severe problems such as the bankruptcy of critical SPEs. The security package provides an additional layer of security to critical megaprojects’ stakeholders, particularly to lenders;
- A13. De-risking the project company. Some types of SPEs (i.e. the project company described in Section 6.5.1) “contract-out” all possible risks and responsibilities. Concerning their “make or buy” decisions, these SPEs just “buy”. Section 7.4.2 describes more in detail the reasons why the project company shall be de-risked. These reasons were explained by the interviewees;
- Governance design instruments
 - A14. Shareholding. The shareholding is one of the critical instruments providing decision-maker powers to shareholders as further described in Section 7.5.1;
 - A15. Shareholder agreement. The shareholder agreement includes the most relevant governance provisions for SPEs, as further described in Section 7.5.1;
 - A16. Loan agreement. In project finance transactions, the loan agreement often includes relevant governance provisions as further discussed in Section 7.5.1;
 - A17. Board of directors. The board of directors assumes significant governance and management responsibilities for SPEs, and the megaproject, as further describe in Section 7.5.1;
 - A18. Internal policies. The internal policies are negotiated and developed right after the incorporation of SPEs. These policies specify in detail the

internal procedures to be followed for decision-making and supplement the other formal governance instruments as further describe in Section 7.5.1;

- A19. Article of incorporation. Potentially, the article of incorporation can be relevant for the governance. However, often the article of incorporation is but often is not as further discussed in Section 7.5.1;
- Context.
 - A20. Context. The principles underlying the governance of SPEs and megaproject are relatively stable and consistent in alternative contracting configurations. There are no significant differences across sectors. The nuclear sector makes an exception as, for regulatory reasons, the application of project finance is limited. Further details concerning the context are discussed through the thesis. Chapter 7 contextualises the theory (RO4) when necessary.

6. Results (A). Types and functions of SPEs in megaprojects

		Code interview/ Code expert	I01	I02	I03	I03	I04	I05	I06	I07	I08	I09	I10	I11	I12	I13	I15	I16	I17	I18	I19	I20	I21	I23	I24	I25	I26	I27	I28	I29	I30	
		Coded Answer	E1	E2	E3	E4	E1	E2	E5	E6	E7	E8	E9	E10	E11	E12	E14	E15	E16	E17	E18	E19	E2	E21	E22	E23	E24	E25	E26	E27	E28	
Unit of Analysis	A1. Relevance of SPEs for the governance	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	
	A2. Unit of analysis- SPE-network	√	√	√	√	√	√															√										
	A3. Purposes and functions of SPEs	√	√	√	√	√	√	√			√	√	√	√	√	√	√	√		√	√	√	√	√			√					
	A4. Different types of SPEs	√	√	√	√	√	√	√	√					√				√		√			√				√					
Governance Rationales	A5. Configurations of the SPE-network	√	√	√	√	√	√				√		√			√	√	√			√			√		√						
	A6. Incompleteness of contracts interpretation		√	√	√		√	√			√			√		√					√						√					
	A7. Single point responsibility			√							√	√		√	√		√	√	√	√	√		√	√	√	√	√	√				
	A8. Conflict of interest and remedies			√	√	√	√	√			√	√		√	√		√					√	√				√					
	A9. Procurement					√	√			√		√	√	√	√				√	√	√		√	√	√	√			√			
Check and balances	A10. Negative control of investors			√	√		√	√			√	√		√	√	√	√			√	√	√	√	√	√	√		√	√	√	√	√
	A11. Trust and reputation						√							√	√					√	√	√	√	√	√	√	√	√	√	√	√	√
	A12. Security package		√	√	√			√					√		√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	A13. De-risking the project company		√	√	√		√	√	√	√	√		√		√	√		√	√				√				√		√			√
Governance design instruments	A14. Shareholding	√		√	√	√	√	√		√	√			√	√		√		√		√	√	√	√	√	√	√	√	√	√	√	
	A15. Shareholder agreement	√	√	√	√			√	√	√	√			√	√	√	√		√		√	√	√	√	√	√	√	√	√	√	√	√
	A16. Loan agreement			√	√		√	√					√	√	√	√				√		√	√	√					√		√	
	A17. Board of directors	√				√	√		√	√	√			√		√	√				√	√	√	√	√	√	√	√	√	√	√	√
	A18. Internal policies						√	√	√	√	√	√	√	√		√					√		√			√						
	A19. Article of incorporation	√	√	√	√		√				√		√	√	√								√				√					
Context	A20. Context		√	√	√	√	√	√	√	√	√	√	√	√	√		√			√	√	√	√	√	√	√	√	√	√	√	√	

Table 6-1: Coded answers from the interviewees

6.3. Evolution of the unit of analysis

The unit of analysis evolved during the research and expanded toward a more systemic perspective, consistently with the inductive and interactive nature of the RAIGT. The evolution of the unit of analysis consisted of four main stages (red circle in Figure 6-1), and it is in line with the topics identified by the theoretical sampling, which was described in Section 5.5.1.

Initially, the unit of analysis focused exclusively on the concept of SPE (stages 1 and 2), allowing to achieve the RO1-RO3. The third stage of development focused on a double structural view concerning the SPEs, i.e. the internal structures of SPEs, and the external contracting structures involving SPEs. The delivering theory (RO4) is mostly based on this unit of analysis. The fourth stage further extended the internal and external structures of SPEs to consider the dynamics and the conditional aspects of FGIM. This fourth level was partially explored to provide a systemic understanding of the negotiation and design of the FGIM, and the role played by SPEs. However, the fourth level was not sufficiently detailed or cross-confirmed to be included in the delivering theory RO4. The resulting four units of analysis considered during the four stages of development are described as follows.

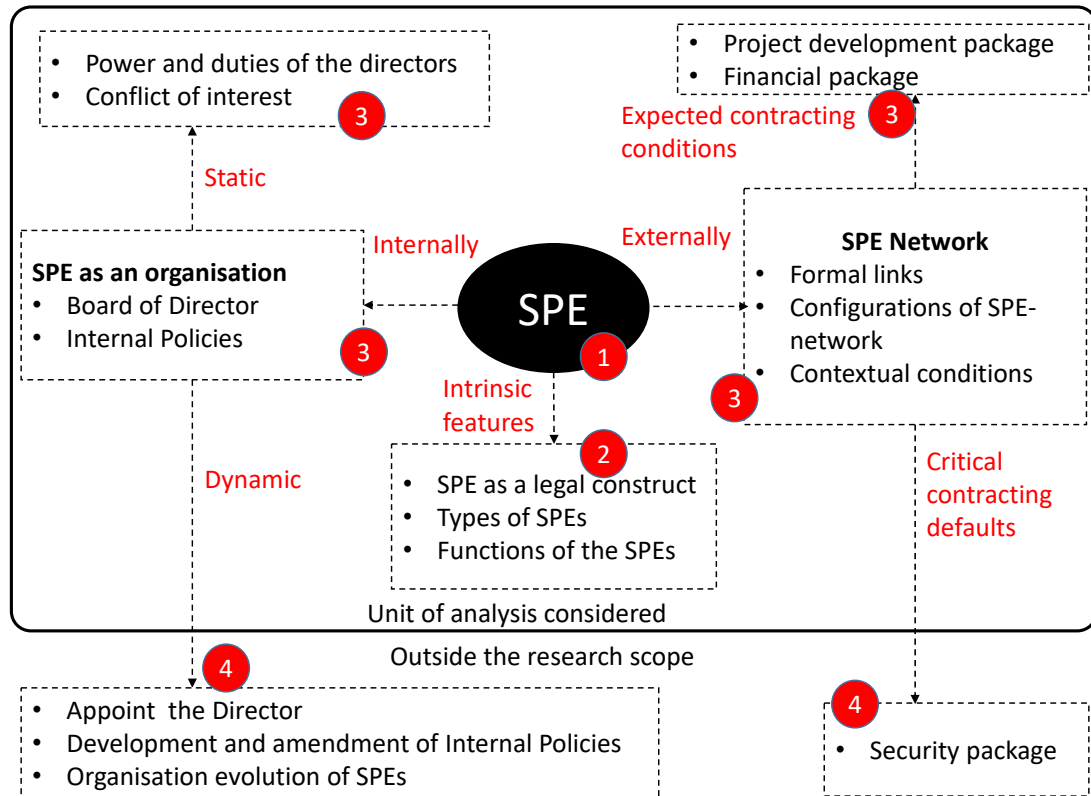


Figure 6-1: Paths toward the definition of the unit of analysis

Firstly, the research focused on the definition of SPE, as already described in Section 3.5. This initial focus was based on the literature.

Secondly, the research focused on the SPEs as a legal construct looking at its inherent features. The research focused on the existing types of SPEs and their function for megaprojects, particularly looking at FGIM. This focus permitted to achieve the **RO1-RO3**. Section 6.4 introduces a general classification of SPEs, including their associated functions. Section 6.5 classifies the existing types of SPEs involved in infrastructure megaprojects.

Thirdly, the researcher considered the SPEs internally and externally. Some experts interviewed focused more on the internal aspect of SPE; others focused on the interconnection between the SPEs and the other stakeholders. The third stage of development permitted to identify the main governance perspective that is based on a structural view. The traditional corporate governance models (Section 4.2), developed for “traditional companies” do not match perfectly with SPEs reality. From one hand, the SPEs are incorporated companies. To the contrary, SPEs are over-constrained

similarly to contracts. To some degree, SPEs combine the governance features of contracts and consortiums to the ones of corporations. Therefore, the existing governance models are partly applicable to the reality of SPEs, but they do not match perfectly with their peculiarities. Chapter 7 focuses on this broader level of analysis.

The understanding of how **SPEs work internally** is essential to understand how SPEs influence the FGIM. To investigate the internal governance of SPEs, the experts suggested focusing on the following aspects, which are the most critical for the internal decision-making of SPEs:

- **Board of directors:** this is probably the most important institution. Many SPEs are almost empty organisations (i.e. they do not have a staff or operating activities) and they only include the board of directors as a mechanism to issue decisions. Section 7.5.1 describes the role of the board of directors for the FGIM;
- **Internal policies,** or quality manuals, regulate the working procedures within SPEs. In case the SPEs undertake physical activities, the internal policies represent the principal regulative instrument. Concerning the design of SPEs, they have a central role, and this is why they were included in the unit of analyses. Section 7.5.1 describes the role of internal policies for the FGIM.

Initially, the investigation of the internal aspects of SPEs focused on **static analysis**, concerning the powers and duties of the directors and the problem of conflict of interests. In the fourth stage of development (partially developed), the unit of analysis was extended to include the dynamic and conditional perspective of governance (Figure 6-1, step 4).

The interconnection between the SPE and other megaproject stakeholders is also critical to understand how SPEs influence the governance of SPEs (**RO4**) permit to understand how SPEs affect the FGIM. SPEs have a relevant role in interconnecting external stakeholders. To some degree, SPEs are contractual and financial hubs, as discussed more in detail in Section 7.6. Consistently, the investigation extended the unit of analysis toward a broader entity, herein defined as **SPE-network**.

"The SPE is not limited to one vehicle but describes the totality of the project vehicles that relate to the support of financing of the project. The securities in such multi-vehicle may be "stapled together" to create a proportionate ownership interest in the overall project, or not. Note that often people structure deals using the phrase "limited purpose entity or group" (LPE) where the enabling entities may include SPEs for issuing, asset-owning (with or without subsidiaries) and a separate operating company." Appendix 1: I02-E2

The **SPE network** is a subset of the overall contracting network in megaproject (that could involve hundreds of organisations). The SPE-network focuses only on the portion of contracting network that is relevant for the research aim: "to identify how SPEs influence the FGIM". In particular, the SPE-network is necessarily centred on the SPEs, and it considers only those stakeholders that are relevant to investigate the FGIM. To define the SPE-network formally, the author employed the institutional theory (Section 4.3.1), focusing on the regulative aspects. The SPE-network is centred on those SPEs that are critical for FGIM (to simplify, the critical SPEs), as clarified in (Section 7.2) in response to the **RO2**.

The **SPE-network** is defined as *"the network comprising of the critical SPEs and the institutional stakeholders interconnected to them by means of enforceable instruments."*

Figure 6-2 represents the SPE-network as a composition of nodes and links:

- **Nodes:** the critical SPEs and the institutional stakeholders (i.e. the ones having legal personality) interlinked to them. Usually, institutional stakeholders include: sponsors, industrial organisations, financial institutions, governments, etc.
- **Links:** formal links such as contracts or securities. To regroup the different formal instruments characterising the SPE-network, the author introduced the concept of "enforceable instruments" as defined in Box 6-1. The term "enforceable instrument" generalises the contracts and other formal instruments. The author did not consider the technicalities arising from these different jurisdictions and legal systems. For the level of analysis considered, the definition in Box 6-1 provides the required trade-off between prescriptiveness and generalisability: The definition

is sufficiently prescriptive to be used operatively, i.e. to discriminate between enforceable and not-enforceable instruments;

The enforceable instrument is a formal relationship between two, or more, agents. The enforceable instrument takes place by means of instruments having legal significance, meaning that the terms of such instruments are recognised, protected and enforced by the court, or by alternative enforcing institutions.

The following terms are synonymous with the term “enforceable instrument”: enforceable link, legal instruments, formal link, and formal instruments.

Examples of enforceable instruments include contracts, deeds, securities, warranties, propriety rights, deeds, royalties, licenses, concessions, etc.

Box 6-1: Enforceable Instrument, definition developed by the author

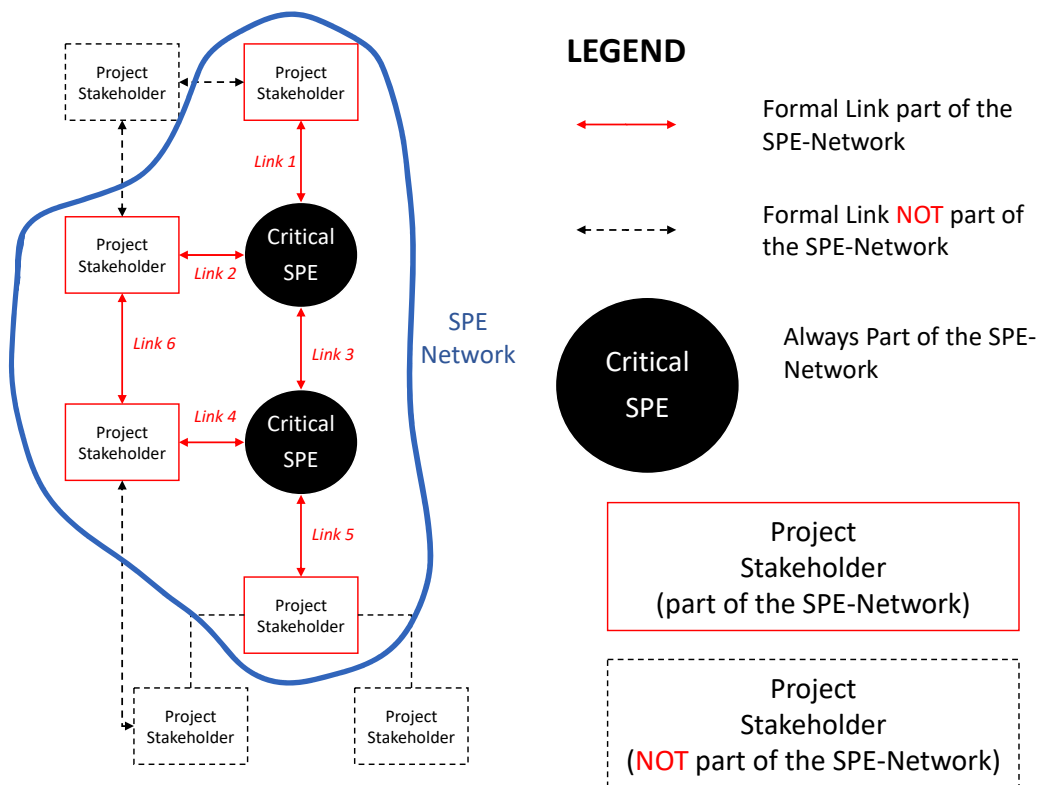


Figure 6-2: The SPE- Network

Concerning the SPE-network, the research focused on the following aspects:

- **Configurations of the SPE-network.** The research considered some basic configurations, out of the infinite possibilities available. The basic configurations are exemplified to illustrate how SPEs influence the FGIM (**RO4**), as further described in Section 7.4;
- **Contextual conditions.** The research identified the conditions in which the incorporation of SPEs is envisaged to govern megaprojects. The contextual conditions delimit the applicability of the research results to certain scenarios, which are quite common in megaprojects. The research findings are generalizable for off-balance sheet megaprojects. Where necessary, Chapter 7 introduces further contextual information (i.e. particularly concerning the differences across infrastructure sectors).

Initially, the investigation focused on the expected contextual conditions associated with the SPE-network. The interviewees highlighted that SPE-networks are negotiated and designed systemically. In particular, SPE-networks involve multiple enforcing instruments, which are clustered according to three main “packages” (Appendix 1: I03-E03, I03-E04, I05-E02, I06-E05, I08-E07, I11-E10, I15-E14, I20-E19, I24-E22, I28-E26), namely: (1) project development, (2) financial, and (3) security packages.

The **(1) project development package** includes the first tier of contracts associated with significant industrial activities including the design, development, operation, and maintenance of the infrastructure. The project development package comprises of critical contracts for the business/ industrial case, including the supply agreement and the offtake contract.

The **(2) financial package** focuses on the financing transactions. It includes primarily the loan, syndicate, and shareholder agreements. Also, it includes other contracts involving investors, financial intermediary and insurance companies.

The **(3) security package** focuses on the backup mechanisms to overcome significant problems. The project development and the financial packages are designed to work in symbiosis under specific contextual “tolerances” (Appendix 1: I02-E02, I03-E03, I03-E04, I06-E05, I11-E10, I13-E12, I15-E14, I16-E15, I17-E16, I18-E17, I20-E19, I21-E2, I23-E21, I25-E23, I26-E24, I28-E26, I30-E28).

"In risk profile, which sits on the SPE, there is a tolerance that sits in there"

(Appendix 1: I05-E02)

In case of significant “shocks”, the project development and financial packages fail to fulfil their original purpose. Significant shocks include the bankruptcy of critical SPE or the default of the critical enforcing instruments composing the previous two packages. The security package is used for risk management purposes, and it provides a backup line of security. Often, the security package provides a real option for investors. In case of significant shocks, critical investors (i.e. usually the syndicate of lenders) have priority toward the assets of SPEs. Often, the security package provides the opportunity to reshape the project development and financial packages entirely, and to finalise the project.

The unit of analysis includes the project development and financial packages as they include the most relevant governance provisions. The author excluded the security package from the unit of analysis as described below.

Fourthly, the research outlined the boundaries of the unit of analysis. The author intended to highlight the systemic and general aspects concerning the design of SPEs and the SPE-networks. The research identifies two relevant perspectives that are almost ignored by the project management community, namely:

- The dynamic evolution of SPEs looks at those governance mechanisms aiming to amend the decision-making powers throughout the lifecycle of SPEs. These mechanisms are predetermined and specified when the SPE-network is designed. Examples of these mechanisms include: the rotation of the directors of the SPE, the pre-agreed exchange of equity shares once a particular stage of the project is reached, the process of amendment of the internal policies, the organisational

evolution of the SPE (Appendix 1: I01-E01, I02-E02, I04-E01, I06-E05, I08-E07, I09-E08, I11-E10);

- The security package provides the basis for governance changes in case of contracting defaults. Often, the security package assigns the decision-making powers to lenders (Appendix 1: I02-E02, I03-E03, I03-E04, I06-E05, I11-E10, I13-E12, I15-E14, I16-E15, I17-E16, I18-E17, I20-E19, I21-E2, I23-E21, I25-E23, I26-E24, I28-E26, I30-E28). The security package identifies the conditional governance that is triggered in critical project scenarios.

Together, the dynamic evolution and the security package provide a novel perspective often neglected in the project management literature. Typically, the governance literature focuses on a single contracting framework, which is often described by a single contracting map (Akintoye *et al.*, 2003; Al-Saadi & Abdou, 2016; Clough *et al.*, 2015; Klijn & Koppenjan, 2016; Megaproject cost action, 2014; Osei-Kyei *et al.*, 2017; Tan, 2007; Whitticks, 2013; Williamson, 1979; Yescombe, 2013). This thesis emphasises that the SPE-network is a representation of the contracting situation in a given moment of time. Due to the dynamic evolution, there are multiple SPE-networks in different project phases. Furthermore, in case of critical circumstances (e.g. default of critical contracts), there might be conditional SPE-networks due to the provisions included in the security package.

The project management community almost ignores these two perspectives. The research acknowledges their relevance for the FGIM without describing in detail the mechanisms characterising them. The author decided to avoid the technical details for these two perspectives for four practical reasons:

- Context dependency: both perspectives are challenging to generalise. For instance, the security package is strongly dependent on the jurisdiction and the applicable law;
- Complexity: the consideration of the two perspectives would increase the complexity of the delivering theory significantly;
- Confirmability: the two perspectives would have been more difficult to be cross confirmed by the experts because of their inherent complexity and context dependency.

- For practical reasons, the author decided to exclude the dynamic evolution and the security package from the scope of research.

6.4. General classification of SPEs

The general classification was obtained by coding and structuring the differential characteristics of SPEs. The author analysed several examples of SPEs described in the literature. The author considered a heterogeneous sample of SPEs to detect “polar types” (Eisenhardt, 1989a) and the differential features among them. The general classification applies to a wide range of SPEs as described in the legal, financial and project management literature. To determine the sample, the author considered the most common and heterogeneous transactions involving SPEs, including: securitisation, trusts, private equity transactions, leasing and other structured financial transactions, project finance, partnering and joint ventures. The inclusion of additional SPEs terminated consistently with the theoretical saturation principle (Eisenhardt, 1989a; Yin, 2013). In particular, the last SPEs considered did not add any new SPE features compared to the ones previously identified.

The general classification was further amended to be consistent with the rest of the research, which focuses on the SPEs in megaprojects. The RAIGT contributed to further specify some parts of the general classification, particularly the functions of SPEs (Section 6.5).

The classification comprises two hierarchical levels: the SPEs features and the values associated with them. **The first level** comprises the “**SPE features**”. The research identified nine main SPE features, namely: (1) legal status, (2) purposes, (3) functions, (4) lifetime, (5) capabilities assets and liabilities, (6) financial structure, (7) risk characterization, (8) ownership and control, and (9) venue. These features provide different perspectives by which the SPEs can be compared. **The second level** concerns the possible “**values**” associated to any of the nine SPE features. For example, the SPE feature labelled “legal status” can be linked to one of the following values: limited liability company, corporation, general partnership⁴, limited liability partnership¹, mutual fund, or trust. The values related to the SPE features are not necessarily

⁴ Only in those jurisdictions where the partnership has legal personality.

mutually exclusive. For some SPE features, more values can coexist together. For example, the SPEs can undertake multiple activities.

Table 6-2 presents the classification of the existing SPEs. Each SPE-feature is further described in the following subsections. Additionally, Table 6-2 highlights three distinctive characteristics in common with any SPE, namely: “fenced entities”, “limited and pre-defined purposes” and the “legal personality”.

The general classification addressed the RO1. The classification includes a Section dedicated to the functions of SPEs that is particularly relevant because central for RO3. To avoid redundancies in the thesis, the current Chapter employs the overarching structure provided by the general classification. However, the functions of the SPEs play a critical role in this thesis. Therefore, Section 6.4.3 is described with further details compared to the others.

6.4.1. Legal Status

The legal status describes the kind of corporation incorporating the SPE. Depending on the jurisdiction considered there are different types of corporations available. The SPEs considered were integrated into a wide range of types of corporation. Some of the most common options are: limited liability company, limited liability partnership, mutual fund, and corporation. They differ for many factors, such as: minimum capital requirements, limitation of liabilities for sponsors, implied governance structure, tax transparency, information requirements (Kraakman *et al.*, 2017; Vinter, Price & Lee, 2013).

The legal personality is an indispensable feature related to the incorporating vehicle of the SPEs (Section 3.5). The types of corporations listed above may have legal personality in some countries and not in others. For instance, the partnership has legal personality only in some countries (e.g. UK) and not in others (Vinter, Price & Lee, 2013:p.13). Consistently, the partnership is a suitable option for SPEs only in those countries where it has legal personality.

6. Results (A). Types and functions of SPEs in megaprojects

SPE FEATURES (Clusters)	POSSIBLE VALUES ASSOCIATED TO THE SPE FEATURES (Codes)		
1-Legal status	SPE has legal personality		
	Limited Liability Company		
	Limited Liability Partnership		
	Mutual Found		
	Corporation		
2-Purposes	Pre-defined Purposes		
	Apparent profit-making motive		
	Structured Finance		
	Tax optimisation		
	Price arbitrage		
	Balance Sheet Management		
	Partnering and alliances		
	Isolating and homogenising cash flows and business risk of a specific asset, asset-class		
	Eases Asset Transfer		
	Deals with legal and regulatory requirements		
	Implicit purposes		
3- Functions	SPEs in quality of legal construct	Contracting	
		Collecting	
		Co-owning and investing	
		Transferring	
		Constraining	
		Isolating	
		Accessing to jurisdictions	
	SPEs in quality of element of SPE-networks	Channelling risk and responsibilities	
		Channelling assets and funds	
		Transforming risks profiles	
		Clustering and institutionalising multiple stakeholders	
	SPEs in quality of organisations	Performing specific activities	
		Managing activities	
		Administrating contracts	
		Governing	
	4- Lifetime	Defined and Limited	
		Perpetual	
5- Capabilities, Assets, and Liabilities	Financial assets and liabilities		
	Intangible assets (E.g. Rights, Licenses, Royalties, Patents, etc.)		
	Human-related capabilities		
	Physical Assets		
6- Financial Structure	% senior debt		
	% junior/subordinated debt		
	% mezzanine debt and hybrid financing		
	% preferred equity		
	% common equity		
Collateralized Finances			
Semi recourse Financing			
Non-recourse Financing			
7- Risk characterisation	Bankruptcy remoteness		
	Low probability of insolvency		
	Risk Sharing Instrument		
	Risk transformation instrument		
8-Ownership And Control	Fenced organisation		
	Self-fenced\Orphan organisation		
	Shared/ distributed ownership		
	Public and Private Parties (PPP) involved together into the SPE		
	Passive management (e.g. autopilot mechanisms)		
	External management (directors, trustee, external administrators, etc.)		
	The entity is primarily owned by one or more financial institution		
	The entity is primarily owned and controlled by infrastructure-related companies (e.g. Utilities, contractors, etc.)		
9-Venue	Resident in off-shore jurisdictions		
	The venue is located where the SPE undertakes his activities		
	The SPE is incorporated on the same jurisdiction of its sponsors		
	SPE has a physical location		

Table 6-2: Classification of the existing SPEs. LEGEND: highlighted in yellow the distinctive features of any SPE

The selection of the most appropriate vehicles to incorporate the SPE is based on many trade-offs that change depending on the purpose of the SPE, and on the jurisdiction considered. One of the critical aspects to consider is the degree of separation of SPEs from their sponsors (Appendix 1: I02-E02, I03-E03, I03-E04, I05-E02, I06-E05, I07-E06, I08-E07, I09-E08, I11-E10, I13-E12, I15-E14, I17-E16, I18-E17, I21-E2, I26-E24, I28-E26, I30-E28).

“The performance risk is discharged through here because the borrowers aren't taking the risk.” (Appendix 1: I03-E03)

“Because the SPV subcontract as much as possible because the banks don't want the SPV to take on any risk.” (Appendix 1: I11-E10)

“In my experience, tend to operate is to...hemmm they want to transfer all the risk further down the line, within the project organisation.” (Appendix 1: I17-E16)

From one hand, SPEs are meant to be separate and bankruptcy remote from their owners; consistently with the definition (Section 3.5) SPEs are fenced organisations. The separation between the SPE and the sponsors concerns the risk of bankruptcy of the SPE primarily (Appendix 1: I03-E03, I03-E04, I27-E25, I28-E26, I30-E28). The isolation is a necessary condition for most structured finance transactions, including project finance. The separation is reflected on the accounting, and the SPEs are off-balance sheet vehicle for their sponsors. Regarding the separation and independence, the “limited liability corporations” provide a higher level of separation and independence. **To the other hand,** SPEs are often used for tax optimisation purposes because the accounting consolidation of SPEs can provide tax advantages for their sponsors. For instance, when SPEs produce losses for a long period of time (e.g. the development of infrastructure megaprojects) the accounting consolidation reduces the taxable income of sponsors. The extent to which the tax benefit of the SPE is associable to sponsors is called **tax transparency** (Helminen, 1999; PriceWaterhouseCoopers LLP, 2006:p.11; Vinter, Price & Lee, 2013:p.41). In particular, tax transparency refers to the extent to which the sponsors are taxed in respect of the revenues generated by their SPE (Vinter p.42). In the “tax opaque” scenario (i.e. the opposite of the tax

transparent), the potential tax credit is not transferred to the sponsors and therefore is wasted. Usually, partnerships provide a good tax transparency.

6.4.2. Purposes

SPEs can be employed for a variety of purposes, and often one SPE serves multiple purposes concurrently. A critical issue in the definition of the purposes their inherent ambiguity. Often, SPEs are part of overarching transactions. Examples of the transaction considered are: securitisation, project finance, leasing, etc. To give account to these two levels of analysis (i.e. the transaction and the SPE), the research considered two distinctive terms: purposes and functions. The purposes describe the objectives of transactions while functions (Section 6.4.3) describe the objectives of the SPE to support the transaction.

The interviews with the experts were carefully analysed by the researcher to make consistent this terminology. The experts interviewed did not necessarily use the same terminology because of the inherent ambiguity associated with the two levels of analysis. The author harmonised and clarified the two level of analysis as part of the reflection process allowed by the RAIGT.

According to the terminology employed, there is a broad range of purposes associated with transactions involving SPEs. The most common are: apparent profit-making motive, structured finance, tax optimisation, price arbitrage, balance sheet management, partnering and alliances, isolating and homogenising cash flows and business risk of a specific asset, eases asset transfer, deals with legal and regulatory requirements. All these terms emerged from the interviews with the experts.

Another relevant aspect concerning the purpose of SPEs is their constrained nature. These purposes of SPEs are pre-defined by definition (Section 3.5), this is one of the key differences between SPEs and the other types of companies. Pre-definition of purposes can be either implicit or explicit. For instance, when a single sponsor owns SPEs, there is no need to constrain their purpose. In such cases, the pre-defined purposes of SPEs are implied by their sponsors and reflected in their activities. These implicit purposes highlight the difficulty of formally recognising SPEs from other

types of corporations. There are examples of SPEs having inherent purposes in private equity transactions. There are examples of SPEs isolating assets and liabilities on behalf of single sponsors such as some types of “BidCo” (Cumming, 2012, 2009). Typically, the purposes of SPEs are predefined and defined by enforceable instruments (Section 6.3) limiting “de facto” the scope of action of the SPEs. Differently, to normal corporations, the enforcing instruments play a central role in the governance of SPEs.

6.4.3. Functions

The functions and purposes of SPEs can be confused as they are contiguous and interdependent characteristics. The difference between purposes and functions is described in Section 6.4.2. The functions of the SPE are the instrumental objectives attributable to the SPE in supporting its associated transaction.

Multiple perspectives can analyse the functions of the SPE; the research considered three main perspectives that emerged in the application of the RAIGT, namely:

1. The SPE as a legal construct;
2. The SPE as an element of the contracting network (i.e. SPE-network);
3. The SPE as an organisation.

These three perspectives were obtained from the RAIGT, and they required the active reflection and conceptual mapping of the researcher. To make consistent the general classification of the SPEs with the opinion of the experts interviewed, the researcher restructured the functions according to the three unit of analysis evolved from the application of the RAIGT (Section 6.3).

The examples of SPEs considered provided a comprehensive spectrum of the ways by which SPEs support their associated transactions. These were restructured adopting bottom-up coding to cluster all these functions in general and meaningful clusters, which are the functions presented in this Section. Section 6.5 provides further details concerning the function of the SPEs for megaprojects, particularly regarding their formal governance. This additional contribute permitted to answer the RO2 and RO3 and integrated the contributes of the expert interviewed.

General functions of the SPEs in quality of legal construct

In quality of legal construct, SPEs provide one, or more, of the following functions to their associated transactions:

- **A1: establish contractual relationships** (Appendix 1: I02-E02, I03-E03, I03-E04, I05-E02, I06-E05, I08-E07, I11-E10, I12-E11, I15-E14, I16-E15, I18-E17, I20-E19, I21-E2, I23-E21, I26-E24). SPEs are capable contractual relationships because of their legal personality. This ability makes them suitable for a variety of purposes. The capacity to establish contractual relationship has deep implications in many other aspects, including: risk management, governance, accounting, financing, etc. for example, thanks to their ability to establish a contractual relationship, SPEs can borrow money, and transform their associated risk by means of hedging instruments. The ability to establish contractual relationship makes SPEs capable of structuring complex transactions. This capability is further described in the Section dedicated to the function of SPE in quality of SPE-network;
- **A2: collect funds** (Appendix 1: I02-E02, I03-E03, I03-E04, I04-E01, I05-E02, I06-E05, I07-E06, I08-E07, I11-E10, I12-E11, I13-E12, I15-E14, I16-E15, I18-E17, I19-E18, I20-E19, I21-E2, I23-E21, I26-E24). Because of their legal personality and corporate structure, SPEs can raise funds in many forms including equity, debt, junior debt. SPEs are as an investing vehicle for many transactions, e.g. project finance, securitisation and many private equity transactions;
- **A3: own assets** (Appendix 1: I02-E02, I03-E03, I03-E04, I06-E05, I08-E07, I11-E10, I12-E11, I15-E14, I16-E15, I19-E18). Because of their legal personality, and their contractual capacity, SPEs can own assets, including intangible proprieties, real estate, equipment, land, securities. This function is exploited in almost every transaction, including securitisation, project finance, leasing, tax optimisation transactions, testamentary trusts, etc.
- **A4: hire people** (Appendix 1: I01-E01, I02-E02, I03-E03, I03-E04, I04-E01, I05-E02, I06-E05, I09-E08, I10-E09, I11-E10, I16-E15, I19-E18). Because of their contractual capacity, SPEs can hire people, and therefore they can undertake activities as further described in the Section dedicated to the function of SPEs in quality of organisations;

- **A5: ease the transfer of ownership** (Appendix 1: I02-E02, I05-E02, I06-E05, I09-E08, I11-E10, I12-E11, I15-E14, I16-E15, I19-E18, I21-E2, I23-E21). Because of their corporate structure, SPEs can be used a vehicle to transfer the ownership a compound of assets. The same ability to transfer is used for the liabilities and risks associated to the SPEs;
- **A6: provide multiple ownership structures** (Appendix 1: I01-E01, I02-E02, I04-E01, I05-E02, I06-E05, I09-E08, I11-E10, I12-E11, I15-E14, I16-E15, I19-E18). Because of their corporate structure, SPEs combine multiple owners and provide special governance mechanisms. This feature is particularly relevant for the joint venture transactions. Consistency is critical for project partnering, including PPPs;
- **A7: limit and constrain the use of specific assets** (Appendix 1: I02-E02, I03-E03, I03-E04, I04-E01, I08-E07, I09-E08, I11-E10, I12-E11, I15-E14). Because of their predefined purposes, SPEs can restrict the use and management of the assets they possess. These limitations are critical for almost every type of transaction, including: project finance, leasing, securitisation, trusts, project partnering, etc.
- **A8: limit and constrain the repayment of its associated liabilities** (Appendix 1: I02-E02, I03-E03, I03-E04, I08-E07, I12-E11, I13-E12, I15-E14). Because of their predefined purposes, SPEs can restrict the capacity of indebtedness and regulate the refund of the creditors and investors. These limitations are critical in project finance transactions;
- **A9: limit and constrain the scope and management of specific activities** (Appendix 1: I02-E02, I03-E04, I04-E01, I08-E07, I09-E08, I10-E09, I11-E10, I19-E18). Because of their predefined purposes, SPEs can compel the management of their activities according to a specific governance framework. This thesis explores in detail the FGIM;
- **A10: limit and constrain the capacity of establishing further contractual relationships** (Appendix 1: I02-E02, I08-E07, I13-E12, I15-E14, I26-E24). The freedom of SPEs to embark additional contractual relationships is limited in many transactions, including project finance, leasing, etc.
- **A11: isolate assets and liabilities** (Appendix 1: I02-E02, I03-E03, I03-E04, I05-E02, I06-E05, I08-E07, I09-E08, I11-E10, I12-E11, I13-E12, I15-E14, I18-E17, I21-E2, I26-E24, I28-E26, I30-E28). Because of their fenced structure, SPEs can

isolate assets and liabilities from both their originators and sponsors and vice-versa. This feature has critical implications regarding risks management (e.g. bankruptcy remoteness principle), and accounting (i.e. the SPE is an off-balance sheet vehicle). This function is critical in almost all transactions, including: project finance, trusts, leasing, securitisation, joint venture and partnering, tax optimisation transaction, etc.

- **A12: isolate formal responsibilities** (Appendix 1: I02-E02, I03-E03, I03-E04, I04-E01, I05-E02, I06-E05, I08-E07, I09-E08). Because of their fenced structure, SPEs can isolate their associated responsibilities from his sponsors. The responsibilities associated with SPES derive from two main sources. Firstly, the responsibilities arising from their contracts (function A1) and their financial liabilities (function A11). Secondly, SPEs have legal personality, and they are subjected to the responsibilities implied by the law, e.g. tort law. Many types of SPEs do not need to isolate responsibilities, because, for example, they are passively managed, or they have limited contractual and legal obligations. In megaprojects and particularly in project finance and PPP, the SPEs play a central role in isolating the set of project responsibilities;
- **A13: isolate risks** (Appendix 1: I02-E02, I03-E03, I03-E04, I05-E02, I06-E05, I07-E06, I08-E07, I09-E08, I11-E10, I12-E11, I13-E12, I15-E14, I17-E16, I18-E17, I19-E18, I20-E19, I21-E2, I23-E21, I26-E24, I28-E26, I30-E28). Because of the functions (A11, A12), SPEs isolate the risks arising from their assets, liabilities, formal responsibilities and activities. This function is critical for almost every SPE transaction including: securitisation, project finance, PPP, etc.
- **A14: provide access to specific legislation and jurisdiction** (Appendix 1: I02-E02, I05-E02, I16-E15, I24-E22, I26-E24). SPEs are incorporated in a particular jurisdiction, which makes them susceptible to the existing law and the judicial system. This function is implicit to all types of SPE and associated transactions. It is particularly relevant for those SPEs that are critical for tax optimisation purposes, protection of security interest, or accounting related purposes. This function enables to formally link the whole SPE-network and transaction to one or more jurisdictions.

Although the list of functions presented above is likely to be extended due to the frequent use of SPEs in innovative transactions, it is sufficiently broad to cover all examples of SPEs and transactions considered. Thanks to the reflective role of the author, the list can be summarised in more general categories (AG) to highlight what SPEs are for, in particular:

- **AG1: contracting**, i.e. establishing a contractual relationship as a result of their legal personality. This function is further analysed in the Section: SPE-network;
- **AG2: collecting**, i.e. collecting and pooling “elements” because of their legal personality and contractual capacity. The term “elements” include asset, liabilities, people, etc.
- **AG3: co-owning and investing**, i.e. easing the mutual ownership and the co-investment on “things”, such as assets, business, etc.
- **AG4: transferring**, i.e. eases the transfer of “things”, including assets, liabilities, responsibilities, risks, etc. This general function is derived from the legal personality and the corporate structure associated to the SPEs;
- **AG5: constraining**, i.e. restricting and limiting “things”, such as the contractual capacity, the debt capacity, decisions and activities, the uses of the assets, etc. This function is derived from the pre-defined purposes of SPEs;
- **AG6: isolating**, i.e. isolating assets, liabilities, contractual responsibilities, risks, etc. The isolation stems from the fenced structure characterising SPEs;
- **AG7: accessing to jurisdictions**, i.e. providing access to specific legislation and jurisdiction. This function stems from the incorporation of the SPE in a particular jurisdiction.

General functions of the SPEs in quality of element of SPE-networks

In quality of element of the SPE-networks, SPEs provide one, or more, of the following functions for their associated transactions:

- **B1: channelling risk and responsibilities** (Appendix 1: I02-E02, I03-E03, I03-E04, I05-E02, I06-E05, I07-E06, I08-E07, I09-E08, I11-E10, I13-E12, I15-E14, I16-E15, I17-E16, I18-E17, I19-E18, I21-E2, I26-E24, I27-E25, I28-E26, I30-E28). SPEs are often used to interlink and bring consistency across multiple enforcing instruments characterising the transaction. Often the SPE is the only contracting party involved in all formal links (i.e. enforceable instruments)

characterising the transaction. As a result, SPEs act as contracting hubs as they enable to convey risks and responsibilities across multiple contracting circuits. Therefore, SPEs are critical instruments to structure complex transactions and contracting networks (i.e. SPE- network);

- **B2: channelling assets and funds** Appendix 1: I02-E02, I03-E03, I03-E04, I05-E02, I06-E05, I07-E06, I08-E07, I09-E08, I11-E10, I13-E12, I15-E14, I16-E15, I17-E16, I18-E17, I19-E18, I21-E2, I26-E24, I27-E25, I28-E26, I30-E28). Similarly to the first function (i.e. channelling risk and responsibilities), SPEs enable to settle multiple contacting circuits and to convey multiple exchanges of funds and assets. Some SPEs are almost predefined and sometimes commoditised, e.g. leasing and securitisation. Others are more complex and require an active “*traffic management*” concerning the flows of funds and assets characterising the complex transaction;
- **B3: transforming risks profiles** (Appendix 1: I05-E02, I06-E05, I07-E06, I08-E07, I19-E18, I21-E2, I26-E24, I27-E25, I28-E26, I30-E28). SPEs enable to restructure and transform risks. Firstly, the financial structure of the corporate vehicle permits to stratify the risk profile associated with security investment one the SPE. The contractual capacity allows the SPE to transform and channel their associated risks to external counterparts. For instance, the adoption of heading instrument (e.g. insurance) permits to transform the risks associated to the SPE;
- **B4: clustering and institutionalising multiple stakeholders** (Appendix 1: I03-E03, I03-E04, I04-E01, I05-E02, I06-E05, I08-E07, I09-E08, I11-E10, I13-E12, I16-E15, I18-E17, I19-E18, I21-E2). SPEs can cluster multiple stakeholders under a common incorporated vehicle. Consistently, SPEs enable performing joint responsibilities, join activities, to co-invest, to co-own assets, to co-issue debts, etc. For this reason, SPEs are widely used in project financing and partnering.

General functions of SPEs in quality of organisations

In quality of organisation, SPEs provide one, or more, of the following functions for their associated transactions:

1. **C1: performing activities** (Appendix 1: I01-E01, I02-E02, I04-E01, I05-E02, I06-E05, I09-E08, I10-E09, I11-E10, I16-E15, I17-E16, I18-E17, I21-E2, I23-E21, I25-E23). Most types of SPEs do not undertake any physical activities. However,

in the infrastructure and industrial sector, sometimes SPEs conduct specific activities. Often SPEs operate and maintain a particular facility or infrastructure. Sometimes, SPEs are also used to access specific markets, for R&D purposes, the construction and design of an infrastructure, or other undertakings;

2. **C2: managing activities** (Appendix 1: I01-E01, I02-E02, I04-E01, I05-E02, I06-E05, I08-E07, I09-E08, I10-E09, I11-E10, I12-E11, I15-E14, I16-E15, I17-E16, I18-E17, I21-E2, I23-E21, I25-E23). Some types of SPEs are “*real*” and self-managed organisations. Within the limit established by their predefined scopes and purposes, SPEs can restructure themselves;
3. **C3: administrating contracts** (Appendix 1: I01-E01, I02-E02, I04-E01, I05-E02, I06-E05, I08-E07, I09-E08, I10-E09, I11-E10, I12-E11, I15-E14, I16-E15, I17-E16, I18-E17, I21-E2, I23-E21, I25-E23). Often SPEs are small organisations managed by external administrators or periodic meetings of the board of directors; e.g. securitisation and trusts. In such circumstances, SPEs’ directors focus on the liquidity management and the administration of the existing contractual obligations. Complex transactions (e.g. project finance) often require the employment of dedicated staff to administer the contractual obligations associated to the SPE;
4. **C4: governing** (Appendix 1: I03-E03, I03-E04, I04-E01, I05-E02, I06-E05, I07-E06, I08-E07, I09-E08, I11-E10, I16-E15, I17-E16, I18-E17). A critical function provided by SPEs is governance. The typical structure is grounded on the corporate governance models and organisational structures. Additional contracting provisions enable to tailor the corporate governance structure to the specific purposes and functions predefined for the SPE.

6.4.4. Lifetime

The time frame of SPEs can vary significantly depending on their functions. Some SPEs might have a very short life because their functions are limited in time; for example, the single transfer of funds across multiple jurisdictions. Other SPEs might last indefinitely because their purpose is indefinite in time. For example, some SPEs are permanent vehicles to hold some assets. In this example, the purpose of the SPEs is very limited in scope but indefinite in time.

Concerning the lifetime, a relevant question is: what happens at the end of the life of the SPE? The sample of SPEs considered revealed two main scenarios.

Firstly, some SPEs are terminated either because they fulfilled their functions or because of they bankrupt. In these scenarios, SPEs are liquidated either voluntarily (i.e. the sponsor take the decisions) or compulsory (i.e. the courts impose this solution).

Secondly, SPEs can transform their status at the end of their lifecycle, and they cease to be qualified as SPEs. Often, at the end of their lifecycle, the SPEs are released from their pre-defined purposes and functions, and therefore they become a type of company other than an SPE, i.e. a “standard” company. Once the contracts are terminated (e.g. for completion) the purposes are no more predefined, and what is left is an incorporated organisation. Sponsors might decide to use this organisation as a “standard company” by changing the statute and providing the company with a broader mission and strategy. This scenario is not frequent, but there are examples of joint ventures that evolved in such way.

There are other ways to transform the status of SPEs. For example, in “Leverage buyouts” SPEs are merged with a target company (Cumming, 2012). At the end of the transaction, the SPE is combined with the target company and ceases to be an SPE.

Other types of SPEs evolve during their time. Once they complete the original purpose, they set new ones and become other SPEs. This pattern is frequent in project finance where the SPEs evolve throughout the project development.

6.4.5. Capabilities, assets, and liabilities

SPEs can have a broad range of capabilities, assets and liabilities depending on the circumstance considered. Most types of SPEs are used only as a legal/ organisational vehicle to hold specific assets and liabilities. In securitisation transactions, the SPEs are usually provided with only financial or intangible (e.g. propriety rights) assets and liabilities. The same applies to other structured transactions.

In leasing tractions, SPEs retain the ownership of physical assets, like industrial equipment, aeroplanes, estates, etc. However, these tangible assets are managed and operated by the lessees. Even if the asset is physical, the SPE is more a legal construct than an actual organisation. In practice, the SPE is a legal vehicle containing ownership titles and contracts. In other words, the vehicle is a file that is stored in the archive of some financial institution or legal studio. Therefore, these SPEs have no physical venue or capabilities to perform any activity.

In project finance, SPEs are often highly leveraged; they have a large debt, limited equity and some form of intangible assets such as: licenses, concessions, and offtake agreements (i.e. they have the right to sell a given product or service according to specific contractual conditions).

In the jargon, these kinds of intangible SPEs are called: shell companies, shelf corporation, mailbox companies, email company or aged corporation; these terms can be used as synonymous.

Conversely, there are SPEs that are equipped with a broad range of capabilities to fulfil their intended functions and purposes. In the infrastructure sector, there are incorporated joint ventures, which are SPEs undertaking critical activities of the project including the design, construction and operation of megaprojects.

To measure the extent to which the SPE is real and capable of doing some activity, the best driver is probably the availability of personnel. According to this driver, it is possible to observe a large spectrum of potential SPEs. Most types of SPEs have no personnel. In project finance, some SPEs have limited personnel, e.g. the board of directors only. Effectively, directors meet every “*n*” days, weeks, or months depending on the phase of the project. Often the project director is not directly hired by the SPE but he is just appointed as a director working with the sponsoring firms. Typically, the directors are assigned to SPEs in “secondment” or according to a “*service/ administration contract*”. On the other edge of the spectrum, some “*more*” operative SPEs can hire personnel adopting different contractual forms. For the construction activities, SPEs can hire personnel directly taking fixed-term

appointments. For longer phases such as the operation, the SPEs can eventually hire personnel permanently as their lifetime is expected to be longer than the appointment of staff.

6.4.6. Financial structure

The financial structure of SPEs refers to the relative distribution of capital among the existing capital categories (Gatti, 2007). The capital of companies is structured in different security categories, i.e. senior debt, junior (or subordinated) debt, mezzanine debt and hybrid financing (e.g. convertible debt, convertible equity), preferred equity and common equity. Different investors have different “risk appetite” (i.e. predisposition to the acceptance of risk as opposed to risk aversion) and different interests concerning the control of SPEs. Consistently, investors participate in various securities. These security categories define the order of priority in case of liquidation (either voluntarily or compulsory) of companies.

Some types of SPEs have a very complex financial structure, i.e. they involve several types of securities associated with the different capital categories. This is the case of the SPEs underlying the securitisation transaction. In securitisation, SPEs are used to engineer the various financial products matching different investors’ expectations. Typically, the securities are standardised and certified by the credit agencies. The different capital categories provide additional flexibility and scalability to the designer of the SPE to match the underlying assets (regarding risk and revenues) as well as to tailor specific investor expectations.

In project finance, the SPEs are highly leveraged, i.e. debt is prominent compared to equity. Many other examples of SPEs are highly leveraged in private equity transactions, e.g. Leverage Buyout. In general, when the purpose of the SPEs is to increase the debt capacity on off-balance sheet basis, the resulting SPEs are necessarily leveraged. In the context of project finance, infrastructure Megaprojects require many types of investors to leverage the capital needed. Depending on the country considered and the type of infrastructure, the capital structure can change widely. Usually, project finance involves massive debts (80-95%) compared to equity (20-5%) (Appendix 1: I02-E02, I03-E03, I03-E04, I07-E06, I10-E09, I11-E10, I13-E12, I18-E17, I19-E18,

I23-E21, I24-E22, I28-E26); often, a syndicate of banks lends a large portion of the debt. The recent trend considered the increase of the involvement of institutional investors as passive equity holders (Appendix 1: I11-E10, I12-E11, I18-E17, I21-E2, I28-E26). Another recent trend is the increasing adoption of project bonds. The equity holders are typically industrial actors involved in the megaproject such as the client, the main contractor, the technology provider and other critical stakeholders. Insurance policies (e.g. monoline insurances) and other hedging instruments further complicate the financial structure of SPEs. The financial structure of SPEs might result even more complicated if the SPE-network perspective is taken into consideration. Sometimes, the financial structure is designed across multiple SPEs. This is the case of the intermediate SPEs described in Section 6.5.3. These complex structures are widely used in securitisation, project finance and private equity.

Other SPEs have a simpler financial structure, e.g. only equity. In these circumstances, the SPEs are used merely as asset vehicle or as a cluster to regroup some enforcing instruments. Often, the SPEs involved in leasing transactions, or other tax optimisation transaction, have a relatively simple financial structure.

6.4.7. Risk characterisation

The risk management is an essential aspect characterising the design of SPEs since their first uses in the 70's for the securitisation transactions. Since then, the risk related issues continued to play a central role for SPEs.

SPEs need to be incorporated to have legal personality (or capacity), consistently they are entitled to own things, establish contractual relationships, and bear risks. Frequently, SPEs are used to encapsulate specific risks, and sometimes to isolate them. The risks associated with the SPEs are the ones derived from the compound of:

- The intrinsic risks of the assets they own, e.g. if the SPE owns an asset changing in value (e.g. real estate, machinery, capital stock or any other), its value will change accordingly;
- The risks arising from the activities they undertake, including the liabilities arising in tort law (e.g. negligence);

- The risks resulting from the contractual obligations (or other enforceable obligations) they undertake with third parties.

Different types of SPEs can have different characterisations regarding risks. Some are relatively “risk-free”. For example, those SPEs without contractual obligations, which do not undertake an activity, owning assets relatively stable in value. These types of SPEs can be used to isolate or transfer (or both) specific assets.

Conversely, other types of SPEs are characterised to be very risky, and dynamic in capital value. For example, the so-called “bad companies”, which are SPEs that are unbundled from corporations in crisis. For the moment they exist (which sometimes is very limited), bad companies are characterised to be at the high risk of bankruptcy.

Between these two edges, SPEs can have very different risk profiles. However, the SPEs are frequently associated with pre-qualified risks that are typically hedged using contracts, insurance policies, derivatives or other instruments. As a result, many SPEs have a low probability of insolvency under normal/ expected contextual circumstances. This is the principal rationale in securitisation and other transactions. There are remarkable exceptions to this principle as demonstrated in 2008 by the subprime crisis (Schwarcz, 2008).

The principle of “low probability of insolvency” is also pervasive in project finance transactions. The SPEs collecting the vast debt are designed to discharge, by means of enforcing instruments, their risk to external stakeholders. Consistently, in project finance, the existing risks are redirected contractually to “the party that is in the better position to manage that risk”; this is a general rationale adopted in negotiating and designing SPE-networks (Appendix 1: I01-E01, I02-E02, I03-E03, I03-E04, I04-E01, I05-E02, I06-E05, I08-E07, I09-E08, I10-E09, I11-E10, I12-E11, I15-E14, I16-E15, I18-E17, I19-E18, I21-E2, I23-E21). As a result, many enforcing relationships involving SPEs give effect to this principle. For example, the market risk is shifted to the offtaker who secures that risk with the offtake contract. The construction risk is typically transferred to the main contractor (or a consortium, or another SPE devoted

to the construction) by mean of EPC contracts⁵. As a result, these types of SPEs (i.e. the project companies explained in Section 6.5.1) are used as a contractual hub to pool the whole project risks and to redirect them to the relevant stakeholders who are capable of bearing and managing it. Theoretically, this contractual nexus enables the SPEs to have a low probability of insolvency. However, the contracting is far to be an exact science, and it is not as effective as in theory. For example, the EPC contracts are supposed to transfer the whole construction risk to the main contractor; for many practical reasons, EPC contracts often fail to transfer the whole construction risks. Many challenges jeopardise the effectiveness of the contracting instruments; for example litigation between the contracting parties, the bankruptcy of a critical stakeholder, the frustration of contracts (i.e. terminated for unforeseeable and exceptional contextual conditions), etc. Additionally, contracts always include gaps, flaws and inconsistencies.

As a result, the “low probability of insolvency” shall be considered more as a theoretical and indicative principle rather than an empirical one. For this reason, in project finance, the SPE-network includes a backup contractual network as part of the “security package”. This provides additional guarantees for those sponsors relying extensively on the performance of the SPEs.

Another risk characterisation that is available in many types (but not all) of SPEs is the principle of bankruptcy remoteness. According to this principle, the SPE and its sponsors have limited exposure (or no exposure at all) to the bankruptcy of the counterpart in a reciprocal way. Sponsors have limited exposure in case of the bankruptcy of SPEs, and SPEs have limited exposure in the event of bankruptcy of sponsors. From one hand, sponsors may reduce their exposure incorporating the SPEs in vehicles limiting their liability, e.g. limited liability company, limited liability partnership, etc. If SPEs bankrupt, the sponsors are only susceptible to their capital contribution. On the other hand, SPEs need to be isolated from the assets of sponsors. With this respect, the accounting and ownership structure plays a central role. The

⁵ “The EPC Contract provides for the work to be done by the EPC Contractor at a fixed price and to be completed by a fixed date. Such a fixed-price, date-certain, turnkey EPC Contract transfers a significant amount of responsibility (and thus risk) to the EPC Contractor, which is clearly likely to be reflected in the EPC Contractor building more contingencies into the contract costings, and hence a higher contract price than the price if the work was done on a cost-plus basis.” (Yescombe, 2013:p.106)

ownership needs to be structured in such a way that the SPE is not formally recognised as an asset of the sponsors, and it is effectively an off-balance sheet vehicle. To achieve this status of separation “sometimes only apparent and formal”, there are technical precautions to put in place. For example, in some jurisdictions, no sponsor needs to have total control over them. Sometimes, the ownership is de-structured in multiple tiers, meaning the other SPEs interpose the controlling and ownership line between the sponsors and the target SPE. The principle of bankruptcy remoteness indicates an accounting separation between the sponsors and the SPE. This separation affects the risk characterisation because it limits/ excludes the reciprocal exposure of the bankruptcy risk.

Another risk characterisation concerns the ability of the SPE of transforming risks. Some SPEs are merely contractual hubs channelling portion of risks from and to external stakeholders. These SPEs do not transform the risks passing (contractually) through them. Other SPEs transform those risks. For example, the SPEs that undertake physical activities can transform some specific risks. In the structured finance, some SPEs are equipped with financial derivatives to transform their risk profile, e.g. the Credit Default Swap (CDF).

A critical determinant of the risk characterisation is the availability of collateral for the financial liabilities. This aspect is particularly relevant for those SPEs that are heavily leveraged and relies extensively on the generation of future cash flows that are secured contractually. This is the case of project finance and securitisation. The critical differentiation is between collateralised, non-collateralised and semi-collateralised financing. Project finance transactions are characterised to be “no” or “partially” collateralised, also known as “no” or “limited recourse” financing. Conversely, securitisation is typically collateralised; for example in the case of Mortgage Backed Securities (MBS) and Asset Back Securities (ABS).

6.4.8. Ownership and control

There are different forms of control and ownership of SPEs. The simplest form of ownership sees a legal person owning and managing indirectly (or passively) the SPE. In securitisation, a common structure sees the SPE as an off-balance sheet isolated

from its originator consistently to the “bankruptcy remoteness process”. These SPEs are designed to be self-managed by automatic mechanisms, as the receivable cash flows should come in the form of periodic payments (e.g. mortgages). To cover the underperforming payments some automatic mechanisms can be employed, such as financial derivatives or insurance policies. These automatic mechanisms are called “autopilot”, and SPEs are called “auto managed” or passively managed.

Slightly more sophisticated traction sees similar ownership structures with the presence of an external manager to handle critical situations. Often, the external manager focuses solely on the liquidity management aspects. In trusts, the SPEs are managed by the trustee on a fiduciary and contractual basis on behalf of the beneficiary party. The trustee is often an example of external manager of the SPE.

Many types of SPEs are co-owned, and the board of directors governs them. The board of directors meets periodically. Often some powers are delegated to the board of directors while others require the direct vote of the sponsors. The governance structure of these types of SPE can be very complicated and involves a variety of enforcing instruments. This is the case, for example of the SPE involved in project finance transactions and the FGIM as discussed more in detail in Chapter 7.

Regardless of the specific ownership and management structure, SPEs are always characterised to be fenced, which is another way of emphasising their independence. To some degree, SPEs are independent and do not belong to anyone in particular. The degree to which this proposition is put into practice may vary depending on the type of SPE. Some SPEs are “self-fenced” meaning that the ownership is dissipated using specific legal techniques. For example, the SPE can be associated with a charitable trust. Consistently these kinds of SPEs are called “orphan” since the ownership is not detectable, and there may be a fictitious ownership to overcome accounting requirements. In other cases, the SPEs are co-owned by many sponsors, all resulting minority shareholders. In such circumstances, no sponsor is qualified as majority shareholder who might inhibit the accounting consolidation; it depends on the jurisdiction considered. This level of separation has a direct effect in terms of risk characterisation (e.g. bankruptcy remoteness) and accounting (i.e. they are off-balance

sheet vehicles). However, after the Enron and Subprime crises, the international accounting standards were amended to make easier and more clear the accounting recognition of SPEs (Section 3.1.1).

Regardless of the specific legal expedient used, SPEs need to be fenced by definition. The alternative is the subsidiary, that is a different legal concept, and it is consolidated on the controlling sponsors. In megaprojects, some SPEs are transformed in subsidiaries at the end of their lifecycle, for example at the end of a concession period. In Built Operate Transfer (BOT), and similar concession schemes, the SPE is used to isolate and transfer the ownership of the infrastructure and sometimes other capabilities including human-related ones. At the end of a pre-defined concession period, the SPE is transferred to the governmental agency, and often it becomes its subsidiary. In these circumstances, the SPE becomes a subsidiary at the end of its lifecycle.

6.4.9. Venue

As described in Sections 7.4.2, SPEs provide access to a specific jurisdiction. Therefore, it is possible to classify SPEs in consideration of their venue. The first differentiation between SPEs focuses on the relationship between two jurisdictions: the one associated with the SPE and the one related to the sponsors. In some circumstances, the SPE is incorporated in the same jurisdiction of its/their sponsors. This is rarely the case for most SPEs. In project finance, sometimes the SPE is incorporated where the infrastructure is developed, meaning that for some local shareholder the two jurisdictions coincide. Conversely, SPEs are often incorporated in the offshore jurisdiction. This is often the case in tax optimisation transactions, including leasing.

Another perspective focuses on the relationship between the jurisdiction of the SPE and the jurisdiction where its associated activities are performed. Many types of SPE do not undertake any activity, and therefore this perspective is not applicable. Conversely, in project finance and project partnering the perspective is meaningful.

Some types of SPE are incorporated in the jurisdictions where the construction site is developed. Often, this choice is imposed by the existing law or by the public

administration involved in the project. The local incorporation permits to pay the taxes in the target jurisdiction, and to apply the specific legislation, e.g. hiring contracts, information disclosure, accounting, etc.

Other types of SPEs are incorporated in offshore jurisdictions; typically for tax optimisation or accounting purposes. In project finance, this is sometimes the case of projects developed in developing countries. The local legislation and the judiciary system are not entirely trusted by critical stakeholders (e.g. financial institutions). Consistently, these stakeholders can impose, during the negotiation, the incorporation of the SPE in countries where the law is suitable and predictable for the project finance transaction; often the British common law. Additionally, the financial institutions tend to favour jurisdictions where the security interest is particularly flexible and suitable for the project finance transactions. The efficiency and reputation of the judiciary system are essential elements considered.

6.5. Types of SPEs specific to infrastructure megaprojects

Megaprojects involve a broad range of SPEs differing in many aspects, e.g. legal status, functions, lifetime, etc. The general classification presented in 7.4 was partly expanded and amended adopting the RAIGT. The interviews with the experts and the documents analysed permitted to describe the existing types of SPEs in megaprojects. Some features of the general classification required additional insights because deemed to be critical as emphasised by the interviewees.

There are different types of SPVs carrying out different functions.

Appendix 1: I15-E14

“If you speak to a lawyer, they would focus on the functionality. They would go for a checklist of functions of the SPVs. If you step back and you ask, what is the purpose?

The purpose is to deliver the project, in a certain way. The biggest question, the difficult question that people in the business are focusing with, is about the purpose.

The SPE, for a megaproject, is the only vehicle with the minimum amount of functionality for the total project perspective, to enable the purposes of the different stakeholders to be achieved.” Appendix 1: I05-E02

According to most interviewees, the “functions of SPEs” is the most relevant driver permitting to differentiate among the different types of SPEs, (Appendix 1: I02-E02, I03-E03, I03-E04, I05-E02). For this reason, the researcher expanded and amended the feature functions significantly. Consistently, “the functions of the SPEs” (Section 6.4.3) was the driver used to cluster and classify the SPEs involved in infrastructure megaproject. There are four main types of SPEs involved in megaproject, namely: Project Companies (PCs), Industrial Vehicles (IVs), intermediate SPEs, and Jurisdictional Shell Companies (JSCs). Often, megaprojects involve all these types of SPEs concurrently. These types of SPEs are not only available in megaprojects but project finance and PPPs in general.

The following subsections present each type of SPE and describe their functions in detail. These research findings contributed to the RO1-RO2.

A second driver that is particularly significant for governance of both the SPEs and the megaproject is the “ownership and control” of the SPEs. This driver was not used to classify the SPEs but permitted to articulate the theoretical proposition of how SPEs influence the FGIM. i.e. RO4. The constructs presented in Chapters 7 were further expanded and casually interconnected to other relevant constructs. The answer to the RO4 is presented in Chapter 7.

6.5.1. Project Companies

PCs are those SPEs that are used primarily to collect and structure the finances for the infrastructure megaprojects. The term PC was chosen because was often used by the experts to indicate the central and more critical SPE involved in the project finance transactions (Appendix 1: I02-E02, I04-E01, I05-E02, I06-E05, I09-E08, I11-E10, I13-E12, I16-E15, I18-E17, I26-E24). The following tables (Table 6-3, Table 6-4, Table 6-5) summarise the specific functions of the PCs.

“Typical scheme is the financial SPE plus an existing EPC contractor and an existing Operator. The SPE serves as a single point of responsibility for all the parties.” Appendix 1: I03-E03

6. Results (A). Types and functions of SPEs in megaprojects

You have a single SPV that carries out the project. Separate finance SPV and then leads to the project company, construction SPV, JV consortium.

Appendix 1: I15-E14

"We had SPV-xxxx which the seat shareholder that was the umbrella company, also responsible for the overall financing for the authority engineering."

Appendix 1: I16-E15

"The purpose is usually to keep the cash flow and the guarantees of the parent companies off balance sheet." Appendix 1: I11-E10

The descriptions provided by the experts, together with the example of PCs analysed, allowed to describe this type of SPE adopting the general classification presented in Section 6.4. According to the research analysis, the PCs are always critical for the FGIM; i.e. they are critical SPEs. PCs are the critical financial and contractual hubs in project finance transactions (Appendix 1: I02-E02, I03-E03, I03-E04, I05-E02, I08-E07, I09-E08, I11-E10, I13-E12, I16-E15, I18-E17, I26-E24).

6. Results (A). Types and functions of SPEs in megaprojects

Function of PCs in quality of legal constructs	Relevance of the function for PCs
Contracting	Critical function. PCs are at the centre of the SPE-network. The ability to undertake contract is essential to structure SPE-networks. Appendix 1: I01-E1, I04-E1, I05-E2, I06-E5, I08-E7, I09-E8, I11-E10, I13-E12, I16-E15, I18-E17, I26-E24.
Collecting	Critical function. PCs are used as investment vehicles. Their ability to collect funds is particularly relevant. Usually, the financial structure of the PC involves multiple layers (i.e. trenches) and different types of securities to satisfy the expectations of different investors, e.g. syndicate of banks (e.g. senior debt), institutional investors (e.g. junior debt, equity), industrial investors (e.g. equity). Appendix 1: I01-E1, I04-E1, I05-E2, I06-E5, I08-E7, I09-E8, I11-E10, I13-E12, I16-E15, I18-E17, I26-E24.
Co-owning and investing	Critical function. PCs are used as investment and ownership vehicles. The PC invest on the megaproject on behalf of its investors. Often, the assets of the SPE are used as partial collateral for the senior debt. PCs are designed to make the megaproject bankable. In particular, PCs are equipped with collaterals, securities on the revenue stream, guarantees and licences to hedge megaproject risks for lenders. PCs contracts-out, to a large extent, the megaproject risks to megaprojects stakeholders. The compound of these financial and contractual mechanisms allows PC to leverage vast debt and to attract different types of investors. Appendix 1: I01-E1, I04-E1, I05-E2, I06-E5, I08-E7, I09-E8, I11-E10, I13-E12, I16-E15, I18-E17, I26-E24.
Transferring	In some circumstances, the ability to transfer a pool of assets and liabilities among various stakeholders is essential. For example, in BOT concession schemes, the infrastructure transferred to the original concession grantor (or a connected public agency) after a predefined period. Similar examples involve industrial shareholders transferring the ownership of the infrastructure exchanging of shares of the PC. Consistently, the transferring is often critical in PCs. Similarly, the transferring function is essential for the security interest of lenders. For example, in case of severe underperformance or megaproject, the lenders might use the transferring function to “step in” and take control the SPE in the attempt to save the megaproject. Appendix 1: I01-E1, I04-E1, I05-E2, I06-E5, I08-E7, I09-E8, I11-E10, I16-E15, I18-E17.
Constraining	Typically, PCs are over-constrained and controlled by multiple stakeholders. This is due to the multiplicity of investors involved and on the governance PCs for the project. Lenders, in particular, force relevant constraints during the negotiation of the SPE-network, Section 7.5.1. Appendix 1: I03-E3, I04-E1, I05-E2, I06-E5, I08-E7, I09-E8, I11-E10, I16-E15, I18-E17, I26-E24.
Isolating	Critical function as PCs are used as an off-balance sheet vehicle. Shareholders benefit to this function excluding large debt from their balance sheet improving their credit metrics. Lenders take advantage of the enhanced control and risk isolation compared to corporate financing. Appendix 1: I03-E3, I05-E2, I08-E7, I09-E8, I11-E10, I13-E12, I18-E17, I26-E24, I27-E25, I30-E28.
Accessing to jurisdictions	PCs are usually placed in jurisdictions having long traditions and experience in project financing and the banking law. The protection of the security interest for lenders is another critical aspect determining the selection of the jurisdiction. Appendix 1: I02-E2, I03-E3, I05-E2, I06-E5, I08-E7, I09-E8, I11-E10, I13-E12, I16-E15, I24-E22, I26-E24, I27-E25, I28-E26, I30-E28.

Table 6-3: Function of PCs in quality of legal constructs

6. Results (A). Types and functions of SPEs in megaprojects

Function of PCs in quality of elements of SPE-networks	Relevance of the function for PCs
Channelling risk and responsibilities	Critical for PCs. PCs are used as contractual hubs in SPE-network to channel risk and responsibilities to the stakeholders that are better able to manage it. Some risks are entirely exogenous to all shareholders, and they are typically hedged using financial and contractual mechanisms. Appendix 1: I02-E2, I03-E3, I05-E2, I06-E5, I08-E7, I11-E10, I13-E12, I16-E15, I18-E17, I24-E22, I26-E24.
Channelling assets and funds	Critical for PCs. PCs are used as the financing vehicle for the megaproject. PCs are also used as vehicles to transfer ownership rights related to infrastructure or other relevant assets and liabilities. Appendix 1: I02-E2, I03-E3, I05-E2, I06-E5, I08-E7, I11-E10, I13-E12, I16-E15, I18-E17, I24-E22, I26-E24.
Transforming risks profiles	Critical for PCs. PCs are used as investment vehicles for megaprojects. PCs discharges specific risks by means of contracts and other enforcing instruments. The financial structure of PCs (i.e. trenching) is another way by which PCs transform their associated risks for different types of investors. Appendix 1: I02-E2, I03-E3, I05-E2, I06-E5, I08-E7, I11-E10, I13-E12, I26-E24.
Clustering and institutionalising multiple stakeholders	Critical for PCs. PCs play a critical role in institutionalising megaprojects, and their promoters as further explained in Section 7.5.1. Appendix 1: I01-E1, I02-E2, I03-E3, I05-E2, I06-E5, I07-E6, I08-E7, I09-E8, I11-E10, I13-E12, I16-E15, I18-E17, I24-E22.

Table 6-4: Function of PCs in quality of elements of SPE-networks

Function of PCs in quality of organisations	Relevance of the function for PCs
Performing specific activities	Limited or absent. Often, PCs do not undertake any physical activity. Lenders require de-risking the PCs by means of contracts and hedging instruments. Consistently, the PCs “make or buy” decisions are extremely unbalanced compared to other types of organisations. Effectively, PCs “buy” everything and “make” almost nothing. Appendix 1: I05-E2, I06-E5, I07-E6, I08-E7, I09-E8, I11-E10, I16-E15, I18-E17, I24-E22.
Managing activities	Sometimes, high-level manager (e.g. the project manager) are appointed inside the PC. However, PCs are more involved in the FGIM rather than their management. PCs act as critical interfaces between the investors and the other critical stakeholders. Appendix 1: I01-E1, I04-E1, I05-E2, I06-E5, I07-E6, I08-E7, I09-E8, I11-E10, I16-E15, I18-E17, I24-E22.
Administrating contracts	Critical for PCs. PCs steer the megaproject on behalf of their investors. PCs are placed at the centre of the SPE-network. Consistently PCs are required to administer most enforcing instruments characterising the SPR-network. Often, part of the administrative duties are delegated to external organisations, including legal firms for legal assistance, and technical auditors to assess the performance of critical contracts (e.g. EPC contract, operation and maintenance contract). Appendix 1: I02-E2, I04-E1, I05-E2, I06-E5, I09-E8, I11-E10, I16-E15, I18-E17.
Governing	Critical for PCs. PCs govern the megaproject on behalf of their investors Section 7.6.1. Appendix 1: I01-E1, I02-E2, I04-E1, I05-E2, I06-E5, I07-E6, I08-E7, I09-E8, I11-E10, I13-E12, I16-E15, I18-E17, I26-E24.

Table 6-5: Function of PCs in quality of organisations

Typically, PCs include a board of directors appointed by the most critical stakeholders for the megaproject, including: government, project client, critical contractors, technology providers, and operator (Section 7.5.1). In practice, the steering committee (Müller, 2012; Müller, Shao & Pemsel, 2016) of the megaproject is institutionalised by the critical investors of the PCs. The board issues critical decision and is bounded to the powers and decision-making process regulated by the shareholder agreement, and the article of incorporation (Appendix 1: I02-E02, I03-E03, I03-E04, I04-E01,

I05-E02, I06-E05, I07-E06, I08-E07, I09-E08, I10-E09, I11-E10, I12-E11, I13-E12, I15-E14, I16-E15, I18-E17, I19-E18, I20-E19, I21-E2, I23-E21, I24-E22, I25-E23, I26-E24, I27-E25, I28-E26, I30-E28). Rarely the PC manages and governs the project activities directly. The project management activities of the megaproject are contracted outside the PC to de-risk it. A strong interface between the project management and the PCs is strongly advised by the experts interviewed (Appendix 1: I02-E02, I03-E03, I03-E04, I09-E08, I11-E10, I12-E11, I15-E14, I16-E15, I17-E16, I18-E17, I19-E18, I21-E2, I23-E21, I24-E22, I25-E23). Typically, the relationship between the project management and the project governance is based on two channels.

Firstly, the contractual relationship between the PCs and the organisation in charge of the project delivery (and management), typically: the main contractor, a consortium or another type of SPE, i.e. the main contractor role described in Section 7.4.1. To simplify the discussion, the stakeholder in charge of the project delivery is herein called the main contractor. The contractual relationship is based on a standard project development contract, and it specifies aspects such as: scope changes, budget changes, liquidated damages, litigation process, etc. The contract type allowing the maximum transfer of responsibilities is usually advisable to de-risk the PC (Appendix 1: I02-E02, I03-E03, I03-E04, I04-E01, I05-E02, I06-E05, I07-E06, I08-E07, I09-E08, I10-E09, I11-E10, I13-E12, I15-E14, I17-E16, I18-E17, I21-E2, I26-E24, I28-E26, I30-E28). Consistently, the EPC Turn Key contract are the standard types of contract employed.

Secondly, the main contractor is often a shareholder of the PC. They have a partial share, and they maintain their participation in the SPE for the construction period, and sometimes for some years of operation of the infrastructure. During the project development, the main contractor appoints critical directors, and they are in charge of the PC. Usually, the leadership of the main contractors is only expressed during the project development stage. This allows the PC to be a capable client, and to align the interests of the client and the main contractor. However, strong check and balance mechanisms are applied to the PC, to limit the conflict of interests associated with the main contractor in the quality of sponsor of the PC. In quality of sponsor, the main contractor is expected to direct the PC in the best interest of all shareholders and creditor (e.g. banks). Further details concerning the specific governance mechanisms regulating the conflict of interests in the SPEs are discussed in Sections 8.5.1.

PCs play a central role in the FGIM. The following propositions explain this relevance:

- PCs involve the most critical project stakeholders for the megaprojects;
- PCs act as the contractual and financial hub for the whole megaproject, or for a relevant part of it. Consistently PCs institutionalise and formalise a coherent governance structure for the megaproject;
- PCs provide critical governance institutions for the megaproject, particularly the steering committee. The steering committee is involved both directly for extraordinary decisions, and indirectly for ordinary decisions, which are issued by the board of directors of the PC.

Consistently, PCs are considered critical SPEs for the FGIM.

6.5.2. Industrial Vehicles

IVs are those SPEs involved in physical and industrial undertakings. These types of SPEs are real industrial organisations devoted to specific functions for the megaprojects (Appendix 1: I01-E01, I02-E02, I04-E01, I05-E02, I06-E05, I11-E10, I16-E15, I18-E17, I21-E2). They are comparable to consortia, but they are provided with legal personality. Typically, the IVs are incorporated joint ventures regrouping project stakeholders with complementary capabilities, e.g. contractor and technology provider.

Some SPVs perform industrial activities such as the construction or the operation of the infrastructure. Appendix 1: I15-E14

“A fully resourced substantially self-performing SPE will have budgeted to attract marketing and technical staff and will have to have made, and will continue to make, operational decisions relating to service delivery, resourcing, systems and supporting stakeholder engagement. A fully functioning SPE, therefore, has to have the right level of quality of people and leadership.” Appendix 1: I02-E02

IVs can be employed for different activities, including design, construction, operation and maintenance, staff training, etc. To perform their associated activities, the IVs hire personnel and buy or lease the equipment and facility (or any other sort of instrumental asset) required to carry out their related activities. Often in the private equity jargon,

6. Results (A). Types and functions of SPEs in megaprojects

the IVs are called “Opcos” because they are “operative” companies. The following Tables (Table 6-6, Table 6-7, Table 6-8) summarise the specific functions of the IVs.

Function of IVs in quality of legal constructs	Relevance of the function for IVs
Contracting	Critical for IVs. IVs assume special responsibilities for the megaproject (e.g. construction, operation and maintenance) thanks to their contractual capacity. Appendix 1: I02-E2, I05-E2, I11-E10, I16-E15, I18-E17, I21-E2.
Collecting	Limited for IVs. Collecting funds is not the primary function of IVs. Appendix 1: I02-E2, I03-E3, I05-E2, I13-E12, I21-E2.
Co-owning and investing	Limited. Potentially, industrial stakeholders (e.g. contractors, technological suppliers, etc.) could use IVs as collective investment vehicles for the industrial activities. However, IVs are often used as “operative” organisation. Appendix 1: I02-E2, I03-E3, I05-E2, I13-E12, I21-E2.
Transferring	Sometimes IVs are used to re-package the risk and funds associated with the industrial activities they perform. Appendix 1: I02-E2, I06-E5, I11-E10, I18-E17.
Constraining	Critical for IVs. IVs are deeply constrained and focused on the industrial contracts associated with them. Appendix 1: I01-E1, I02-E2, I04-E1, I05-E2, I06-E5, I11-E10, I16-E15, I18-E17, I21-E2.
Isolating	Relevant for IVs. IVs are often limited liability types of corporation allowing their sponsors to isolate specific risks. However, the SPE-network is negotiated systemically, and the lender would carefully assess that critical contractors have sufficient “skin in the game” as a precondition for the bankability of the megaproject. Appendix 1: I05-E2, I06-E5, I21-E2, I27-E25, I28-E26, I30-E28.
Accessing to jurisdictions	In some national contexts (typically in Islamic jurisdictions), the legal framework might force international contractors to incorporate a local corporation that is subjected to the domestic law. Consistently, the domestic law might force international contractors to incorporate national/local operative branches, i.e. the IVs. Appendix 1: I02-E2, I05-E2, I06-E5, I16-E15, I21-E2, I24-E22, I28-E26.

Table 6-6: Function of IVs in quality of legal constructs

Function of IVs in quality of elements of SPE-networks	Relevance of the function for IVs
Channelling risk and responsibilities	Critical for IVs. Often, IVs cluster multiple contractors and they are used as a vehicle to redistribute collective risks and responsibilities among them. Appendix 1: I01-E1, I02-E2, I04-E1, I05-E2, I06-E5, I09-E8, I11-E10, I16-E15, I18-E17, I21-E2, I24-E22, I28-E26.
Channelling assets and funds	IVs can be used to manage the specific findings associated with the industrial activities. However, this function is not critical compared to the role of PCs. Appendix 1: I02-E2, I05-E2, I06-E5, I09-E8, I11-E10, I16-E15, I18-E17.
Transforming risks profiles	IVs can be used to transform, using contracts and securities the risk associated with critical industrial stakeholders. However, the transformation of risk profiles “per-se” it is not the main functions attributed to IVs. Appendix 1: I02-E2, I05-E2, I06-E5, I09-E8, I11-E10, I16-E15, I18-E17.
Clustering and institutionalising multiple stakeholders	Critical for the IVs. IVs provide a single point of responsibility for a cluster of activities, such as the construction, or the operation and maintenance of infrastructure megaprojects. Appendix 1: I01-E1, I02-E2, I04-E1, I05-E2, I06-E5, I09-E8, I11-E10, I16-E15, I18-E17, I21-E2.

Table 6-7: Function of IVs in quality of elements of SPE-networks

6. Results (A). Types and functions of SPEs in megaprojects

Function of IVs in quality of organisations	Relevance of the function for IVs
Performing specific activities	Critical for IVs, e.g. construction, or the operation and maintenance of infrastructure megaprojects. Appendix 1: I01-E1, I02-E2, I04-E1, I05-E2, I11-E10, I16-E15, I18-E17, I21-E2
Managing activities	Critical for IVs. Sponsors appoint operative directors inside the IVs to manage the activities associated with them. Appendix 1: I01-E1, I02-E2, I04-E1, I05-E2, I11-E10, I16-E15, I18-E17, I21-E2
Administering contracts	Relevant for IVs. From one side IVs manage the joint interface with the megaproject sponsor/ owner (e.g. the PC). To the other one, the IVs manage the subcontracts to deliver their activities efficiently and effectively.
Governing	Typically, IVs have a more direct managerial role. However, IVs govern indirectly critical supply chains for the megaproject (e.g. the project delivery chain or the operative supply chain, Section 7.6) to deliver their activities efficiently and effectively. Appendix 1: I02-E2, I05-E2, I09-E8, I11-E10, I18-E17, I21-E2.

Table 6-8: Function of IVs in quality of organisations

The descriptions provided by the experts, together with the example of IVs analysed, allowed to describe this type of SPE adopting the general classification presented in Section 6.4. Usually, IVs are often critical for the FGIM because they act as an interface between the project owner and the industrial actors, i.e. the project delivery chain and the supply chain (Section 7.6). IVs can have a variety of configurations. For simplicity, the research focused only on the IVs playing a significant role for the megaproject and considered the most standard types, namely:

- IVs devoted to the project development called Industrial Vehicles Contractors (IVCs);
- IVs devoted to the operation and maintenance of the infrastructure called Industrial Vehicle Operators (IVOs).

If employed for the megaproject, both these sub-types of SPEs are critical for the FGIM.

“Sometimes the EPC is a Joint Venture, a major construction joint venture. Sometimes are unincorporated. Sometimes incorporated. Often they are incorporated as SPV” Appendix 1: I03-E03

Sometimes, the SPV is incorporated to build the infrastructure. Typically, it assumes the role of the main contractor for the megaproject.

Appendix 1: I11-E10

Those IVs involved in the construction are herein defined IVCs, they are typically involved as main contractor/ prime contractor for the infrastructure megaproject.

Usually, IVCs regroup multiple stakeholders associated with the project development, e.g. contractors, technology providers, critical manufactures, etc. The board of directors and the other governance mechanisms embedded in the IVCs allow the SPE to institutionalise and make decisions on behalf of the critical stakeholders associated with it. Consistently, the IVCs provide a more accurate and operative governance function for the development of the megaproject.

"The operations function is the coordination and effectiveness of resources and managing the interfaces with those matters that are self-performed and those matters which are sub-contracted." Appendix 1: I02-E02

"In terms of operational obligations, and to the extent these are not back to back with sub-contractors, the lenders will seek to have third-party expert advice to ensure that, depending on the complexity of the operations, the right resources and experience is made available to or is within the OpsCo consistent with their residual obligations." Appendix 1: I02-E02

"sometimes we self-perform the operation (within the SPV) [...] SPV, so we would, you know, set up an operation with maybe 100-150 people employed [...] if you have 7 employees or 120, obviously you need, you know, a heavier governance structure, being in the biggest company." Appendix 1: I06-E05

Those IVs involved in the operation of the infrastructure are herein defined IVO. The IVOs play a critical role in the operation of infrastructure, while they play a negligible one during their construction. Regardless of the specific powers associated with the operation vehicle, this SPE plays always a relevant governance role in harmonising and institutionalising the critical industrial stakeholders of the megaproject, including: the utility/ operator, the critical suppliers, the critical service providers (e.g. maintenance). Sometimes, the operation vehicle includes the government or a deputy administration (e.g. public/ private utilities), the technology provider of the infrastructure, the client or the off-taker.

The construction and operation vehicles are critical SPEs playing a relevant role in the FGIM and therefore are further considered by this investigation.

6.5.3. Intermediate SPEs

Intermediate SPEs are used for the sole purpose of complement the contracting and ownership structure of other SPEs (Appendix 1: I05-E02, I08-E07, I11-E10, I12-E11, I15-E14, I16-E15, I18-E17, I21-E2, I26-E24, I28-E26). Intermediate SPEs are often used as a structuring or isolating vehicle. For instance, intermediate SPEs are used to establish an additional layer of separation between SPEs and their sponsors to strengthen bankruptcy remoteness structure. Intermediate SPEs are employed primarily for their legal functions, but they can have formal implications in terms of SPE-network.

Sometimes, intermediate SPEs concern the link between the SPE and one, or more, contractual stakeholder. These SPEs interpose what would be a directly enforceable instrument between the project stakeholders and the critical SPEs. Intermediate SPEs are purely shell companies without staff or management.

Other SPVs intermediate and interpose other contracting agents including other SPVs. [...] like in mergers and acquisitions, some SPVs are used to optimise specific transactions such as the purchase of the target company. In project financing, some “intermediating SPVs” can be used to separate the sponsors from the proper SPV used to finance. These “intermediating SPVs” enhance the application of the bankruptcy remoteness principle for the main SPV. Besides, they can be used in certain jurisdictions to realise off-balance sheet vehicles. Appendix 1: I15-E14

“The SPE is not limited to one vehicle but describes the totality of the project vehicles that relate to the support of financing of the project. The securities in such multi-vehicle may be “stapled together” to create a proportionate ownership interest in the overall project, or not.” Appendix 1: I02-E02

The incorporation of the intermediate SPEs is often justified for tax, accounting, and risk related purposes. In private equity transactions, intermediate SPEs are widely

6. Results (A). Types and functions of SPEs in megaprojects

employed. These techniques were transferred to the project finance domain, and they are used in megaprojects. In private equity, the intermediate SPEs often take specific names for the functions they provide. The jargon includes terms such as Propo Co. (to indicate an intermediate SPE with the function or possess and isolate the propriety of another company or SPE). Often, the ownership of another entity is structured in multiple ownership tiers, typically from one to three. Consistently, the jargon in private equity reflects this layering technique. There are Top Co. (first tier closer to the final owner/ beneficiary), Mid Co. (middle tiers) and Low Co. (lower tiers closer to the target entity), which is owned and controlled indirectly.

Often, intermediate SPEs combines the functions described by the jurisdictional shell companies (Section 6.5.4). The following tables (Table 6-9, Table 6-10, Table 6-11) describe the functions of the intermediate SPEs adopting the general framework introduced in Section 6.4.3.

Function of intermediate SPEs in quality of legal constructs	Relevance of the function for intermediate SPEs
Contracting	Relevant for intermediate SPEs. Thanks to their contractual capacity, intermediate SPEs interpose the different contracting parties to realise their intended purposes. Appendix 1: I02-E2, I05-E2, I08-E7, I15-E14, I18-E17, I21-E2, I26-E24, I28-E26.
Collecting	Depending on the architecture of the SPE-network, intermediate SPEs might be involved in the collection of funds. Often, intermediate SPEs support the transferring of funds rather than holding them for extended periods of time. Appendix 1: I05-E2, I08-E7, I12-E11, I15-E14, I18-E17, I21-E2, I26-E24, I28-E26.
Co-owning and investing	Sometimes, intermediate SPEs are used to cluster multiple owners or investors. Appendix 1: I05-E2, I08-E7, I12-E11, I15-E14, I18-E17, I21-E2, I26-E24, I28-E26.
Transferring	Critical for intermediate SPEs. Often, the main function of intermediate SPEs are channel cash flows between the organisations they interpose, i.e. controlling companies vs controlled companies and contractors. Appendix 1: I05-E2, I08-E7, I12-E11, I15-E14, I18-E17, I21-E2, I26-E24, I28-E26.
Constraining	Often, this function is not critical for intermediate SPEs. Sometimes, intermediate SPEs have a single owner, and their purpose can be implicit. Appendix 1: I18-E17, I21-E2, I26-E24, I28-E26.
Isolating	Essential for intermediate SPEs. Appendix 1: I05-E2, I08-E7, I12-E11, I15-E14, I18-E17, I21-E2, I26-E24, I28-E26.
Accessing to jurisdictions	Sometimes it is relevant, particularly for tax optimisation purposes. Often, off-shore companies mix the two types of SPE, i.e. intermediate SPEs and Jurisdictional Shell Companies. Appendix 1: I05-E2, I08-E7, I12-E11, I15-E14, I18-E17, I21-E2, I26-E24, I28-E26.

Table 6-9: Function of intermediate SPEs in quality of legal constructs

6. Results (A). Types and functions of SPEs in megaprojects

Function of intermediate SPEs in quality of elements of SPE-networks	Relevance of the function for intermediate SPEs
Channelling risk and responsibilities	Relevant for intermediate SPEs. Appendix 1: I02-E2, I05-E2, I08-E7, I11-E10, I12-E11, I15-E14, I16-E15, I18-E17, I21-E2, I26-E24, I28-E26.
Channelling assets and funds	Relevant for intermediate SPEs. Appendix 1: I02-E2, I05-E2, I08-E7, I11-E10, I12-E11, I15-E14, I16-E15, I18-E17, I21-E2, I26-E24, I28-E26.
Transforming risks profiles	Relevant for intermediate SPEs. Appendix 1: I02-E2, I05-E2, I08-E7, I11-E10, I12-E11, I15-E14, I16-E15, I18-E17, I21-E2, I26-E24, I28-E26.
Clustering and institutionalising multiple stakeholders	Limited for intermediate SPEs. Appendix 1: I05-E2, I21-E2, I26-E24, I28-E26.

Table 6-10: Function of intermediate SPEs in quality of elements of SPE-networks

Function of intermediate SPEs in quality of organisations	Relevance of the function for intermediate SPEs
Performing specific activities	Absent in intermediate SPEs. Appendix 1: I05-E2, I21-E2, I26-E24, I28-E26.
Managing activities	Absent in intermediate SPEs. Appendix 1: I05-E2, I21-E2, I26-E24, I28-E26.
Administrating contracts	Limited or absent in intermediate SPEs. Appendix 1: I05-E2, I21-E2, I26-E24, I28-E26.
Governing	Often limited or absent in intermediate SPEs. Appendix 1: I05-E2, I21-E2, I26-E24, I28-E26.

Table 6-11: Function of intermediate SPEs in quality of organisations

Typically, the intermediate SPEs do not play a critical role in the FGIM. In strictly formal terms, these SPEs can be indirectly relevant because they shape the ownership structure of critical SPES, such as the PCs. However, these SPEs are only exploited for their legal capabilities and do not perform any active and direct governance function for the megaproject. Consistently, the current investigation acknowledges their existence, but it does not investigate them further.

6.5.4. Jurisdictional Shell Companies

Jurisdictional Shell Companies (JSCs) are those SPEs that are incorporated with the purpose of providing access to a specific jurisdiction (Appendix 1: I05-E02, I08-E07, I12-E11, I15-E14, I21-E2, I26-E24, I28-E26). Usually, JSCs are created for the following purposes: tax optimisation, security interest, accounting and information disclosure, regulatory reasons and mandatory provisions imposed by the project context. The following tables (Table 6-12, Table 6-13, Table 6-14) summarise the specific functions of the JSCs.

6. Results (A). Types and functions of SPEs in megaprojects

Function of JSCs in quality of legal constructs	Relevance of the function for JSCs
Contracting	Sometimes relevant. JSCs can link more tightly to a specific jurisdiction. Contracts often specify the applicable law, but the incorporation of one contracting party (i.e. the JSC) into a target jurisdiction provides a further connection to it giving direct access to courts in that state. This explanation is simplifying, but it provides the general rule. Appendix 1: I05-E2, I08-E7, I12-E11, I15-E14, I21-E2, I26-E24, I28-E26.
Collecting	Potentially relevant, but it depends on the specific transactions, and SPE structure the JSC is supporting. Appendix 1: I05-E2, I08-E7, I12-E11, I15-E14, I21-E2, I26-E24, I28-E26.
Co-owning and investing	Potentially relevant, but it depends on the specific transactions, and SPE structure the JSC is supporting. Appendix 1: I05-E2, I08-E7, I12-E11, I15-E14, I21-E2, I26-E24, I28-E26.
Transferring	Potentially relevant, but it depends on the specific transactions, and SPE structure the JSC is supporting. Appendix 1: I05-E2, I08-E7, I12-E11, I15-E14, I21-E2, I26-E24, I28-E26.
Constraining	Potentially relevant, but it depends on the specific transactions, and SPE structure the JSC is supporting. Appendix 1: I05-E2, I08-E7, I12-E11, I15-E14
Isolating	Potentially relevant, but it depends on the specific transactions, and SPE structure the JSC is supporting. Appendix 1: I05-E2, I08-E7, I12-E11, I15-E14, I21-E2, I26-E24, I28-E26.
Accessing to jurisdictions	Essential, this is the characterising functions of the JSC. Appendix 1: I05-E2, I08-E7, I12-E11, I15-E14, I21-E2, I26-E24, I28-E26.

Table 6-12: Function of JSCs in quality of legal constructs

Function of JSCs in quality of elements of SPE-networks	Relevance of the function for JSCs
Channelling risk and responsibilities	Potentially relevant, but it depends on the specific transactions, and SPE structure the JSC is supporting. Appendix 1: I05-E2, I08-E7, I12-E11, I15-E14, I21-E2, I26-E24, I28-E26.
Channelling assets and funds	Potentially relevant, but it depends on the specific transactions, and SPE structure the JSC is supporting. Appendix 1: I05-E2, I08-E7, I12-E11, I15-E14, I21-E2, I26-E24, I28-E26.
Transforming risks profiles	Potentially relevant, but it depends on the specific transactions, and SPE structure the JSC is supporting. Appendix 1: I05-E2, I08-E7, I12-E11, I15-E14, I21-E2, I26-E24, I28-E26.
Clustering and institutionalising multiple stakeholders	Potentially relevant, but it depends on the specific transactions, and SPE structure the JSC is supporting. Appendix 1: I05-E2, I08-E7, I12-E11, I15-E14, I21-E2, I26-E24, I28-E26.

Table 6-13: Function of JSCs in quality of elements of SPE-networks

Function of JSCs in quality of organisations	Relevance of the function for JSCs
Performing specific activities	Potentially relevant, but it depends on the specific transactions, and SPE structure the JSC is supporting. Appendix 1: I05-E2, I08-E7, I12-E11, I15-E14, I21-E2, I26-E24, I28-E26.
Managing activities	Potentially relevant, but it depends on the specific transactions, and SPE structure the JSC is supporting. Appendix 1: I05-E2, I08-E7, I12-E11, I15-E14, I21-E2, I26-E24, I28-E26.
Administrating contracts	Potentially relevant, but it depends on the specific transactions, and SPE structure the JSC is supporting. Appendix 1: I05-E2, I08-E7, I12-E11, I15-E14, I21-E2, I26-E24, I28-E26.
Governing	Potentially relevant, but it depends on the specific transactions, and SPE structure the JSC is supporting. Appendix 1: I05-E2, I08-E7, I12-E11, I15-E14, I21-E2, I26-E24, I28-E26.

Table 6-14: Function of JSCs in quality of organisations

JSCs play an indirect role in the FGIM. Their primary role is to access to a specific jurisdiction. Indirectly, the access to the jurisdiction is relevant for the FGIM because it implies the applicable laws and regulations. Some of most relevant branches of law for megaprojects and their governance are: contract law, tort law, banking law, public law, corporate law, propriety law, environmental law, as well and accounting standards (Appendix 1: I02-E02, I03-E03, I03-E04, I12-E11, I15-E14). Additionally, the JSC provides direct access to the judiciary system, which may have governance implications in case of litigation between the project stakeholders or in the event of bankruptcy of one critical stakeholder. According to the interviewees, the judiciary system is the resource of last resort to handle both critical scenarios, i.e. litigation and bankruptcy (Appendix 1: I02-E02, I03-E03, I03-E04, I12-E11, I15-E14).

Some SPEs are incorporated purely for jurisdictional and reasons. Sometimes this is required by the Law. In the Islamic countries, you are required to incorporate the SPV in the country where you develop the infrastructure. Appendix 1: I24-E22

People designing are not necessarily driven by the infrastructure, much more relevant are the tax aspects, therefore the jurisdiction considered. Also requirements of lenders about the Securities of the SPVs. Ability to enforce security, for practical and legal reasons. Appendix 1: I15-E14

“In other markets, I saw SPVs for entering in new markets for new sales. Penetrate new market.” Appendix 1: I08-E7

Some jurisdictional aspects are commented as enablers for the incorporation of SPEs, in particular:

- Taxation and accounting: for many types of SPEs, these factors are probably the most important (Appendix 1: I02-E02, I11-E10, I12-E11, I15-E14, I24-E22, I26-E24). It is the prevalent factor for the “intermediate SPEs” and often for the JSCs. The research does not consider in detail these jurisdictional factors because they play a limited role in the FGIM;
- Protection of the security interest: this factor is the most relevant for those SPEs that rely extensively on debts such as the PCs. Some aspects associated with this

jurisdiction factor are further commented because they play a critical role in the FGIM. The protection of the security interest affects primarily the security package (Appendix 1: I02-E02, I03-E03, I03-E04, I06-E05, I11-E10, I13-E12, I15-E14, I16-E15, I17-E16, I18-E17, I20-E19, I21-E2, I23-E21, I25-E23, I26-E24, I28-E26, I30-E28);

- Local legal and regulatory requirements. This jurisdiction factor concerns the mandatory provisions to incorporate the SPE where it undertakes its activities. These provisions are typical in Islamic countries (Appendix 1: I05-E02, I17-E16, I18-E17, I24-E22, I28-E26). Sometimes, the law is not explicit about this factor, but the public stakeholders impose this choice, i.e. to incorporate the SPE where the megaproject is developed. This jurisdictional factor is only acknowledged by the investigation but is not considered further as it has an indirect effect on the FGIM.

JSCs are not considered critical for the FGIM because their impact is indirect and often negligible.

6.6. Summary

The current Chapter introduced the general answers received during the semi-structured interviews. Section 6.2 summarised the responses received from the semi-structured interviews. Section 6.2 clustered the responses according to five main categories, namely: (1) unit of analysis, (2) governance rationales, (3) check and balances, governance design instruments, and context. Among these categories; the Chapter focused extensively on the first (i.e. unit of analysis).

Section 6.3 described how the unit of analysis evolved during the research, consistently with the principles underlying the RAIGT. Initially, the author focused extensively on the SPEs, understood both as legal constructs and organisations. This unit of analysis was too narrow to understand the impact that SPEs have on the FGIM. Therefore, the author followed the suggestion of the interviewees who advised to expand the unit of analysis. The extended unit of analysis also considered the SPE as part of a network defined as “SPE-network”.

Section 6.4 focused on the initial unit of analysis that was the SPE alone. Section 6.4 introduced the general classification of SPEs addressing the RO1. The classification considered nine main features, namely: (1) legal status, (2) purposes, (3) functions, (4) lifetime, (5) capabilities assets and liabilities, (6) financial structure, (7) risk characterization, (8) ownership and control, and (9) venue. For each of these, the classification provided possible values as described in the literature and observed in different examples of SPEs.

The classification provided profound insights concerning the (3) the functions of SPEs. The interviewees confirmed that the functions of the SPEs are the most relevant driver to distinguish different types of SPEs. The functions were described according to three alternative perspectives, which emerged from the RAIGT. SPEs provide their functions to their associated transactions in quality of (1) legal construct, (2) element of the contracting network, (3) organisation.

The functions of the SPE permitted to identify the types of SPEs involved in megaprojects, namely: project companies, industrial vehicles, intermediate SPEs, and jurisdictional shell companies. For each type of SPE, the research described their functions for megaprojects. Consistently, Section 6.4.3 addressed the RO3: “to identify the functions provided by SPEs for infrastructure megaprojects”.

Finally, the identification of different types of SPE and the consideration of their specific functions permitted to address the RO2: “to identify which types of SPE play a role in the FGIM”. In particular, the project companies and the industrial vehicles were investigated more in detail (Chapter 7) as they play a critical role in the FGIM. The industrial vehicles were further distinguished into two sub-categories: industrial vehicles – contractors and industrial vehicle – operators. The former focus on the development of infrastructures, the latter on their operation once they are completed.

This Chapter is critical for four main reasons. Firstly, this Chapter addressed the RO1 providing the classification of the existing types of SPEs. Secondly, this Chapter addressed the RO2 identifying which types of SPEs play a role in the FGIM. Thirdly, this Chapter described the functions of SPEs for infrastructure megaprojects, and for

their formal governance. Consistently, this Chapter addressed the RO3. Lastly, this chapter provided the essential concepts underlying the governance theory (RO4) presented in Chapter 7. In particular, this Chapter contributed entirely to the Proposition 1 introduced in Section 7.2. The Proposition 1 is essential to support the remaining theoretical propositions described the Chapter 7.

7. Results (B). How SPEs influence the FGIM

7.1. Chapter Overview

The current Chapter addresses the RO4, namely: “*How SPEs influence the FGIM?*”

The Chapter is structured according to the theoretical propositions emerged from the application of the RAIGT, in particular:

- Section 7.2 introduces the **proposition 1** clarifying the relevant SPEs for the FGIM;
- Section 7.3 describes the **proposition 2**: how SPEs influence the FGIM. The proposition 2 is aggregated and it is broken down in the following Sections, namely: proposition 2.A, 2.B, and 2.C;
 - Section 7.4 describes the **proposition 2.A** concerning the project roles assumed by critical SPEs;
 - Section 7.5 describes the **proposition 2.B** about the governance of SPEs, which is further broken down in the following sub Sections:
 - Section 7.5.1 describes the **proposition 2.B.i** about how the Project Company (PC) is governed;
 - Section 7.5.2 describes the **proposition 2.B.ii** about how the Industrial Vehicle – Contractor (IVC) is governed;
 - Section 7.5.3 describes the **proposition 2.B.iii** about how the Industrial Vehicle – Operator (IVO) is governed;
 - Section 7.6 introduces the **proposition 2.C** regarding the governance of the SPE-network, which is further broken down by the following sub Sections:
 - Section 7.6.1 describes the **proposition 2.C.i** about how critical SPEs govern part of the SPE-network and the megaproject;
 - Section 7.6.2. describes the **proposition 2.C.ii** about how the IVC governs part of the SPE-network of the megaproject;
 - Section 7.6.3. describes the **proposition 2.C.iii** about how the IVO governs part of the SPE-network of the megaproject.

Finally, Section 7.7 summarises all the propositions, and it presents the theoretical reflections.

7.2. Proposition 1: the relevant SPEs for the FGIM

Proposition 1: *Not all types of SPEs influence the FGIM. The types of SPEs having a relevant impact on the FGIM are: the Project Company (PC), the Industrial Vehicle-contractor (IVC) and the Industrial Vehicle – Operator (IVO). These types of SPEs are defined as "critical SPEs". The other types of SPEs (i.e. non-critical SPEs) do not have a relevant impact on the FGIM.*

Chapter 6 classified the existing types of SPEs involved in infrastructure, describing the PC, the IVC, the IVO, the intermediate SPE and the Jurisdictional Shell Company (JSC), (Section 6.5).

“Yes, some types of SPEs can be very important for the governance of megaprojects.” (Appendix 1: I05-E02)

This classification emerged from the interview and was based on the functions played by the different types of SPEs in quality of: a legal construct, an element of the SPE-network, and an organisation (Section 6.4.3).

The functions of SPEs clarify which types of SPE are critical for the FGIM, namely the PC (Section 6.5.1), the IVC (Section 6.5.2) and the IVO (Section 6.5.2). The remaining types of SPE are not relevant for the FGIM, i.e. intermediate SPE (Section 6.5.3) and the JSC (Section 6.5.4).

7.3. Proposition 2: how SPEs influence the FGIM

Proposition 2: *The critical SPEs are instrumental and functional to the SPE-network, and they influence the FGIM.*

Most interviewees emphasised that the SPEs alone are of limited relevance (Appendix 1: I01-E01, I02-E02, I03-E03, I03-E04, I04-E01, I05-E02, I06-E05, I08-E07, I09-E08, I11-E10, I16-E15, I18-E17, I21-E2). These interviewees emphasised the instrumental nature of SPEs for the contracting network, as SPEs can play a relevant governance role, together with other formal instruments. To understand the influence that SPEs have on the FGIM, the author introduced a broader unit of analysis, i.e. the SPE-network defined as: *“the network comprising of the critical SPEs and the institutional*

*stakeholders interconnected to them by means of enforceable instruments*⁶”(Section 6.3). The SPE-network do not generalise all possible determinants of the formal governance. Rather, it focuses on the parts of the contracting network having proximity with the critical SPEs, in order to identify their contribution to the FGIM.

The interviews confirmed that the SPE-network is designed and negotiated systemically by the contracting parties, which include project sponsors, financiers, prime contractors, suppliers, operators, and clients/off-takers and the Government. SPE-networks assume different configurations depending on the specific requirements associated with them. Typically, the most relevant requirements include: *financing, accounting, tax, risk management, governance and legal/jurisdictional aspects* (Appendix 1: I01-E01, I02-E02, I03-E03, I03-E04, I04-E01, I05-E02, I06-E05, I08-E07, I09-E08, I10-E09, I11-E10, I12-E11, I13-E12, I15-E14, I16-E15, I18-E17, I19-E18, I20-E19, I21-E2, I23-E21, I26-E24).

To explain how critical SPEs influence the FGIM, the research focused on the concept of “control” exercised by a project stakeholder on the others. Most interviewees declined the concept of control distinguishing between (Appendix 1: I02-E2, I03-E03, I03-E04, I05-E02, I06-E05, I08-E07, I09-E08, I11-E10, I12-E11, I13-E12, I15-E14, I18-E17, I19-E18, I20-E19, I21-E2, I23-E21, I24-E22, I25-E23, I27-E25, I28-E26, I29-E27, I30-E28):

- **Positive control**, which refers to the ability to promote and decide upon a positive course of actions. This is the ability to lead and orientate certain decisions. An example of positive control is the power exercised by the majority shareholder who can appoint directors and issue governance decisions for the company. The positive control generates the strategic objectives steering the management actions;

⁶ *The enforceable instrument is a formal relationship between two (or more) agents. The enforceable instrument takes place by mean of instruments having legal significance, meaning that the terms of such instruments are recognised, protected and enforced by the court, or by alternative enforcing institutions. The enforceable instrument is synonymous with the following terms: enforceable link, legal instruments, formal link, and formal instruments. Examples of enforceable instruments include contracts, deeds, securities, warranties, propriety rights, deeds, royalties, licenses, concessions, etc.*

- **Negative control**, which refers to the ability to review and eventually block the exercise of positive controls and the management actions. The negative control provides the ability to limit or precludes certain positive decisions. The negative control is neither propositive or proactive; rather, it is limiting and reactive. Governance mechanisms involving negative powers are usually expressions of checks and balances. These are mechanisms designed to maintain under scrutiny the discretionary powers left to the positive controllers. In the SPE-networks, the negative powers are frequently used to resolve agency issues (Section 4.3.5) or similar problems such as the protection of minority decision-makers (Kraakman *et al.*, 2017).

“The Government may decide to take, what is essentially a class of two shares or something, are called golden share, which has negative control on the operation of the SPE or they have infringement rights to be able to stop things to happening, even sanding shares or other things." Appendix 1: I02-E2

“You can have negative control, which is far greater than your shareholding that would otherwise normally permit. There can be things that are not allowed to happen even if you are tiny shareholders or you have no shares at all, but you are a lender, for example.” Appendix 1: I08-E7

In megaprojects, both positive and negative powers are embedded in the various enforcing instruments characterising the SPE-network. The concurrent application of the enforcing instruments provides a systemic attribution of powers and responsibilities to the various shareholders composting the SPE-network.

The concept of positive and negative control allowed the author to map the governance powers associated with the project stakeholders (including critical SPEs) within the SPE-network. Figure 7-1 summarises how the PC influences the formal governance of the SPE-network. On the top of the figure, the investors and the governments exercise the control on the PC. On the bottom side of the figure, the PC influence the governance of part of the SPE-network. The critical project stakeholders (bottom side

of Figure 7-1) manage directly or exercise control towards the industrial activities of their competence.

Figure 7-1 provides a simplified governance map streamlining the attribution of powers and responsibilities among stakeholders. To understand the specific contribution that critical SPEs have on the FGIM (i.e. RO4). The proposition 2 lies on three sub-propositions (i.e. 2.a, 2.B, 2.C) focusing on the following perspectives:

- A. The roles associated with the critical SPEs in different configurations (Section 7.4);
- B. How the SPEs are governed by the stakeholders composing the SPE-network (Section 7.5);
- C. How SPEs govern the other stakeholders of the SPE-network (Section 7.6).

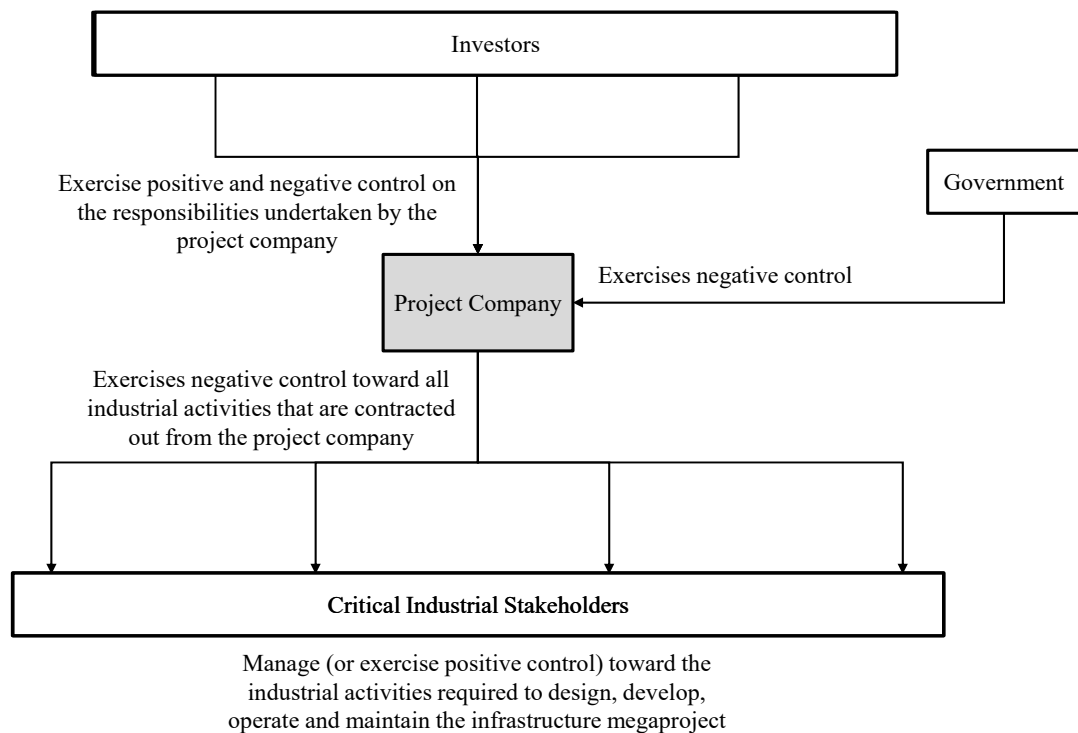


Figure 7-1: How PCs influence the governance of SPE-networks

7.4. Proposition 2.A: the project roles assumed by critical SPEs

Proposition 2.A: *The critical SPEs assume critical project roles for the megaproject and the SPE-network, in particular:*

- i. The PC assumes the role of project owner;*
- ii. The Industrial Vehicle –Contractor (IVC) assumes the role of the main contractor;*

iii. The Industrial Vehicle –Operator (IVO) assumes the role of project operator;

Potentially, the three roles can be integrated into different SPE-network configurations. Some configurations are more frequent than others:

iv. Often, the three roles are kept separated;

v. Alternative configurations can be observed in special circumstances, for instance, the integration between the project owner (PC) and the project operator (IVO);

vi. Other integrations are less likely to take place for organisational and risk management reasons.

The proposition 2.A focuses on the roles that critical SPEs might have on the SPE-network. The interviewees were familiar with the concept of project roles (Section 4.4). In describing different examples of SPEs, three main roles emerged: the “project owner”, the “main contractor” and the “project operator”. In megaprojects, the critical SPEs assumes one (or more), of these three roles.

"The typical scheme is the financial SPE plus an existing EPC contractor and an existing Operator. The SPE serves to centre a single point of responsibility for all the parties." Appendix 1: I03-E3

Starting from the descriptions provided by the interviewees, the author included his reflections according to the RAIGT (Chapters 6). The project roles are instrumental in the formulation of the theory as they are sufficiently general to describe different SPE-network configurations. The author considers the project roles as clusters of homogeneous responsibilities to be associated with a single megaproject stakeholder. The homogenous responsibilities provide a functional perspective toward the SPE-network. For the sake of simplicity, the project roles are assigned to a single stakeholder: either a critical SPE, or an existing organisation (e.g. EPC contractor, utility, etc.); this is consistent with the examples provided by the interviewees. Three main project roles were considered by the research, namely the project owner, the main contractor and the operator.

The **first** critical role is the **project owner**, which is an organisation that owns the infrastructure megaproject. The author avoided calling this role "project client", as it might confuse the description of the SPE-network configurations. The term "client" is based on a relational perspective focused on the duality "client-supplier". In some SPE-network configurations, the client and the supplier are the same organisation. Therefore, the terms "project client" changes meaning in different configurations, which might confuse the reader. Conversely, the term "project owner" is relatively stable in the different SPE-networks' configurations. The concept of project owner emerged "naturally" in the context of SPEs since they are often incorporated for their ability to own and isolate assets.

The **second** critical role is the **main contractor**, which is the single point of responsibility for the building and commissioning of the infrastructure megaproject. Sometimes, the main contractor also assumes the additional role of "designer" of the infrastructure. In all examples introduced by the interviewees, the construction activities were assigned to a single organisation by mean of a single EPC-turn key contract. The experts interviewed confirmed this trend and explained why it is so. The SPE-network is based on a systemic attribution of risks and responsibilities between the critical project stakeholder (i.e. first tier SPE-network). In the SPE-network, it is often important to keep the revenue stream (and any collateral) separated to the relevant sources of risk, and particularly the completion risk. Therefore, the project owner is separated from the project contractor (Appendix 1: I02-E02, I03-E03, I03-E04, I05-E02, I06-E05, I07-E06, I08-E07, I09-E08, I11-E10, I13-E12, I15-E14, I17-E16, I18-E17, I21-E2, I26-E24, I28-E26, I30-E28). The main contractor is a preferred option compared to other approaches such as multiple contracting, as from the perspective of project owner the main contractor provides a single point of responsibility. A fragmented contracting framework is not advisable because it can create additional complexity and uncertainty concerning the interfaces between multiple contractors. The EPC-turn key contract assigns the project completion risk to a single contracting party, namely the main contractor. The EPC contract has known limitation (Clough *et al.*, 2015; Hughes, Champion & Murdoch, 2015; Huse, 2002; Merrow, 2011) but compared to other contracting approaches (e.g. reimbursable contracts, fixed price contracts), it provides a stronger attribution of risks and

responsibilities to the main contractor. As a result, the main contractor is a critical role for the SPE-network as it provides a single and accountable point of responsibility concerning the completion risk.

The **third** critical role is the **project operator**, which is the organisation operating the megaproject infrastructure during its operational phase. Often, the project operator provides additional services such as the maintenance of the infrastructure.

Figure 7-2 employs a “transactional perspectives” (Section 4.5.1) to describe a simplified SPE-network structure. The SPE-network represented involves three project roles interfacing with relevant supply chains for the megaproject. Firstly, the project owner interfaces the investors and sometimes (depending on the SPE-network configurations) the infrastructure clients. Secondly, the main contractor interfaces the project delivery chain with the SPE-network. Thirdly, the operator interfaces the operating supply chain (e.g. energy, fuel, input material, etc.) and sometimes the infrastructure clients.

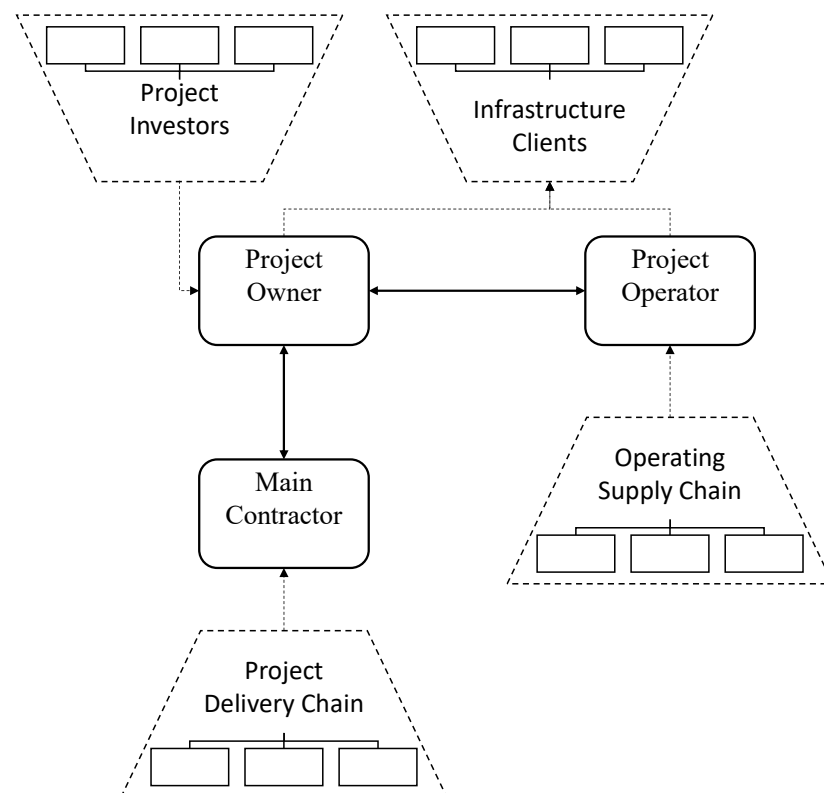


Figure 7-2: Critical roles of the SPE-network and supply chains connected to them

Figure 7-2 does not generalise all possible SPE-networks, but it is functional to describe their configurations, focusing on the roles played by critical SPEs. In particular, the configurations of the SPE-network focus on two main determinants:

- Determinant N.1: The roles of the SPEs as part of the SPE-network;
- Determinant N.2: The integration of multiple roles into a single SPE.

According to the interviewees, certain SPE-network configurations tend to be “standardised” or “commoditised” (Appendix 1: I02-E02, I03-E03, I03-E04, I05-E02, I06-E05, I11-E10, I16-E15). This is observable in small-medium projects. For example, the PFI in the UK experienced a consolidation of contracting practice in sectors, including standard schools, prisons, hospitals, etc. This consolidation resulted into the standardisation of the configuration of the SPE-network associated to the standard projects (Appendix 1: I03-E03, I03-E04, I05-E02, I11-E10). The standardisation included the definition of general contracting templates and types of SPEs. The standardisation allowed to reduce the time and cost of negotiation, which is a relevant advantage, particularly for small and medium enterprises. An example of standardised PFI transaction is the so-called “building school for the future” (Department for Education GOV.UK, 2010; National Audit Office, 2009).

Conversely, infrastructure megaprojects are based on ad hoc contracting solutions, often characterised by their innovation and creativity. The experts emphasised that is very difficult to generalise the SPE-network configurations in megaprojects, which is an inherent challenge of the current research (Appendix 1: I01-E01, I02-E02, I03-E03, I03-E04, I04-E01, I05-E02). To overcome this challenge, the researcher employed two alternative strategies. Firstly, it reconciled the many exemplifications reported by the experts in a bottom-up way. Secondly, the research fostered the experts to make assumptions and generalise about the general configurations of the SPE-network. The latter approach demonstrated to be effective and drove the generalisation process. The examples of megaprojects and SPEs collected along the research served to either confirm the general configurations or to identify interesting exceptions in specific contexts and circumstances.

7.4.1. Determinant N.1: The roles of the SPEs as part of the SPE-network

The first determinant focuses on the role (s) played by the critical SPE for the project. In particular, the first determinant is based on the following questions (Appendix 1: I01-E01, I02-E02, I03-E03, I03-E04, I04-E01, I05-E02, I09-E08, I11-E10, I15-E14, I16-E15, I17-E16, I20-E19, I24-E22, I26-E24):

- D1.1: Is the project owner an SPE?
- D1.2: Is the main contractor an SPE?
- D1.3: Is the project operator an SPE?

Concerning the **project owner (D1.1)**, the critical decision to undertake is whether to finance the megaproject off-balance sheet or not. If the megaproject is financed off-balance sheet, then the PC (Section 6.5.1) needs to be incorporated taking the role of the project owner. The project sponsors decide whether to incorporate the PC or not. Other investors might have a say on this critical decision, particularly the lenders.

You have a single SPV that carries out the project. Separate finance SPV and then leads to the project company, construction SPV, JV consortium.

Appendix 1: I15-E14

Concerning the **main contractor (D1.2)**, the critical stakeholders involved in the construction of the megaprojects (e.g. project contractors, technology providers, designers, etc.) decide whether to incorporate an SPE or not. In case an SPE is incorporated, it is an IVC (Section 6.5.2). This critical decision depends on many factors, including:

- Legal aspect: for example, the procurement process might force international contractors to compete under the local legal and regulatory framework. The legal context might force the incorporation of a local company to award the construction contract;
- Risk management: the IVC might be a "limited liability" company, and therefore it could limit the risk exposition of its sponsors. The project lenders might oppose this choice, as they usually require appropriate guarantees to cover the completion risk of the megaproject. Consistently, the main contractor could be forced to demonstrate that he is liable and accountable for the construction performance.

- Industrial synergies: the industrial sponsors of the IVC might pursue synergies and alliances for the promotion and delivery of the project. For example, an established construction contractor and a technology provider (e.g. a reactor vendor in the nuclear sector) might incorporate the IVC to enhance the transfer of knowledge and to align their interests toward the megaproject performance.

“Sometimes the EPC is a Joint Venture, a major construction joint venture. Sometimes are unincorporated. Sometimes incorporated. Often they are incorporated as SPV” Appendix 1: I03-E3

Sometimes, the SPV is incorporated to build the infrastructure. Typically, it assumes the role of the main contractor for the megaproject. Appendix 1: I11-E10

The **project operator (D1.3)** can be assigned to an IVO (Section 6.5.2). An alternative option includes other types of organisation such as a consortium or an existing company (e.g. an existing utility). Often, the IVO is an incorporated joint venture involving stakeholders such as: the project owner, the operating organisations, the critical suppliers (e.g. the gas suppliers in LNG projects, Appendix 1: I01-E01, I04-E01, I18-E17), the maintenance service providers, etc.

“Sometimes we self-perform the operation (within the SPV)” Appendix 1: I06-E05

7.4.2. Determinant N.2: The integration of multiple roles into a single SPE.

The first determinant (Section 7.4.1) assumed the three roles independent from each other. However, the SPE-network might involve configurations where two or more roles are integrated into a single SPE. Consistently, the second determinant of the SPE-network configurations considers the integration of the critical project roles to be assigned to an individual SPE. The second determinant is based on the following questions (Appendix 1: I01-E01, I02-E02, I03-E03, I03-E04, I04-E01, I05-E02, I09-E08, I11-E10, I15-E14, I16-E15, I17-E16, I20-E19, I24-E22, I26-E24):

- D2.1: Are the roles of the “project owner” and the “project operator” integrated and assigned to a single SPE?

- D2.2: Are the roles of the “project owner” and the “main contractor” integrated and assigned to a single SPE?
- D2.3: Are the roles of the “main contractor” and the “project operator” integrated and assigned to a single SPE?
- D2.4: Are the roles of the “project owner”, the “project operator” and the “main contractor” integrated and assigned to a single SPE?

Figure 7-3 presents the twelve possible configurations resulting from the answers to the previous questions, i.e. D1.1-D1.3, D2.1-D2.4. These configurations are labelled using the letters A-L. The experts interviewed emphasised that the SPEs are very flexible instruments, but some of the possible configurations are very unlikely to take place and can be excluded from the feasible options. These are the configurations I, K and L.

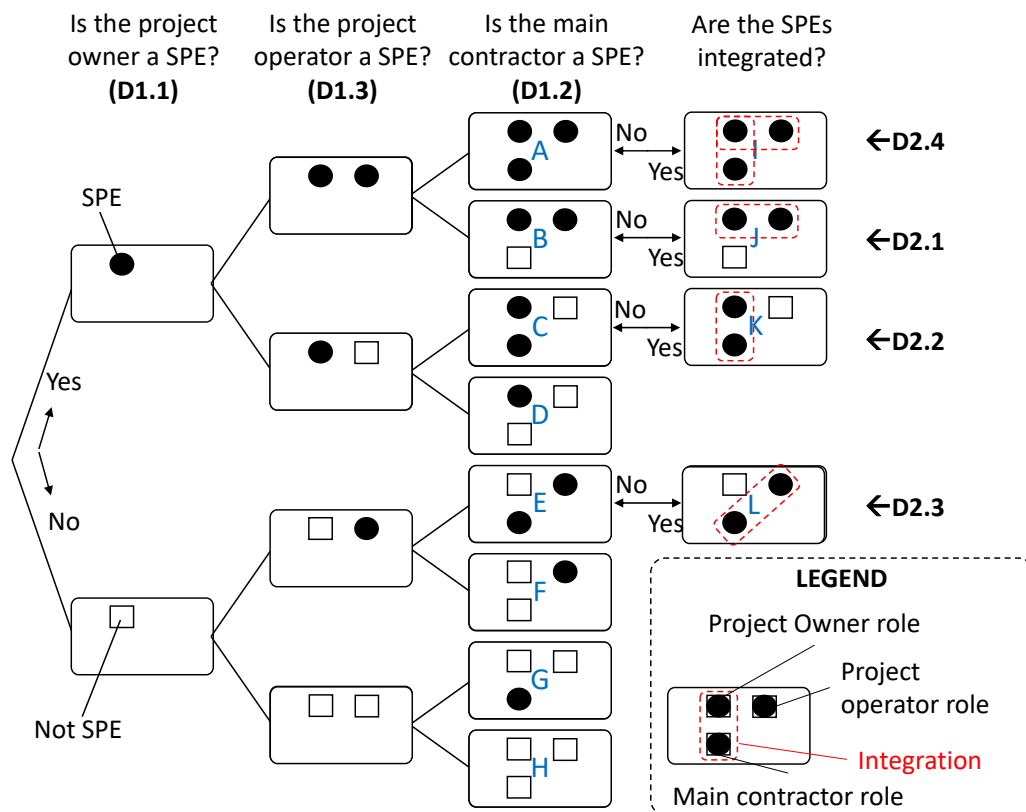


Figure 7-3: Possible configurations of the SPE-network

The configurations I and K are excluded by most experts (Appendix 1: I02-E02, I03-E03, I03-E04, I05-E02, I06-E05, I07-E06, I08-E07, I09-E08, I11-E10, I13-E12, I15-

E14, I17-E16, I18-E17, I21-E2, I26-E24, I28-E26, I30-E28). The PC needs to be relatively “risk-free” because it involves large debts, and it encloses the critical project assets such as the public concessions, the licenses, the ownership rights towards the infrastructure to be developed. Usually, the PC involves large debts both in absolute and relative (i.e. high leverage) terms, meaning that PC is susceptible to bankruptcy. Typically, the design rationale for the PC is to “contract out” (to the possible extent) all megaproject risks. The risks are assigned to the stakeholders that are in the better position (due to their experience and capabilities) to manage them. Alternately, the residual risks shall be adequately hedged and assigned to the stakeholders that are in the better position to bear them. Consistently, the configurations I and K are very unlikely to take place as the completion risk is associated to the PC, which is susceptible to bankruptcy in case of poor construction performance (Appendix 1: I02-E02, I03-E03, I03-E04, I05-E02, I06-E05, I07-E06, I08-E07, I09-E08, I11-E10, I13-E12, I15-E14, I17-E16, I18-E17, I21-E2, I26-E24, I28-E26, I30-E28).

“There are project companies that do everything. But they are very unusual, I have never seen one. Less common to have the project company do the operation and maintenance services...you have to convince the banks of this.” Appendix 1: I15-E14

“The SPV subcontract as much as possible because the banks don't want the SPV to take on any risk. Risk is a commodity just like anything else. Now, the propensity to absorb risk is purely the ability to pay for things to going wrong. If you have an SPV where the only thing is the shareholder equity, which is a tiny part of it, lenders don't want the risk to be placed where there is a lot of money to be taken away. So again, this risk contracted. You have the contractor, the operator, their subcontractors. Their subcontractors have the insurance company one way or another. And before you know it, this SPV to deliver a road, has the risk dispersed all over the economy, maybe in several countries.” Appendix 1: I11-E10

The **configurations L** is equally unusual as it describes the scenario whereas an SPE is set up to undertake both the construction and the operations of the infrastructure megaprojects (Appendix 1: I03-E03, I03-E04, I11-E10, I13-E12, I15-E14, I24-E22, I28-E26). The industrial capabilities required for the construction of the infrastructure

are very different to the ones associated with its operations. This implies an inherent difficulty in making operative a brand new SPE devoted to both the construction and the operations of the megaproject. Construction and operations require different operative processes as the former is a temporary and non-routinely activity while the latter is quasi-permanent (i.e. the lifecycle of the infrastructure is very long) and routine (or cyclic).

The only integration of roles considered by the research is the **configuration J** (Figure 7-4), involving an SPE having the role of project owner and operator. Examples of this configurations can be found in different sectors: this research considered examples of megaprojects including the Andosol Thermopower Plant, Rovigo LNG project, and the Greater Gabbard Wind Farm (Megaproject cost action, 2014). These case studies provided additional insights concerning the evolution of the SPE. In particular, the configuration J is based on a single SPE evolving its capability and roles along the project. At the beginning of the project, the configurations J (SPE-J) is a PC. During the construction phase, the SPE-J behaves exactly like a PC but starts to be structured internally for the subsequent operating activities. The internal structuring includes the development of quality manuals. Throughout the construction, the operating staff is prevalently involved in the training activities until the start of the operations. At the beginning of the operations, the SPE-J acts both as project owner and as project operator. One of the most critical aspects of the design is the board of directors, which is evolving in its composition during the project development.

A peculiar example of the configuration J is observable in the nuclear sector as the legal and regulatory framework might force (in most nuclearised countries) the integration between the ownership and operations of an NPP. The existing legal and regulatory frameworks are grounded in international laws and standards. The Chernobyl accident in 1986 promoted an era of international cooperation on topics such as emergency preparedness and notification, nuclear safety (having a transboundary effect), nuclear security, the acceptability of the nuclear technology, etc. (IAEA, 2004; Stoiber *et al.*, 2010, 2003). The international cooperation resulted in the creation of extensive international law. One of the most important international conventions was the first international Convention on Nuclear Safety, 1994 (CNS I).

The CNS I established the basis for the modern nuclear licensing process worldwide introducing the concept of exclusive nuclear liability of the nuclear operator. The nuclear operator is exclusively liable for the nuclear safety risk, i.e. the risk that unsafe use of the nuclear power may result in damage to people, properties or the environment. For example, if a nuclear accident is due to defectively installed equipment (e.g. steam generator), the nuclear operator (which neither manufactured or installed the equipment) is held responsible. The state (and its administrations including the nuclear regulatory body), and the private victims of the accident can claim damages (or other legal remedies) to the nuclear operator. The exclusive liability is not transferable to other agents, and the contracting provisions attempting to overcome this constraint are to be considered void. Therefore, they are not enforceable in courts for non-compliance with the law. The economic exposure to the nuclear risk can be limited by the nuclear operator by mean of hedging instruments such as insurance policies.

The general principle of exclusive liability of the nuclear operator is applied in different ways depending on the country considered; usually, it is complemented by prescriptive mandatory requirements for the nuclear operator (Appendix 1: I20-E19, I28-E26, I30-E28). Examples of prescriptive requirements include: financial stability and capitalisation requirements, proven experience and capabilities, etc. These mandatory requirements either forbid the use of SPEs as a nuclear licence, or they imply specific SPE-network configurations such as the J (Appendix 1: I20-E19, I29-E27, I30-E28). In some jurisdiction (e.g. Finland, France, the USA), the mandatory requirements forbid the licensing of an SPE because it lacks the proven experience and the capitating requirements. In other jurisdictions (e.g. in the UK), the exclusive liability principle implies that the nuclear operator is both the owner of the nuclear power plant and the operator, and it must demonstrate his capabilities of being so, i.e. industrial capabilities, experienced personnel, safety culture, etc. If an SPE applies for the role of nuclear operator, it must combine the features of the PC and the IVO. Therefore, in the UK, the SPE must be structured according to the configuration J.

Historically, SPEs in nuclear were used to set up industrial joint ventures between international reactor vendors (i.e. technology providers) and national nuclear

operators, permitting the transfer of knowledge and technology between them. An example of this is Franco-Américaine de Constructions Atomiques (FRAMATOME), later Areva NP, which was an incorporated joint venture set up in 1958 to enable the transfer of nuclear technology between the American Westinghouse and other critical nuclear programme stakeholders in France (Nuclear Energy Agency OECD, 2011). FRAMATOME was effectively an IV (Section 6.5.2). After the ratification of the CNS I, the legal context introduced limitations for the nuclear operators, including financial capitalisation requirements, as the nuclear operator might be financially resilient to compensate the nuclear damages in case of an accident. This and other limitations are significant challenges for the adoption of off-balance sheet financing in the nuclear field. However, because of several reasons (such as the privatisation of utilities), some countries are experimenting for the first time the application of project finance in the nuclear sector, e.g. the construction of Hinkley Point C NPP, in the UK (IAEA, 2014; Taylor, 2016). Currently, it is not clear if Hinkley Point C will be effectively delivered, but the contracting structure has been established.

Figure 7-4 shows the SPE-network for Hinkley Point C, and it highlights two SPEs. Firstly, NNB GENCO, which is both project owner and operator (i.e. configuration J) for the reasons explained above. Secondly, the NNB HOLDCO, which is an intermediate SPE (Section 6.5.3). Hinkley Point C provides an example of Configuration J.

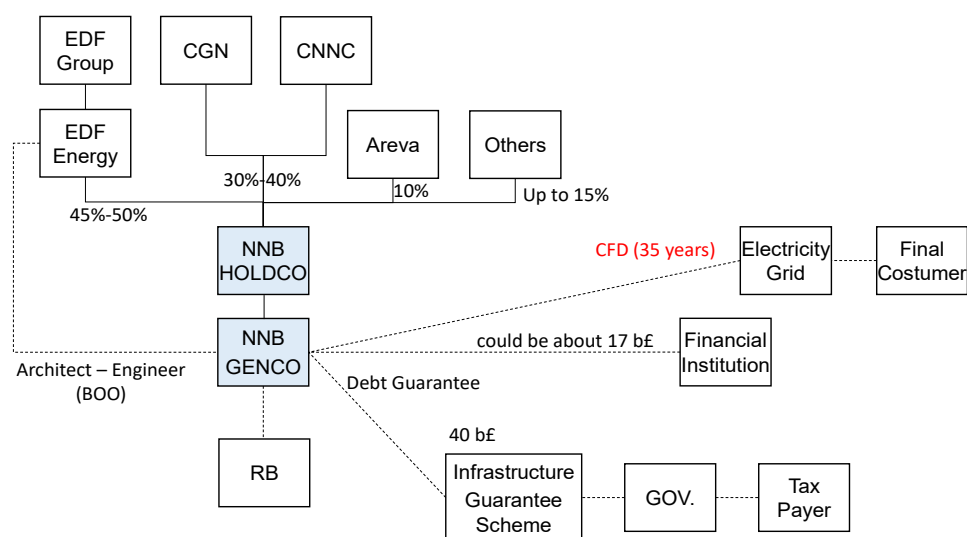


Figure 7-4: Hinkley Point C contracting network

The remaining configurations of the SPE-network, (i.e. A-G) sees one or more SPE undertaking the following roles:

- The project owner is a PC, in the configurations: A-D;
- The main contractor is an IVC, in the configurations: A, C, E, G;
- The project operator is an IVO, in the configurations: A, B, E, F.

In these configurations, the three project roles (Section 7.4.1) are independent of each other and are assigned to different organisations. The experts interviewed, suggested that the separation of roles is often preferable for financial and risk management purposes, i.e. for the risk isolation and risk allocation as aforementioned.

The configurations considered in this Section were based on a simplifying assumption concerning the way of integrating two or more SPEs. The Section assumed the scenario where a critical SPEs assumes two or more roles from the megaproject. There are “softer” and “hybrid” ways of integrating more project roles. For instance, the partial integration can be achieved using the unilateral or mutual (i.e. crossed) ownership between two (or more) SPEs. This option permits to maintain a partial integration concerning governance, leaving a separation between the SPEs from the accounting and risk management perspective. This expedient is frequently used to smooth and balance the different level of integrations between critical SPEs. Usually, the PC (acting as project owner) owns the other critical SPEs. This unilateral ownership permits to align the different roles of the SPE-network towards the objectives settled by the sponsors (and other critical investors) governing the PC (Section 7.5.1). This hybrid way of integrating SPEs was never discussed explicitly with the interviewees. However, the existing examples of SPE-network considered led the author to reflect on these forms of integrations.

The following Sections discuss how the SPEs govern and are governed within the SPE-network. The Sections assume a separation between the project roles, consistently with the configurations (A-D). All these configurations include the PC performing the role of “project owner”. The PC is the most relevant of the critical SPEs (Appendix 1: I02-E02, I04-E01, I05-E02, I06-E05, I09-E08, I11-E10, I13-E12, I16-E15, I18-E17, I26-E24). This choice of focusing only on the configurations (A-D) simplifies the narrative

of the following Sections, allowing to highlight the influence that critical SPEs have on the FGIM.

7.5. Proposition 2.B: the governance of SPEs

Proposition 2.B: *the megaproject's investors and other critical stakeholders govern the critical SPEs.*

To a large extent, the following enforcing instruments determine the formal governance of the critical SPEs by shareholding, shareholder agreement, article of incorporation, loan agreement and by the other relevant enforcing instruments predefining their purposes. Internally, the critical SPEs include the board of directors and by the internal policies, which determine their governance. These instruments provide the positive and negative controlling powers to the stakeholders governing them.

The following subsections describe how the formal instruments determine the formal governance of the critical SPEs, in particular:

- Section 7.5.1 describes how the PC is governed;
- Section 7.5.2 describes how the IVC is governed;
- Section 7.5.3 describes how the IVO is governed.

7.5.1. Proposition 2.B.i: How the Project Company (PC) is governed.

Proposition 2.B.i: *Usually, the PC is governed by the critical investors of the megaproject:*

- a. The sponsors having a vested interest in the project exercise a negative and positive control by mean of the shareholding, the shareholder agreement and the board of directors;*
- b. The lenders exercising a relevant negative control by mean of the loan agreement;*
- c. The government exercising a positive control in quality of shareholder, and a negative control through the concession and others similar enforcing instruments;*
- d. Other financiers (including international development banks, multilateral agencies, institutional investors, bond investors) have limited control on the PC.*

Figure 7-5 builds upon the framework introduced the previous Chapter. Figure 7-5 provides a systemic mapping on how the SPE-network is governed by the critical megaproject stakeholders. Figure 7-5 focuses on the PC, which is the most critical and emblematic SPE influencing the FGIM. The two other potential roles associable to critical SPEs are presented in grey.

7. Results (B). How SPEs influence the FGIM

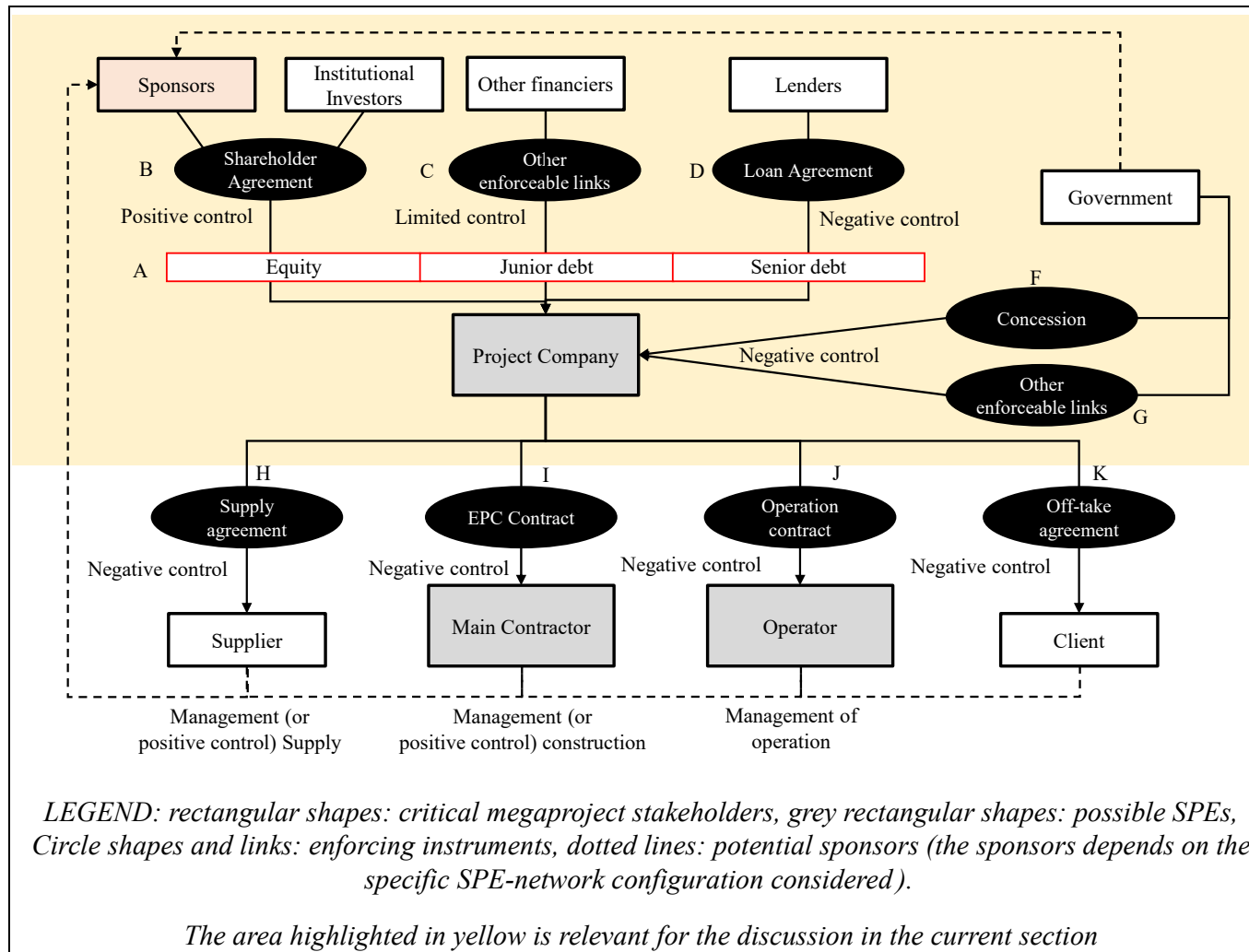


Figure 7-5: How the PC is governed.

On the top side, Figure 7-5 presents the **critical investors** of the megaprojects controlling the PC. The critical investors include the sponsors, the institutional investors, other financiers, and the lenders. Depending on the SPE-network configurations, the **sponsors** might include a variety of project stakeholders having a vested interest in the project. Potential sponsor includes the government, the critical suppliers, the main contractor, the operator, and the client. Usually, sponsors invest in the equity of the PC and have positive control of the PC, in accordance to their shareholding (Figure 7-5.A) and the provisions of the shareholder agreement (Figure 7-5.B). The **institutional investors** might invest in the equity of the PC. Often, the institutional investors have neither the interest nor the capability to control the PC positively. In such circumstances, the shareholder agreement (Figure 7-5.B) enables to reduce the positive control of the institutional investors in favour of negative controlling powers.

Usually, megaproject involves a variety of **other financiers**, including international development banks, multilateral agencies, insurances, hedging funds, bond-holders, etc. These investors might affect the design of the SPE-network. However, once the SPE-network is operative, they often have limited control on the PC. The **lenders** exercise significant control over the governance of the PC. This is legitimate in most financial structures observed, as the senior loan is the prevalent source of financing. The senior loan is typically organised in a syndicate of banking managed by one or more lead arrangers. The syndicate of banking governs the relationship between the banks composing the syndicate. The loan agreement (Figure 7-5.D) provides relevant negative powers to the lenders. Usually, these negative controlling powers are exercised by the lead arranger on behalf of the syndicate.

The **government**, if involved, might introduce further negative control on the PC. For example, the public concessions (Figure 7-5.F) can include controlling provisions for the Government. Additional enforcing instruments might provide further negative control to the Government (Figure 7-5.G). For example, the public guarantees issued by the Government to support the PC can provide additional controlling powers for the Government.

“On a critical infrastructure, the government may decide to take , what is essentially a class of two shares or something, are called golden share, which has negative control on the operation of the SPE or they have an infringement rights to be able to stop things from happening, even sending shares or other things.” Appendix 1: I02-

E2

In summary, the enforcing instruments A-G provide different positive and negative power to the stakeholders governing the PC. These instruments are negotiated together as part of the “financial package” (Appendix 1: I02-E02, I03-E03, I03-E04, I05-E02, I06-E05, I11-E10, I13-E12, I15-E14, I17-E16, I18-E17, I20-E19, I21-E2, I23-E21, I25-E23, I26-E24, I28-E26, I30-E28) as they need to be consistent with each other. For instance, the different positive and negative controls are balanced and prioritised in different contextual conditions. For example, the loan agreement might include a provision stating that the negative control conferred to the lenders takes priority towards the other positive and negative controls associated with the other investors. Usually, the loan agreement and the public concessions take priority over the other enforcing instruments.

The systemic balancing of controlling power stated in different enforcing instruments is complicated because of the intrinsic legal features of some enforcing instruments. For instance, the contracts are subjects to the doctrine of privity (Furmston, Cheshire & Fifoot, 2012), stating that the only beneficiaries of a contract are the contracting parties and not third ones. This legal setting complicates the systemic interlink between enforcing instruments. Complex legal solutions can be found, e.g. assigning of deeds to third-party beneficiaries. One of the benefits of the PC is its centrality to the SPE-network. The PC is a contracting party to many of the critical enforcing instruments characterising the SPE-network. The integration and consistency among the different enforcing instruments are facilitated by the PC in quality of contracting party.

The controlling power stated by the enforcing instruments A-G provide a systemic, and prescriptive, decision-making framework for the PC. However, the interconnection between these enforcing instruments is fragile in the sense that any default of contract, or company, might imbalance the attribution of risks,

responsibilities and controlling power. Particularly critical is the default of the PC as it is central to the SPE-network. To limit this fragility, SPE-networks are designed to cope with both expected and critical circumstances. In normal circumstances, the enforcing instruments operate harmoniously providing a precise and prescriptive governance framework for the PC. In critical circumstances, one (or more) enforcing instrument or organisations default. The SPE-network is equipped with a “*security package*” composed by different enforcing instruments, including the direct contract, the security agreement, security deeds, security trustee, etc. (Dentons, 2016).

The security agreement provides the mechanisms to:

- A. Maintain enforceable the SPE-network, usually through direct contract. Direct contracts provide a backup contracting framework to re-establish the SPE-network in case it collapses because of the default of one or more enforcing instruments or organisations;
- B. Assign all decision-making power to the lenders, who have the most significant interest in saving the project because they invested extensively in it. The lenders acquire the direct positive control of the SPE-network by mean of the following instruments: loan agreement, the security agreement, direct agreement, security deeds, and security trustee (which is usually the beneficiary of the security deeds);
- C. Replace or re-establish part of the SPE-network. Once they acquire full control of the SPE-network, the lenders are in the position to establish and renegotiate the missing parts of the SPE-network.

In summary, the security agreement provides the lenders with the option to redeem the SPE-network and the megaproject in case of critical defaults. The specific mechanisms underlying the security agreement are not the focus of this thesis. They are highly sophisticated, and their technical treatment would complicate the narrative of the thesis. What is relevant for this research is the effect of the security package on the governance of SPE-network. The security package provides an additional layer of security supporting the enforceability of the SPE-network in critical circumstances.

“The banks have the prime security over the other claims, All, or almost all, agreements have subordination arrangements.” Appendix 1: I03-E3

The Direct agreement involves the Government and the lenders. It covers the fact that in the case of termination of the project, the government compensate the financiers. Other aspects enable the banks to step into the projects.

Appendix 1: I15-E14

Conversely, other enforcing instruments are considered more in detail to explain how SPEs are governed. The previous discussion focused on the PC as it is particularly critical for FGIM. The other critical SPEs (i.e. IVC, IVO) are governed adopting the same enforcing instruments as described for the PC. The most relevant enforcing instruments influencing the governance of the critical SPEs are the shareholding, the shareholder agreement and the loan agreement. These enforcing instruments determine the relative powers that investors have on the critical SPEs.

The critical SPEs include additional structures and process characterising their internal governance. In quality of incorporated companies, the critical SPEs are subject to the traditional governance framework (Section 4.2). Differently, to other types of corporations, the internal governance framework of critical SPE is designed to be consistent and synergic with the external enforcing instruments. The board of directors and the internal policies provide relevant governance instruments for all critical SPEs.

The internal and the external determinants of the governance of the SPEs are presented in the following subsections.

How the shareholding influences the governance of critical SPEs

The shareholding is critical for determining the voting power at the shareholder meeting, which decides on critical matters as prescribed by the shareholder agreement of the SPE.

“The percentage of share is a good proxy about decision-making power toward the SPE and this information is usually available.” Appendix 1: I01-E1

Some organisations, absolutely always require greater than 50%, so they can have control. Otherwise, they may require at least to be the largest shareholder. Other

*investor shareholders do not require that control. And happily take 10, 15%/ As you know, there are thresholds. 5% is what allows you to get a resolution to the annual leasing, 10% etc., etc."*Appendix 1: I08-E7

The most basic assumption would consider the relative decision-making power associated with the “percentage of shareholding” of a company. Therefore, if a shareholder controls the 50%+1 of the shareholding, it can “impose any decision” on the SPE. At the beginning of the investigation, the researcher considered the game theory approaches to determine the controlling power due to the simple shareholding, such as the Shapley Index (Fujiwara-Greve, 2015). These indexes can be used to measure quantitatively the controlling power of the different shareholders, and there is extensive literature in the corporate governance literature (Section 4.2).

In real scenarios, the actual controlling power of the shareholder is not entirely based on the shareholding. For instance, the shareholder agreement can unbalance the controlling power of the shareholders, assigning disproportionate power to some shareholders compared to their shareholding. This scenario is typical in the case of golden shares, which are typically assigned to the government. Institutional investors might have reduced positive control compared to their shareholdings. Additionally, the loan agreement might associate special powers to the financial institutions and therefore limit the decision-making power of the shareholders. Moreover, the shareholding can be manipulated by mean of more sophisticated approaches as it happens with the “contingent equities” (Figlewski & Levich, 2012; Goyer, 2011; Pazarbasioglu *et al.*, 2011). As a result, the shareholding can be used as a general “proxy” of the controlling powers, but it does not reflect necessarily the actual power of the shareholders. Often, the shareholding plays a central role in rebalancing the controlling powers between the SPE shareholder. These dynamic modifications are facilitated due to the ability to transfer the shareholdings.

One interviewee suggested general rules of thumb in designing the shareholding (Appendix 1: I04-E01). These heuristic principles were not asked or confirmed by other experts, but they are often observable in megaprojects. Interviewee E01 suggested the following heuristic principles:

1. The shareholdings should support one majority shareholder to avoid deadlock positions. For example, in the case of two shareholders, it is advisable the position 51-49% rather than the 50-50%. The majority shareholder is the sponsoring organisation that is in the best position to manage the risk and responsibilities associated with the SPE in the given phase of the megaproject. For example, the main contractor during the construction, the operator during the operation, etc.
2. The coalition of the minority shareholders should be sufficiently powerful to balance the majority shareholder; this principle does not apply in the case of two shareholders. The minority shareholders maintain (jointly) the negative controlling power towards the positive controlling power exercised by the majority shareholder. In case of problems, the minority shareholder can take control of the SPE;
3. The ideal scenario considers three shareholders, one majority shareholder and two minority ones. In this scenario, the minority shareholders are not too dispersed to form a coalition to overturn the majority shareholder.

In PCs, the critical project stakeholders are also sponsors, e.g. the main contractor, the operator, the Government, sometimes the infrastructure client and the critical suppliers. All these critical stakeholders have a vested interest in the megaprojects. The PC regroups the stakeholders promoting and investing in the megaproject. Depending on the type of infrastructure, and the procurement process adopted, the sponsors of the megaproject might change. For example, in Liquefied Natural Gas (LNG) projects, the suppliers of gas (more in general, the international oil companies) are the critical sponsors together with relevant contractors and operators (Appendix 1: I01-E01, I04-E01, I16-E15, I18-E17). In power projects, the critical sponsor is usually the operating utility (Appendix 1: I05-E02, I08-E07, I09-E08, I17-E16). In transportation projects, the government or a deputy transportation institution is the critical sponsor (Appendix 1: I03-E03, I03-E04, I05-E02, I17-E16, I18-E17, I25-E23). In wind farm projects, the manufacturer of the wind turbines, the general contractor, and the operating utility are the critical sponsors (Appendix 1: I09-E08). In pipelines projects (e.g. in the oil & gas sector) different governments, national oil companies, international oil companies and main contractors are the sponsors (Appendix 1: I16-E15).

"In my experience, there is not a large change of the SPV structures in different types of infrastructure. The big difference is with the oil & gas. They do not need bank debt." Appendix 1: I04-E1

"Broadly, in my experience, there are no significant differences across infrastructure sectors. However, I am sure in different circumstances they might be."

Appendix 1: I11-E10

It is difficult to generalise about all possible shareholding compositions in different infrastructure megaprojects. What emerged clearly during the interviews is that the sponsors of the megaprojects are critical stakeholders having a vested interest in the project. Consistently, the critical stakeholders play a dual role in the SPE-networks, as from one side they are investors in the PC (and therefore on the megaproject), and on the other, they express the vested interest, namely:

- As suppliers of product or services: e.g. main contractor, critical suppliers, operator, or
- As a client of the infrastructure product or service: i.e. infrastructure client, offtaker, government, etc.

This dual role introduces the critical issue of conflict of interests in SPE-networks (Appendix 1: I03-E03, I03-E04, I04-E01, I05-E02, I06-E05, I08-E07, I09-E08, I11-E10, I12-E11, I15-E14, I21-E2, I23-E21, I26-E24). The conflict of interest is introduced by the main contractor acting as sponsor of the PC; the same reasoning can be employed for all other sponsors having a vested interest in the megaproject. If an organisation is both investor in the project and main contractor, there is a conflict of interest in the governance of the PC (Appendix 1: I03-E03, I03-E04, I04-E01, I05-E02, I06-E05, I08-E07, I09-E08, I11-E10, I12-E11, I15-E14, I21-E2, I23-E21, I26-E24). The EPC contract between the PC and the main contractor should be based on the principle of: "arm's length transaction", meaning that the two institutions are independent of each other, and the transaction is governed by the free market forces (OECD, 2017b; Wittendorff, 2010). The principle of arm's length transaction ensures that the two contracting agents negotiate rationally for their self-interest. Conversely, if the main contractor is also an investor on the PC, it is in the position to orientate the

decisions on the PC. In particular, the main contractor negotiates on the two side of the transaction, in quality of investors and main contractor.

“I guess the biggest picture about the conflict of interest is I said, you don't get rewarded for doing a bad job. Because the banks won't let you because their money is gone. They have spent all these money and will end up with a loss if they can't get the debt repaid; so that's why they would want independent surveyors looking at things. And they won't give you money the way you draw down is quite regimented. There will be a certificate for the technical advisors. And that is the very limits for frauds, and misuses of funds, because the banks really have an eye to that and to making sure things are done properly. Because otherwise, they lose out. If it goes wrong there is nothing here. They really want that road to be built, these above all others.” Appendix 1: I03-E4

“Normally, conflict of interest arises with problems in the projects such as construction delay, cost overrun poor maintenance, etc. Therefore, the shareholder agreement has normally some provisions under the name of: dis-enfranchise or conflict of interest. There is normally a procedure set out for the escalation of that dispute. Including the mediation and arbitration process. Normally, the shareholder agreement says that the appointed director cannot take part of that discussion to the specific matters in conflict.” Appendix 1: I15-E14

The article of incorporation of the SPE and the shareholder agreement regulates the conflict of interest of the shareholder of PCs (or any critical SPE). The usual remedy to this problem is based on the suspension of power delegated to the sponsors in a conflict of interest. The suspension is limited only to those decisions in a conflict of interest. In the previous example, when the PC negotiate (or renegotiate) the EPC contract with the main contractor:

- The main contractor is excluded to its decision-making powers in quality of sponsor of the PC;
- For this specific negotiation, the PC is directed by the other sponsors;
- The main contractor negotiates from the other side of the EPC transaction, defending its vested interest.

In practice, these arrangements are complemented by additional provisions forbidding cross alliances between sponsors, as stated in the shareholder agreement. These provisions limit the possibility that the main contractor is represented indirectly in the decision-making of the PC leading to a conflict of interest.

Ultimately, the provisions against the conflict of interest restore (partially) the arm's length transaction principle governing the negotiation, the design and the performance of the EPC contract. However, the provisions do not restore the independence of the contracting agents entirely because there is no real competition for the main contractor role. In practice, the main contractor in the sponsoring position can secure its role in the project. For this reason, the SPE-network is susceptible to the risk of monopolies and low competition, since the most critical stakeholders are often self-selected in quality of investors of the megaproject (Appendix 1: I03-E03, I03-E04, I04-E01, I05-E02, I06-E05, I07-E06, I08-E07, I09-E08, I11-E10, I12-E11, I15-E14, I17-E16, I18-E17, I19-E18, I21-E2, I23-E21, I24-E22, I25-E23, I26-E24, I27-E25).

How the shareholder agreement influences the governance of critical SPEs

Most experts interviewed confirmed that the shareholder agreement is an essential instrument to determine the governance of the SPEs (Appendix 1: I01-E01, I02-E02, I03-E03, I03-E04, I04-E01, I05-E02, I06-E05, I07-E06, I08-E07, I09-E08, I11-E10, I12-E11, I13-E12, I15-E14, I16-E15, I17-E16, I18-E17, I19-E18, I20-E19, I21-E2, I23-E21, I24-E22, I25-E23, I26-E24, I27-E25, I28-E26, I30-E28). The shareholder agreement is a contract between the shareholders of the SPE specifying the relative power of shareholders and the way these powers are implemented as part of the SPE's decision-making. Typically, the shareholder agreement involves all SPE shareholders.

The shareholder agreement is the more critical piece of documentation formalising the governance of SPVs. Appendix 1: I15-E14

The shareholder agreement can have endless configurations as, in general, is subject to the doctrine of “freedom of contracts”, meaning that the contracting parties have the freedom to design the contracts as they want. Usually, the shareholder agreement is confidential because it includes sensitive information, and this is true also for public

infrastructure projects. Usually, the shareholder agreement is created together with the incorporating vehicle: the combination of the two instruments (together with an appropriate fenced structure) originates the SPE.

The shareholder agreement includes critical aspects of the governance of the SPE. The researcher analysed some authentic shareholder agreements for infrastructure megaprojects. The following “headings” describe the critical provisions that a shareholder agreement might include. These headings were directly selected from the available samples and included some reflections arisen from the discussion with the experts during the interviews. The headings do not generalise the structure of the shareholder agreement but highlight the critical areas impacting on the governance of the SPE:

- Organisation of the corporation: indicating the general features of the SPE, the incorporating vehicle, the venue, etc.
- Capitalisation and shareholding: including the distribution of shares among the shareholders, their voting rights and other relevant provisions, e.g. regulating the conversion of equity;
- Issuance of shares: regulating aspects such as the “pre-emptive rights” of the existing shareholders, or the provisions regulating the increase or decrease of capital;
- Dividend policy: pre-defining the dividend policy and the distribution of policy. This Section is particularly relevant for the lenders, as they normally require to take priority toward the operating profits of the infrastructure;
- Board of directors: prescribing certain power to the board of directors. The provisions include: the process to be followed to appoint a director, the process to replace directors, the meeting rules, the voting rules, etc.;
- Shareholders: introducing provisions for the concerning shareholder meetings: i.e. scope, conduct of the meeting, notice period and process;
- Management of the corporation: describing the rules to be followed in the internal decision-making process, including which decisions require the board of directors approval, the shareholder approval, etc.;

- Transfer of shares: regulating the transfer of the share, e.g. chain in control, right to redemption of the share, look up and holding period for the shareholding, void transfers, etc.;
- Termination of the SPE: regulating the termination process of the SPE;
- Arbitration and deadlock: regulating aspects such as disputes, arbitrations, deadlock positions, etc.;
- Voting in controlled and subsidiaries: including provisions on how the SPE governs subsidiaries;
- Other stipulations: indicating aspects such as the confidentiality, the process of admission to a party, incorporating cost, no partnership clause, no-competition clause, further assurances, other agreements, etc.

In summary, the shareholder agreement regulates the relations between shareholders of the SPE and indicates the decision-making powers of both the “shareholder meetings” and “the board of directors”. Usually, the shareholder agreement provides a “formal” and a “substantive” definition of decision-making power. The formal definition provides the provisions regulating the decision-making process. The substantive definition of the power provides the subject areas where a decision is required, and it is assigned to either the shareholders or the board of directors. Shareholders are usually involved in more critical and strategic decisions, whereas the board of director is more operative.

How the article of incorporation influences the governance of critical SPEs

The article of incorporation is a formal document outlining the general governance of the SPE, the type of corporate structure, the duration, the registering agent, the venue and associable jurisdiction, and other basic information concerning the incorporated vehicle (Kraakman *et al.*, 2017). Often, the article of incorporation highlights the temporary nature of the SPE.

According to most interviewees, the article of incorporation is relatively standard and does not add any specific governance provisions (Appendix 1: I01-E01, I03-E03, I03-E04, I05-E02, I08-E07, I10-E09, I11-E10, I12-E11, I26-E24). In some contexts, it might include special rights to be assigned to critical stakeholders.

“The articles govern the underlying structure of the SPE, and the shareholders’ agreement seeks to agree how the day to day running of the SPE will function. In the articles, it is possible to entrench rights in respect of:

- Separate classes of shares and their respective [voting and distribution] rights and provisions relating to the variation of those rights. There may be a different economic distribution than economic interest. Note that some governments may seek to have a “golden share” in some projects to ensure that they have access to management information and can veto certain actions/activities;*
- Procedures for the issue and transfer of shares (including pre-emption rights and restrictions on transfer). Again subject to lenders restrictions;*
- Notice and proceedings at formal shareholder and director meetings (including quorum and voting). In practice, there are meetings under the shareholder agreements that allow for all such matters to be agreed wherever practical in advance of any public meeting.*
- Appointment, powers and duties of directors (and company secretary if one is to be appointed);*
- Provisions for the authorisation and management of directors' conflicts of interest. There is usually an adjustment for majority voting if there is a manifest conflict of interest. This helps prevent the above “who pays my pension” issue;*
- Drawdown, budget variances and certain other restricted or reserved matters.”(Appendix 1: I02-E02)*

Additionally, the article of incorporation can include special requirements for the shareholders such as the “good faith” having implications in equity law (Appendix 1: I03-E03, I03-E04). The good faith requirement typical in partnerships (e.g. joint ventures) and implies legal obligations for partners, as outlined by the equity law in common law jurisdictions (Appendix 1: I03-E03, I03-E04). The good faith requirement introduces enforceable requirements concerning the quality of the decision-making, the communication between partners, and similar aspects. Additionally, the article of incorporation often includes provisions aiming to avoid conflict of interests between shareholders and appointed directors (Appendix 1: I03-E03, I03-E04, I06-E05, I08-E07, I09-E08, I11-E10, I12-E11). These provisions

concerning the conflict of interest can be explicit or implicit in the good faith requirement attributable to decision-makers.

How the loan agreement influences the governance of critical SPEs

The loan agreement is a critical document of the financial package for the megaproject. Usually, the loan agreement regulates the relation between a syndicate of banks and the project owner. The loan agreement is controlled primarily by the lead arranger (representing the syndicate of banks) and the SPE. Often, the loan agreement provides negative controlling rights to the lead arranger or the syndicate in general. The loan agreement can have a significant impact on the governance of the SPE, as emphasised by some interviewees (Appendix 1: I03-E03, I03-E04, I05-E02, I06-E05, I11-E10, I12-E11, I13-E12, I15-E14, I18-E17, I20-E19, I21-E2, I23-E21, I28-E26, I30-E28). In particular, the PCs are used to support project finance transactions, which are often characterised by high financial leverage. In these scenarios, the lenders have strong bargain position during the negotiation of the PC, and they can impose strict controlling and negative control to oversights their investment.

“The loan arrangement will have a significant number of provisions in it, which entitle the banks to direct the company to do things. and they are like to say, you must terminate that EPC contract and appoint another EPC contractor...”

Appendix 1: I03-E3

This controlling power is legitimated because the loan is often provided on “no” or “semi-recourse” basis. The performance of the critical project stakeholders is essential to repay the vast loan associated with the PC. Therefore, the loan agreement has a pervasive controlling power toward the PC and the other critical enforcing instruments connected to it, i.e. the EPC contract, the operation contract⁷, public concessions⁸,

⁷ This thesis considers the operation contract in general terms, which is comparable to the Operation & Maintenance (O&M). “O&M helps to ensure that project O&M costs stay within budget and that the project operates as projected. [...] O&M may be dealt with under one contract with a single contractor, if this is appropriate to the type of project (e.g., a power station). Alternatively, the O&M responsibilities may be split (e.g., for a toll road, where toll operations involve one type of expertise and road maintenance another). Another approach is for the EPC Contractor or equipment supplier to provide long-term major maintenance.”(Yescombe, 2013:p.115)

⁸ The public concession (or concession agreement) “is a contract between a public-sector entity and the Project Company, under which a project is constructed to provide a service (rather than a product as under an Offtake Contract) to the public-sector entity, or directly to the public. Concession

supply agreements⁹, offtake agreements¹⁰, etc. Often the provisions introduced by the loan agreement take priority toward on the ones included by the other enforcing instruments. In the case of inconsistency or conflict between different enforcing instruments, the loan agreement has the priority.

The negative controlling power exercised by the lenders through the loan agreement might include:

- The access to the information available to the shareholders and directors of the SPE;
- The lender's power to participate in the shareholder meeting or board of directors meetings. The loan agreement specifies the negative controlling power and the modality by which these are exercised by the lenders. Often the lenders are represented by an agent (fiscal person) having different controlling power in different decision scenarios. The agent might be appointed as “silent” or “shadow” director. The most critical decisions usually provide veto power to the representative of the lenders. The less critical information usually do not provide any voting rights to the lenders and their representative.

How the board of directors influences the governance of critical SPEs

The board of director is the critical institution managing the critical SPEs. The shareholder agreement regulates the composition of the board of directors. The general rule states that the directors’ power mirrors the shareholding of the organisations appointing them. There are several exceptions to this general rule, as previously described in the current Section.

Agreement is the traditional name for this type of contract, but it now also goes under various different names, such as Service Agreement or Project Agreement.” (Yescombe, 2013:p.79)

⁹ Supply (input) contract “are likely to be the main operating cost for a project yielding an output product (as opposed to providing a service), whether under an Offtake Contract or into the open market. Security of the input supplies, on an appropriate pricing basis, is therefore an important building block for this type of project finance, usually achieved through a long-term Input Supply Contract.” (Yescombe, 2013:p.117)

¹⁰ Offtake Contract “is used for a project that produces a product (e.g., a power purchase agreement is used for a project producing electricity). Such agreements provide the Offtaker (purchaser) with a secure supply of the required product and the Project Company with the ability to sell its products on a pre-agreed basis” (Yescombe, 2013:p.70). This thesis considers the offtake contract in a broader sense without focusing on technicalities.

The directors' voting power might change depending on the decisions considered by the board of directors. For example, an operative decision can be left to a single director representing the majority shareholders, whereas more critical decisions might require simple or qualified majority votes. In general, the following list exemplifies the possible powers that can be associated with the directors in different decisions:

1. Participate in the meeting without the possibility either to speak or vote;
2. Participate in the meeting with the possibility to speak but not vote;
3. Ability to speak and simple vote;
4. Ability to speak, simple vote and veto power;
5. Exclusive power to decide.

Different decisions require different quorums and majorities as prescribed by the shareholder agreement of the SPE. Other aspects regulating the decision-making of the board of directors include the notification requirements and the way the board discussion and decisions are conducted.

"When you establish an SPV you have to identify the board of directors. And they also agree what powers, the board of directors, are delegating to, for instance, the project manager of the chief executive of the SPV. And therefore what powers are reserved to the board. Ad of course at the board level, you have people representing the different investors." Appendix 1: I08-E7

"We all know that a director has a duty to act in the best interest of the company. However, in reality, he is appointed, usually, by an investor, a shareholder and he is there to (where it is possible) to safeguard the interest of the shareholder. I think this is a reality even if, strictly speaking, he is supposed to be acting solely in the best interests of the company. If you are a director of the SPV, your powers and your responsibilities, are what is leftover after you have delegated to the project manager and after what have been reserved to the shareholder. Because there are some powers that are reserved to the shareholder anyway. It is not to the board to take certain decisions; they have to go to a shareholder vote. You are in the middle."

Appendix 1: I08-E7

In my experience the roles of the directors rotate every two years to don't give too much control to one party (i.e. shareholder). Benefits: Good balance of power between sponsors. Downside: you loss the expertise gained by the managers, an It is difficult to find the correct person every two years. Appendix 1: I09-E8

Usually, the industrial shareholders are represented by the directors consistently to their shareholding. The financial institutions, if involved, might have negative control. Sometimes, the public institutions have the golden share providing disproportionate power compared to their shareholding. In summary, the board of director is a critical institution to manage the PC and its associated activities.

How the internal policies influence the governance of critical SPEs

The internal policies are the quality manuals describing in details the internal procedures to be followed by the personnel of the SPE. Usually, the internal policies are not enforceable in courts, as they are internal guidelines of how to conduct the SPE business. The policies are particularly relevant for the IVs undertaking complex activities that need to be specified.

The policies are often derived from the internal policies of the critical shareholders. In case of multiple shareholders, the policies might be negotiated and harmonised. Often, the draft proposed by one shareholder is reviewed by the others until they reach a conclusive agreement on the final policies. Sometimes the different shareholders split the efforts in designing the internal policies to avoid conflicts or unproductive negotiations. The leading shareholder (i.e. the contractor for the IVC, the operator for the IVO) often provide the first draft of the policy to be ratified, or amended, by the others. The internal policies are essential for making operative the SPEs, and the IVs in particular. They play a critical regulative and normative role for the internal governance of the SPEs.

“That’s normally a collaborative paper, so we as shareholders, we provide something that we think it would fit, and then the management would take it further to the...to kind of being more specific and then it goes the way or propose it the way

they like it and then they send it to the board for adoption, or to the shareholders for adoption.” Appendix 1: I06-E5

“You can call the policies, you might call them LWIs: Local Work Instructions. I would expect that in the shareholder agreement. There are big issues of how to address and resolve disputes. So you are right, there are many other things to day to day operations. Which may be, even not drafted at the time the shareholder agreement was signed. But there is the belief that it was necessary to document those procedures.” Appendix 1: I08-E7

“The internal procedures evolve over time, particularly the ones related to the operation and maintenance. These are really practical statements. The degree of involvement of negotiating lawyers in these is minimal.” Appendix 1: I15-E14

7.5.2. Proposition 2.B.ii: How the Industrial Vehicle – Contractor (IVC) is governed

Proposition 2.B.ii: *Usually, the IVC is governed by the industrial sponsors (involved in the delivery phase) by mean of the shareholding, the shareholder agreement, and the board of directors. The PC might exercise a direct control (in quality of shareholder) or a negative one, through the EPC contract.*

The IVC employs the same enforcing instruments as the PC to determine its governance, i.e. the shareholding, the shareholder agreement, the board of directors and the internal policies (Section 7.5.1). Unlike the PC, the loan agreement is less relevant (or not existing) in the IVC. The IVC is used as industrial JV, and therefore they are incorporated for industrial purposes rather than financial ones. Usually, the IVC does not include a vast debt, but eventually a service debt for liquidity management during construction. Therefore, the loan agreement is not critical for the governance of the IVC.

Conversely, the following enforcing instruments frame the governance of the IVC:

- **Shareholding:** typically, the main sponsors of the IVC are the critical stakeholders involved in the construction of the megaproject, and, more specifically the critical

contractors and the technology provider. Often the PC is also a shareholder of the IVC; by doing so, the PC can influence directly and positively the governance of the IVC.

- **Shareholder agreement:** similarly to the PC, the shareholder agreement prescribes the general decision-making rules and powers for the sponsors of the IVC.
- **Article of incorporation:** similar to the PC;
- **Board of Director:** The directors appointed by the sponsors, under the power prescribed by the shareholder agreement, manage the IVC.
- **Internal policies:** internal policies are particularly important if the IVC is directly involved in some construction activity. Often the IVC exercises management and engineering support for the megaproject. The internal policies are limited to these activities.
- **EPC contract:** the PC usually exercises negative control towards the main contractor responsibilities. The negative control is embedded in the acceptance conditions stated in the EPC contract. To reduce the discretionary power of the PC, often a third party independent certifier is appointed either by the PC or by its lenders.

7.5.3. Proposition 2.B.iii: How the Industrial Vehicle – Operator (IVO) is governed

Proposition 2.B.iii: *Usually, the IVO is governed by the industrial sponsors (involved in the operating phase) by mean of the shareholding, the shareholder agreement, and the board of directors. The PC might exercise a direct control (in quality of shareholder) or a negative one, through the operation and maintenance contract.*

The governance of the IVO is comparable to the IVC. Megaproject investors often assume the operations to be less risky compared to the construction. Firstly, the operations of the infrastructure is inherently more predictable and endogenous to the operator control. Secondly, during the operation phase, the PC owns collateral for the investors, which is the infrastructure as an asset. Concerning the governance, megaproject investors are often concerned about the ability to replace the management of the operation in case of underperformance. Typically, this ability to replace the

management is based on two main ways that can be combined. Firstly, operations and maintenance contract might include termination provisions in case of underperformance, e.g. if the availability of the infrastructure service falls under a certain threshold for given period. Secondly, the project operator (the IVO) is positively or negatively controlled by the PC. Therefore, the governance instruments (e.g. shareholding, shareholding agreement, etc.) available from the sponsors of the IVO are used to maintain under scrutiny performance of megaprojects during the operations.

In general, the enforcing instruments governing the IVC and the IVO are usually the same. The main differences lie in the shareholding and the operation and maintenance contract; more specifically:

Shareholding: usually, the sponsors of the IVO are industrial organisations involved in the operating phase of the infrastructure megaprojects, such as the operator, the fuel supplier or other critical service suppliers (e.g. maintenance). Often, the PC is also a shareholder of the IVC. Consistently, the PC is in the position of influence the governance of the IVC directly and positively.

Operation and Maintenance contract (O&M): the O&M contract can change significantly deepening of the sector considered. In some sectors, the operation and maintenance contract is subordinated to the offtake contract. The subordination is governed by the PC that is the contracting agent interlinking both the offtake and the O&M contracts. This scenario is often observable in power and transportation infrastructure (Appendix 1: I06-E05, I07-E06, I08-E07, I11-E10, I17-E16, I18-E17, I19-E18).

There are exceptions to this standard approach. One of the most relevant exceptions consists of the operations of upstream oil & gas infrastructures (Appendix 1: I01-E01, I04-E01, I16-E15, I24-E22). In this sector, the operation of the infrastructure is not merely an industrial service, but rather a critical determinant of the national policy. In particular, for those oil & gas producers, the operation of the extraction infrastructure is coordinated with the national policy as it affects the national oil reservoir, the price of oil, the international commercial trades, etc. Consistently, the O&M contracts

available in the upstream oil infrastructure often include balancing mechanisms to trade-off the conflicting objectives, of different contracting stakeholders. Usually, the upstream infrastructure adopts three main models: petroleum concessions, production sharing agreement or service contracts (Open Oil, 2012). These models are employed depending on many factors including the maturity of the country, the legal and regulatory framework, the administrative tradition, the national policy, etc.

The IVO provides a flexible organisation that is adaptable to different contracting models. Simplistically, the differences between governance configurations lie on the attribution of controlling power concerning the extraction of oil & gas. From one hand, in the concession model, the private concessionaire (i.e. international oil company) has the freedom to decide the production. On the other hand, in service contracts, the government (either directly or through the national oil company) has the control towards the oil extraction. The production sharing agreement provides an intermediate model, whereas the government and the international oil company decide together the extraction quantities. The IVO can accommodate the three scenarios by balancing the decision-making power of the Government, the national oil company and the international company. The attribution of decision-making power is amendable using the shareholding, the shareholder agreement and the power associated with the appointed directors at the board of directors.

7.6. Proposition 2.C: the governance of the SPE-network

Proposition 2.C: *Critical SPEs govern critical parts of the SPE-network on behalf of their sponsors. Consequently, critical SPEs govern critical parts of the megaproject.*

The following subsections describe how the critical SPEs govern, either directly or indirectly, the SPE-network, in particular:

- Section 7.6.1 describes how the PC governs part of the SPE-network;
- Section 7.6.2 describes how the IVC governs part of the SPE-network;
- Section 7.6.3 describes how the IVO governs part of the SPE-network.

7.6.1. Proposition 2.C.i: How critical SPEs govern part of the SPE-network and the megaproject

Proposition 2.C.i: *Usually, the PC controls indirectly and negatively the industrial sponsors through the unilateral provisions included in the project development package. In particular, the PC oversees the construction and operation of the megaproject. Sometimes, the PC directly controls the IVC and the IVO in quality of sponsors.*

Usually, the PC exercises a negative control on the main industrial and economic activities, which are contracted out from the PC to the other critical stakeholders of the SPE-network. Typically, the negative control arises from unilateral provisions included in the “project development package”, particularly concerning the EPC and the operations and maintenance contracts. Due to the unilateral controlling provisions, the PC has asymmetric power compared to its contracting counterparts; this is the ground for the negative controlling power exercised by the PC. Figure 7-6 illustrates how the PC governs part of the SPE-network and megaproject. The bottom part of Figure 7-6 illustrates the control that SPE has in relation to the industrial stakeholders involved in the SPE-network.

“When it comes to the governance within an SPV, that aspect of it, often it determines both the shape of the project and how it is governed from the SPV as owner and sometimes as an operator.” Appendix 1: I17-E16

7. Results (B). How SPEs influence the FGIM

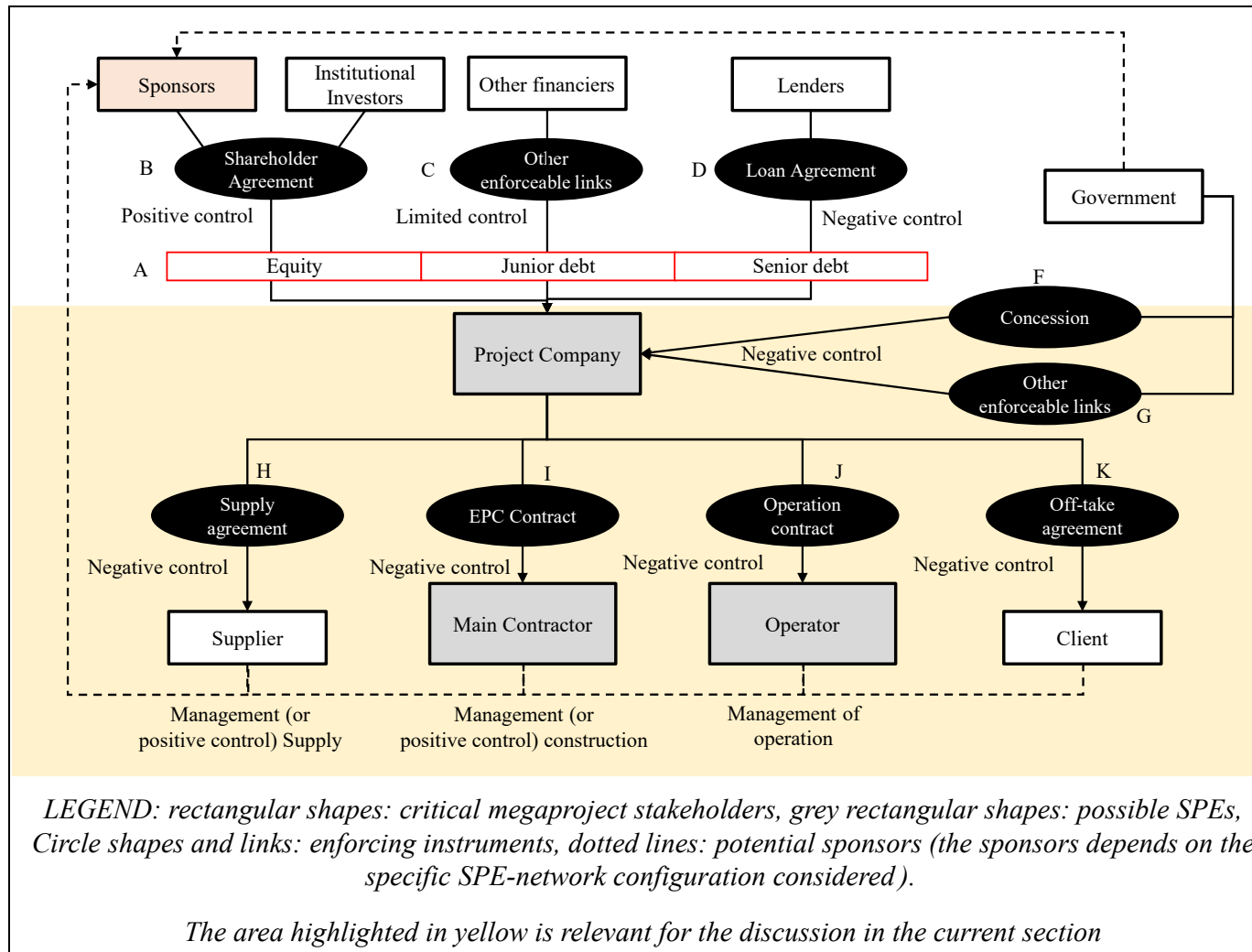


Figure 7-6: How the PC governs part of the SPE-network

The PC assumes the role of project owner acting as the contracting hubs for most transactions considered by the SPE-network. On the one hand, the PC institutionalises the "voice of the investors". The critical investors exercise a positive and negative control on the relevant decisions taken by the PC. The PC includes internal governance framework mechanisms allowing to align the internal management of the PC with the decisions exercised by the critical investors. On the other hand, the PC exercises a negative control towards the enforcing instruments characterising the first contracting tier; particularly the ones having an economic and industrial relevance for the megaprojects. Figure 7-6 shows these enforcing instruments with the letter H-J. The PC exercises a negative control on these enforcing instrument in quality of client and owner of the megaproject. The exercise of negative control can be either directly or indirectly.

Firstly, the PC exercises a **direct control** on major aspects impacting on the financing of the megaproject. The shareholder agreement of the PC, consistently with the project development package provides the direct controlling power on certain matters. For example, the PC has a certain power to amend the project budget, the scope and the timing associated with the megaproject. Often, the direct control is exercised by mean of re-negotiation of the following enforcing instruments: supply agreement, EPC contract, operation and maintenance contract, offtake agreement, etc. Figure 7-6 displays these enforcing instruments with the letters H-K. Usually, these enforcing instruments are very prescriptive, leaving a limited discretion power to both contracting parties. However, these enforcing instruments often require amendments to cope with unexpected circumstances and problems. In particular, some of the critical aspects requiring a renegotiation of the contracts involving the PC include:

- The supply agreement (Figure 7-6 -H). Changes in supply prices, quantities or service are subject to the approval of the PC according to the provisions introduced by the supply agreement;
- The EPC contract (Figure 7-6 -I), which is probably the most critical. Changes in the construction time, budget or scope are subject to the approval of the PC according to the provisions introduced by the EPC-contract;

- The O&M contract (Figure 7-6 -J). Changes in the operation cost or service are subject to the approval of the PC according to the provisions introduced by the O&M contract;
- The offtake agreement (Figure 7-6 -K). Changes in the quantity, price or service considered by the offtake agreement are subject to the approval of the PC according to the provisions introduced by the offtake agreement.

Secondly, the PC exercises an **indirect control on the technical performance** associated with the project development package: i.e. the EPC contract (Figure 7-6 -I), and the O&M contract (Figure 7-6 -J). Usually, the PC appoints independent certifier to monitor the technical performance of the enforcing instruments. The independent certifier can be an engineering company or another specialised organisation capable of monitoring certain technical performance, e.g. construction progress, operational performance, etc. The independent certifier issues acceptance certificates once the technical performance of certain activities is achieved. For example, the independent certifier releases the certificates at the completion of the critical megaproject milestones. The certificate is usually linked to a tranche of payment, which is then released by the PC to the beneficial contracting party, on behalf of the investors.

“I guess the biggest picture about the conflict of interest is I said, you don't get rewarded for doing a bad job. Because the banks won't let you because their money is gone. They have spent all these money and will end up with a loss if they can't get the debt repaid; so that's why they would want independent surveyors looking at things. And they won't give you money the way you draw down is quite regimented. There will be a certificate for the technical advisors. And that is the very limits for frauds, and misuses of funds, because the banks really have an eye to that and to making sure things are done properly. Because otherwise, they lose out. If it goes wrong there is nothing here. They really want that road to be built, these above all others.” Appendix 1: I03-E4

In summary, the PC exercises direct and indirect control on the industrial activities characterising the megaproject, as prescribed by the enforcing instruments

characterising the project development package. The control exercised by the PC is prevalently negative and indirect in compliance with the prescriptive provisions included in the project development package. Conversely, the PC has an active role in the renegotiation of most critical enforcing instruments on behalf of the megaproject investors. The influence of the PC in the FGIM is susceptible to the conflict of interests of those sponsors having a vested interest in the project. As explained in Section 7.5.1, the shareholder agreement and the article of incorporation provide the remedies to the conflict of interest.

7.6.2. Proposition 2.C.ii: How the Industrial Vehicle – Contractor (IVC) governs part of the SPE-network of the megaproject.

Proposition 2.C.ii: *Usually, the IVC controls positively, or manage directly, the delivery of the megaproject. Often, the IVC includes the project manager and his team.*

Usually, the IVC assumes the role of the main contractor; in the eyes of the PC, the IVC is the single point of responsibility for the delivery of the infrastructure megaproject. Usually, the delivery includes the design, building and commissioning of the infrastructure.

The IVC regroups the critical contracting stakeholders (Appendix 1: I02-E02, I05-E02, I06-E05, I09-E08, I11-E10, I24-E22), and it is an incorporated construction JV. The IVC is similar to the construction consortium, but it differs regarding the legal personality (Section 3.5). The IVC governs the delivery of the megaproject. It provides the corporate structure to coordinate the critical "project development stakeholders" regrouped by the IVC. Usually, the IVC includes the project management function: the project manager is often appointed inside the IVC, and he/she is hired temporarily (e.g. secondment). Often, the project manager is the leading (managing) director of the board of directors of the IVC.

Consistently, the IVC provides the formal governance structure for the delivery of the project. The governance structure is based on the common enforcing instruments previously introduced (Section 7.5.1), i.e. the shareholding, the shareholder agreement, the article of incorporation, the board of directors, and the internal policies.

Sometimes, depending on the circumstances of the project, the IVC hires directly (or by a subsidiary) part of the temporary staff dedicated to the project. Often, the IVC has only the project management function, and the effective construction activities are subcontracted, often to the critical sponsors of the IVC. The conflict of interest of the sponsors having a vested interest in the megaproject is resolved similarly to how it is resolved by the PC (Section 7.5.1).

Usually, the IVC controls positively (or manages directly) the first tier of the project delivery chain, thanks to the provisions included in the shareholder agreement and the subcontracts. This is justified by the general architecture of the SPE-network, which implies an effective assignation of risks and reasonability to the critical stakeholders. If the delivery of the project underperforms, the megaproject is seriously at risk. The investors often do not have collaterals, and they are susceptible to lose the invested capital. Similarly, other critical stakeholders can lose their vested interest in the megaproject. To avoid this catastrophic scenario, the attribution of risks and responsibility must be accountable and enforceable, particularly for the delivery of the infrastructure. This principle is threatened in case of a cascade of sub-contracting, which involves long chains of subcontracts increasing the contractual distance between the client and the organisation that performs (effectively) the construction activity (herein called effective-sub-contractor). For the “doctrine of privity” (Furmston, Cheshire & Fifoot, 2012), the only agents bonded to contracts are the contracting parties, meaning that third parties have no rights or duties in relation to those contracts.

In the case of a cascade of sub-contracting, the client and the effective sub-contractor are not linked by a contract, but rather by a series of intermediate sub-contractors interposing them. From the perspective of the IVC, and this scenario jeopardises the effective enforcement and accountability of the construction activities. Often, in a cascade of sub-contracting, the scope of work is broken down into multiple work chunks which are assigned to many “effective sub-contractors”. In such scenario, the line of accountability is dispersed into the project delivery chain. The project delivery is liable to any default of either subcontracts or subcontractors, which may cause significant delay and over budget. For this reason, the IVC often assumes proximity to

the project development activities, i.e. direct contract or direct management. As a result, the IVC assumes a relevant governance role (and sometimes management) for the megaproject.

7.6.3. Proposition 2.C.iii: How the Industrial Vehicle – Operator (IVO) governs part of the SPE-network of the megaproject.

Proposition 2.C.iii: *Usually, the IVO manages the O&M of the infrastructure megaprojects directly.*

Typically, the IVO manages the infrastructure assets directly. Usually, the IVO hires directly (or through a subsidiary) the operating personnel. The governance of the IVO is designed for routine (or cyclic) operating processes. The IVO employs the standard governance structure of operating corporations. The internal policies provide formal and normative standards for quality assurance. The internal organisational structures reflect the operating activities. Unlike normal corporations, the strategic governance is limited and focused on the O&M of the infrastructure only. These predefined purposes are introduced by the shareholder agreement and by the operating and maintenance contract. From the perspective of the sponsors, the IVO is a “cost centre”. Consistently, the impact of the IVO in the FGIM concerns the direct management of the operations.

7.7. Summary of the theoretical propositions and reflection

The current Chapter addresses the RO4: “*To develop a theory that explains how SPEs influence the FGIM*”. The proposed theory is based on the following theoretical propositions.

Proposition 1: *Not all types of SPEs influence the FGIM. The types of SPEs having a relevant impact on the FGIM are: the Project Company (PC), the Industrial Vehicle-contractor (IVC) and the Industrial Vehicle – Operator (IVO). These types of SPEs are defined as “critical SPEs”. The other types of SPEs (i.e. non-critical SPEs) do not have a relevant impact on the FGIM.*

Reflection on the proposition 1. The first proposition highlights the relevance that some types of SPEs can have on the FGIM. The existing project management literature does not explicitly recognise the relevance of SPEs for the FGIM (Section 5.2.1) and does not differentiate between different types of SPEs. Therefore, the first proposition justifies the PhD research, paving the way towards further researches, and the theoretical contribution consists of the explanation of the relevance of SPEs and in the differentiation between alternative types of SPEs. More specifically this research differentiates the SPEs according to their functions. The differentiation between the SPEs was essential because SPEs can have many forms, ranging from an intangible incorporated company without assets, personnel and venue (i.e. "simply" one document, such as an article of incorporation in a lawyer's office) to large organisations operating infrastructure megaprojects. Without this essential distinction, the term SPE would remain too vague. Furthermore, the term SPE can have different meanings, depending on the audience. Since the field of research is multidisciplinary, it was essential to specify and clarify what SPEs are, and what they do (Chapter 6). The classification also allowed to identify the types of the SPEs influencing the FGIM, addressing the RO1- RO3.

Proposition 2: *The critical SPEs are instrumental and functional to the SPE-network, and they influence the FGIM.*

- A. The critical SPEs assume critical project roles for both the megaproject and the SPE-network;*
- B. Megaproject's investors and other critical institutional stakeholders govern the critical SPEs;*
- C. Critical SPEs govern critical parts of the SPE-network on behalf of their sponsors. Consequently, critical SPEs govern critical parts of the megaproject.*

Reflection on the proposition 2. The second proposition introduces three perspectives highlighting the impact that critical SPEs have on the FGIM, i.e. propositions 2.A, 2.B and 2.C. These perspectives emerged inductively from the application of the RAIGT.

These three perspectives are consistent with project organising theories (Section 4.4) combining transactional and inter-organisational governance perspectives. The

proposition 2 lies explicitly on the transactional perspectives focusing on the SPE-network. However, the proposition 2.B considers the inter-organisational perspectives implicitly (Section 4.5.2), looking at corporate governance mechanisms of critical SPEs.

The second proposition introduces the concept of SPE-network, which is the unit of analysis emerged from the research. The identification of the SPE-network lies on the regulative pillar of the institutional theory (Section 4.3.1). Similarly, the contingency theory informs the different configurations of the SPE-network as described in Section 7.4. The research acknowledges the existence of a systemic negotiation and design of the SPE-network, which typically considers three main packages of enforceable instruments, i.e. the project development, the financial and the security packages. The packages comprise of a conjunction of enforceable instruments (e.g. contracts, concessions, deeds, SPEs) that are integrated harmoniously to give effect to specific purpose (such as balance the risk between stakeholders, attract investors. The compound of enforceable instruments enables specific effects, that the single instruments would not be capable of balancing). Consistently, this research acknowledges that the governance features associated with independent instruments are partial and sometimes meaningless. This reduced perspective is often employed in project management to deal with the formal governance (Section 4.5). The research provides a systemic perspective by considering systemic governance structures in infrastructure megaprojects.

Proposition 2.A: *The critical SPEs assume critical project roles for the megaproject and the SPE-network, in particular:*

- i. The PC assumes the role of project owner;*
- ii. The Industrial Vehicle –Contractor (IVC) assumes the role of the main contractor;*
- iii. The Industrial Vehicle –Operator (IVO) assumes the role of project operator;*

Potentially, the three roles can be integrated into different SPE-network configurations. Some configurations are more frequent than others:

- iv. Often, the three roles are kept separated;*

- v. *Alternative configurations can be observed in special circumstances, for instance, the integration between the project owner (PC) and the project operator (IVO);*
- vi. *Other integrations are less likely to take place for organisational and risk management reasons.*

Reflections on the proposition 2.A. The proposition 2.A is consistent with the project organising literature (Section 4.4). According to contingency theory, this research identifies and comments alternative configurations of the SPE-networks. This research concludes that specific configurations are more likely to occur than others. This result is justified by the specific governance and risk management rationales that were described in Section 7.4.2. In summary, proposition 2.A provides insightful results for the project management literature expanding on a consolidated project organising framework.

Proposition 2.B: *the megaproject's investors and other critical stakeholders govern the critical SPEs.*

To a large extent, the following enforcing instruments determine the formal governance of the critical SPEs by shareholding, shareholder agreement, article of incorporation, loan agreement and by the other relevant enforcing instruments predefining their purposes. Internally, the critical SPEs include the board of directors and by the internal policies, which determine their governance. These instruments provide the positive and negative controlling powers to the stakeholders governing them.

Proposition 2.B.i: *Usually, the PC is governed by the critical investors of the megaproject:*

- a. *The sponsors having a vested interest in the project exercise a negative and positive control by mean of the shareholding, the shareholder agreement and the board of directors;*
- b. *The lenders exercising a relevant negative control by mean of the loan agreement;*
- c. *The government exercising a positive control in quality of shareholder, and a negative control through the concession and others similar enforcing instruments;*

d. Other financiers (including international development banks, multilateral agencies, institutional investors, bond investors) have limited control on the PC.

Proposition 2.B.ii: *Usually, the IVC is governed by the industrial sponsors (involved in the delivery phase) by mean of the shareholding, the shareholder agreement, and the board of directors. The PC might exercise a direct control (in quality of shareholder) or a negative one, through the EPC contract.*

Proposition 2.B.iii: *Usually, the IVO is governed by the industrial sponsors (involved in the operating phase) by mean of the shareholding, the shareholder agreement, and the board of directors. The PC might exercise a direct control (in quality of shareholder) or a negative one, through the operation and maintenance contract.*

Reflection on the proposition 2.B.i-iii. The proposition 2.B lies on the two traditional project governance perspectives, namely: the transactional (Section 4.5.1) and the inter-organisational perspective (Section 4.5.2). In particular, the proposition builds upon corporate governance and expands toward those enforceable instruments constraining the governance of SPEs. The research acknowledges that traditional corporate structures only partially fit with the specific nature of SPEs. SPEs are not common corporations, and their governance also lies on external enforceable instruments, including shareholder agreement, loan agreement, etc. This is a strong exception of the traditional corporate governance assumptions. In normal corporations, external contracts do not change their governance, with limited exceptions such as the shareholder agreement. The research shows that corporate governance assumptions are only partially respected in SPEs. Therefore, a question arises about whether traditional corporate governance theories (Section 4.3) are still applicable to SPEs.

Some governance theories are sufficiently general to be applied directly to SPEs, such as the institutional, the rational choice and the contingency theories, which also informed the development of proposition 2.B. Other corporate theories are less likely to be directly applied: these are the agency theory, the shareholder and the stakeholder theory.

The research directly employed some of these theories (Section 4.3) as they provided the “theoretical lenses” to investigate governance. In particular, the regulative pillar of the **institutional theory** and the **transaction cost** perspective enabled the author to identify the SPE-network as a critical construct for this research (Section 6.3).

The **rational choice and contingency theories** were implied as assumptions for the research. In fact, the research focuses on formal governance and does not consider other aspects that fall outside **rational choice theory**, such as the social or psychological elements of governance (i.e. the informal governance). The contingency theory is embedded in contracting, particularly in megaprojects. The narrative of the research includes reference to special cases and exceptions, particularly concerning the nuclear and the oil & gas sector. The author argues that the most critical challenge for this research was to trade-off two conflicting requirements, i.e. to provide general propositions vs being sufficiently specific concerning the technicalities of the topic. The contingency theory supported the research in finding the most appropriate balance between these requirements.

Thirdly, the research contributes to the following theories: (1) agency, (2) shareholder, and (3) stakeholder (Section 4.3). These three theories were developed in the traditional corporate context. SPEs are unconventional corporations characterised for their limitations in time and scope, together with the formal restrictions affecting their decision-making. The research shows that the application of these three theories is very different in SPEs compared to normal corporations.

Concerning the **agency theory** this research provides relevant insights. Traditionally, the agency theory has been focusing on the misalignment of interests between the shareholders and managers of corporations. However, the experts interviewed did not mention this aspect as particularly critical for SPEs. The misalignment of interests between the shareholders of the SPE and the appointed managers is less significant in SPEs than in regular corporations. This is due to the following reasons:

- The appointed directors work only temporarily for the SPEs, while they work for the parent companies on a permanent basis. Therefore, the discrepancy between objectives is reduced in SPEs;

- The appointed directors have limited scope for decision-making compared to the directors of traditional corporations. This limitation is due to the constrained nature of the SPE and the pre-defined purpose of the SPE;
- The shareholders have substantial power to oversee and replace the appointed directors;
- The asymmetry of information between the appointed directors and the shareholders is limited in SPEs. Typically, the shareholders have a vested interest in the megaproject, working as main contractor, operators or in other roles. Therefore, the shareholders view the SPE business from different perspectives, which reduces their information gap compared to the appointed directors;
- The directors of the SPE are appointed by different organisations having (partly) conflicting objectives. The heterogeneous composition of the board of directors leads to a mutual checking from the directors. To some extent, the composition between the board of directors is close to the ancient governance principle “divide et impera” (i.e. divide and rule). The principle describes the situation where divisions in the controlled parties (the directors in the analogy) make them weaker and controllable in the eyes of the controlling party (the shareholders in the analogy);
- Concerning the PCs, the lenders oversee the decision-making of the directors strictly.

In the existing literature, the agency theory is broader than the relationship between sponsors and directors of a corporation (Jensen & Meckling, 1976; Mitnick, 1973; Müller, Shao & Pemsel, 2016; Ross, 1973). The “agency” relates to any time an agent takes decisions on behalf of the principal. This scenario applies to several relationships in the SPE-network. The most relevant ones concern the PC deciding on behalf of its sponsors and investors at large. The majority shareholder directs the PC (Section 7.5.1); according to the previous discussion, there is not a critical agency problem between majority shareholder and the appointed director deciding on its behalf. Formally, there might be an agency between the majority shareholder (agent) and the minority one (principal). However, the effective collaboration in the SPE context is critical, and the interviewees emphasised the role of collaboration and reputation. In addition to that, minority shareholders might have special veto powers, either

individually or jointly. Potentially, a further agency applies between lenders (principal) and sponsors (agents). However, the research shows that lenders have strong “negative” control towards the PC due to the provisions introduced in the loan agreement and security package (Section 7.5.1 - loan agreement).

Two additional agencies could be critical in PCs:

- The agency between the stakeholders of the SPE-network (agent) and the other stakeholders involved in megaprojects (principal);
- The agency between the Government (principal) and private investors (agents), including sponsors and lenders.

These agencies are briefly discussed below. Further research is ultimately required to examine the relevance of these agencies for SPE.

Firstly, the agency between participants to SPE-network (agents) and the other megaproject stakeholders (principal) arises because of the asymmetry of information and the unbalanced bargaining power. SPE-networks require systemic negotiation and design because the enforcing instruments are mutually interconnected. Consequently, the design and negotiation of the SPE-network determine an inner-circle of critical megaproject stakeholders shaping FGIM. The enforcing instruments are then kept confidential, and the megaproject’s investors govern the SPE-network (Section 7.5.1). Conversely, many other stakeholders participating in the megaprojects have limited information and access to the central decision-making. Together, members of the SPE-network have stronger bargaining powers and can impose decisions for whole supply chains interconnected to the SPE-network (Section 7.4).

Secondly, project finance is often criticised for its limited ability to serve the public interest (National Audit Office, 2013, 2011a, 2010, 2006, 2003), which is partly explained by an agency problem between the Government (principals) and private investors (agents). Often, project finance is criticised for the unbalanced attribution of risk between the public and private stakeholders. In the case of negative megaproject performance, the loss is absorbed by the public while, in the case of positive performance, the profit is shared by the private sponsors, and stakeholders at large.

Additionally, project finance is criticised for specific mechanisms such as the “refinancing of debt” after construction. According to this mechanism, the sponsors refinance the debt at the end of construction because the perceived risk by lenders is significantly lower than at the beginning of the project. This mechanism leads to large profit for sponsors, and it is heavily criticised by opponents of project finance. The early version of the Private Finance Initiative (PFI) in the UK suffered criticism for the poor attribution of risk and refinancing. To overcome these problems, a new version of PFI called “Private Finance 2” (PF2) was established in 2012 (GOV.UK, 2012). One of the critical amendments introduced by PF2 was the direct involvement of the Government in the governance of PC. PF2 encourages the participation of the government as a shareholder to the PC. This remedy overcomes the agency problem of original PFI approaches. In particular, the remedy brings the Government into the inner SPE-network circle, allowing it to access confidential information and participate in the FGIM.

Concerning (2) shareholder and (3) stakeholder theories, their application to the SPE context is controversial and hardly generalisable. In traditional corporate governance, shareholder theory states that the purpose of the corporation is to maximise the return on equity. The stakeholder theory extended the purpose of the corporation to all relevant stakeholders. Whether the theories apply to SPEs depends on the type of SPE considered. Some SPEs are incorporated for purposes other than profits, and with one or more functions (as described in Section 6.4.3). In other examples of SPEs, the external stakeholders are predominant compared to the shareholders; this is demonstrated by fiduciary SPEs employing trusts. During the period of repayment of debt, the PC is bound to the interest of lenders more pervasively compared to the ones of shareholders. Other SPEs are more similar to normal corporations, and the shareholders have greater control compared to other stakeholders, e.g. IVC and IVO. Although it is not possible to generalise about all possible SPEs, the research demonstrated a clear difference between SPEs and traditional corporations. In SPEs, the application of shareholder and stakeholder theory is more explicit and predetermined compared to traditional corporations. The trade-offs between shareholder and stakeholder objectives are negotiated explicitly and pre-agreed at the time the SPE is incorporated.

Proposition 2.C: *Critical SPEs govern critical parts of the SPE-network on behalf of their sponsors. Consequently, critical SPEs govern critical parts of the megaproject.*

Proposition 2.C.i: *Usually, the PC controls indirectly and negatively the industrial sponsors by mean of the unilateral provisions included in the project development package. In particular, the PC oversight the construction and operation of the megaproject. Sometimes, the PC directly controls the IVC and the IVO in quality of sponsors.*

Proposition 2.C.ii: *Usually, the IVC controls positively, or manage directly, the delivery of the megaproject. Often, the IVC includes the project manager and his team.*

Proposition 2.C.iii: *Usually, the IVO manages the O&M of the infrastructure megaprojects directly.*

Reflection on the proposition 2.C (i-iii). The proposition 2.C focuses on the SPE-network. The propositions are based on the mapping of both the positive and negative control derived from enforceable instruments. The concepts of direct and indirect control emerged inductively from the application of the RAIGT. Both public and corporate governance (Section 4.2) consider the checks and balances associated with decision makers. This perspective is consistent with the structural view characterising organisations. The project management literature does not consider this approach extensively. While the structural view is often applied, both for the transactional (Section 4.5.1) and inter-organisational (Section 4.5.2) governance perspectives, the focus is more on project organising rather than the mapping of actual decision-making power. Similarly, stakeholder maps are often applied in project management. However, these maps fail to recognise the actual controlling powers exercised via the contracting network. The Proposition 2.B and 2.C streamline how the controlling powers (either positive and negative) are exercised via the SPE-network. Together, the propositions 2.B and 2.C highlight the governance role exercised by critical SPEs. This research explains how critical SPEs exercise relevant controlling power toward the SPE-network (i.e. proposition 2.C), and how these SPES are controlled by critical

stakeholders (i.e. proposition 2.B), e.g. sponsors, lenders and the government. These propositions address the RO4.

The results of this research are systematic and multidisciplinary and provide relevant insights about the FGIM for practitioners and academics. The perspective employed can be applied to alternative contracting approaches for a deeper understanding of the FGIM.

8. Conclusion

8.1. Chapter Overview

This Chapter addresses the conclusion of the thesis. Section 8.2 summarises the gap in knowledge and its relevance, as well as the research aim and objectives. Section 8.3 describes how the research results addressed the four research objectives. Section 8.4 summarises the conclusions of this thesis. Section 8.5 illustrates how the research met the rigour criteria employed for the pragmatist-interpretative paradigm. Section 8.6 highlights the contribution to knowledge and the theoretical implications. Section 8.7 describes the practical implications of the study. Section 8.8 highlights the relevance of the research, and Section 8.9 describes areas to be further investigated.

8.2. Gap in knowledge, research aim and objectives

Recent research conducted by the Megaproject COST Action emphasised the relevance of Special Purpose Entities (SPEs) for the performance of infrastructure megaproject. The term “SPE” is frequently cited in project management and infrastructure research, particularly concerning Public Private Partnerships (PPPs) and Project Finance (PF), as described in Chapter 3. However, the project management literature does not focus extensively on the role of SPEs for megaprojects. The author found that the term “SPE” is often deemed a technical instrument for aspects such as accounting and financing.

This thesis confirms the gap in knowledge concerning the role played by SPEs for the Formal Governance of Infrastructure Megaprojects (FGIM). This research included an extensive literature review concerning megaprojects and their performance (Chapter 2), the governance of projects and megaprojects (Chapter 4), SPEs and their adoption in megaprojects (Chapter 3). At the beginning of the research, the author conducted a bibliometric analysis to map the state of the art of SPE literature (Sainati, Brookes & Locatelli, 2017). The literature review and the bibliometric analysis confirmed the gap in knowledge regarding the role played by SPEs in the FGIM.

Consistently with the Megaproject COST Action, the author argued that the governance roles of SPEs in megaprojects is a relevant topic for the effective delivery of megaproject. When employed, SPEs are linked by contracts (or other enforcing instruments) to the most critical institutional stakeholders, including investors, the Government and first tier contractors. The SPEs’ position in the contracting network suggested a relevant role for the FGIM, i.e. SPEs interposing the most critical megaproject stakeholders. The result of the research confirmed the relevance of SPEs for the FGIM (Chapters 7, 8).

The broader literature about SPEs is about the structured finance and tax optimisation. In this context, SPEs are analysed for their legal and accounting proprieties. The author found that formal perspective is consistent across the existing domains of knowledge considered. Consistently the research focused on the FGIM; this choice is consistent with neo-classical economics. In describing the complex economic phenomenon, neo-

classical economics focuses on the formal aspects and introduces relevant simplifying assumptions to formulate more general theories, e.g. rational decision-makers inefficient markets.

The identification of the relevant gap in knowledge, and the pragmatic perspective assumed by the author led to the formulation of the following research aim and objectives:

Research Aim: To identify how SPEs influence the FGIM.

Research Objectives (ROs):

1. Provide a classification of the existing types of SPE;
2. Identify which types of SPE play a role in the FGIM;
3. Identify the functions provided by SPEs for infrastructure megaprojects;
4. Develop a theory that explains how SPEs influence the FGIM.

8.3. Summary of the results

The following subsections summarise the results of the research consistently with the ROs. RO1 to RO3 are instrumental to RO4, which focuses on the ultimate deliverable of the research, i.e. a governance theory.

8.3.1. RO1 - To provide a classification of the existing types of SPE

The SPE is a legal construct that can be applied to a wide range of organisations and industries. Concerning the first RO, this research makes three main contributions.

Firstly, this research provides a “universal” definition of SPEs that applies to the different contexts and fields, including project management. The proposed definition of an SPE is: *“a fenced organisation having limited pre-defined purposes and a legal personality”* (Sainati, Brookes & Locatelli, 2017).

Secondly, the research proposes a general classification for SPEs. The classification is based on nine main features, namely: legal status, lifetime, purposes, activities, capabilities assets and liabilities, financial structure, risk characterisation, ownership and control, reporting and accounting, and venue. For each feature, the classification provides the most common options; for example, the legal status of SPEs is usually:

limited liability companies, corporation, general partnership¹¹, limited liability partnership, mutual fund, or trust. This classification considers all possible types of SPEs, and it is not limited to the ones involved in infrastructure megaprojects.

Thirdly, the research provides a specific classification for SPEs involved in infrastructure megaprojects. This classification identifies five main types of SPEs: Industrial Vehicle (IV), Project Company (PC), intermediate SPEs and jurisdictional shell companies. These types are not mutually exclusive, and there are examples of SPEs that combine the properties of multiple types into a single entity. This specific classification enabled the author to distinguish between different organisations that are conventionally (in the literature) grouped under the common name of SPE.

8.3.2. RO2 - To identify which types of SPE play a role in the FGIM

The specific classification of SPEs enabled the author to identify the types of SPEs playing a relevant governance role; i.e. PC and the IV. These types of SPEs are called “critical SPEs” to distinguish them from the other types that are not relevant to the FGIM. These other types of SPE can affect the FGIM indirectly because, for example, they provide the link(s) to specific jurisdictions. However, their influence on the FGIM is negligible. Therefore, the research focused on the PC and IV.

8.3.3. RO3 - To identify the functions provided by SPEs for infrastructure megaprojects

The research describes the general functions of SPEs for infrastructure megaprojects; in particular, the research provides three perspectives:

1. General functions provided by SPEs in quality of legal constructs;
2. General functions provided by SPEs as an element of the contracting network. The research introduces the concept of SPE-network that is instrumental to the research, particularly concerning RO4. This second perspective focuses on the SPE-network defined as: “*the network comprising the critical SPEs and the institutional stakeholders interconnected to them by means of enforceable instruments.*”

¹¹ Only in those jurisdictions where the partnership has legal personality.

3. General functions provided by the SPEs in quality of organisation.

Firstly, the research described the general functions of SPEs in quality of legal constructs. The following fourteen functions were identified: (1) establish contractual relationships, (2) collect funds, (3) own assets, (4) hire people, (5) ease the transfer of ownership, (6) provide multiple ownership structures, (7) limit and constrain the use of specific assets, (8) limit and constrain the repayment of its associated liabilities, (9) limit and constrain the scope and the management of specific activities, (10) limit and constrain the capacity of establishing further contractual relationships, (11) isolate assets and liabilities, (12) isolate formal responsibilities, (13) isolate risks, and (14) provide access to a specific legislation and jurisdiction.

Secondly, the research identified the general functions provided by SPEs as an element of the SPE-network, namely: (1) channelling risk and responsibilities, (2) channelling assets and funds, (3) transforming risks profiles, and (4) clustering and institutionalising multiple stakeholders.

Thirdly, the research identified the general functions provided by the SPEs in quality of organisation, namely: (1) performing activities, (2) managing activities, (3) administrating contracts, and (4) governing.

These functions are further described in relation to the types of SPEs identified by RO1, in particular for the PC, the IV, the intermediate SPEs and jurisdictional shell companies. Finally, the functions related to the FGIM were further explained when addressing RO4. This further explanation concerns only the critical SPEs; in particular the PC and the two IVs (i.e. the IVC and the IVO).

8.3.4. RO4 - To develop a theory that explains how SPEs influence the FGIM

Chapter 7 described the theory addressing RO4, which explained how SPEs influence the FGIM. The theory employed concepts and propositions associated with RO1-RO3. In particular, the theory focused exclusively on the types of SPEs that are critical for

the FGIM (RO1-RO2). The theory built on specific functional aspects of critical SPEs (R03).

Particularly relevant are the functions derived from the SPEs, as a special element of the contracting network. This research described the functions SPEs by adopting three main perspectives, i.e. functions derived from the SPE in quality of:

- legal construct;
- element of the SPE-network;
- of organisation.

The theory object of the study focused on the second perspective, namely the SPE in quality of element of the contracting network. This perspective is consistent with the transactional view available in the governance literature.

The author investigated the governance role of SPEs by focusing on the transactional perspective in contracting networks. In defining the contracting network, the author employed legal definitions. The author focused on the contracting agents having legal personality, i.e. institutionalised stakeholders. The only relations considered were the ones based on the notion of “enforcing instruments” that is a generalisation of contracts. The application of the RAIGT allowed the author to focus on the relevant portion of the contracting network; i.e. the SPE-network that is defined as: *“the network comprising of the critical SPEs and the institutional stakeholders interconnected to them by means of enforceable instruments.”*

SPE-networks can have a variety of configurations. The proposed theory focused on one configuration deemed to be sufficiently representative and explanatory of the governance mechanisms. The author considered the case, typical of infrastructure megaprojects, where the PC acts a project owner, the IVC as the main contractor and the IVO as the operator of the infrastructure. The configuration includes a variety of enforcing instruments, including: the shareholder agreement, the loan agreement, the Government concession, the offtake contract (considered in general terms as a mechanism to secure the revenue stream of the PC), the EPC contract, the operation and maintenance contract, and the direct agreement.

The delivering theory considered the interaction of different enforcing instruments and their implication for the FGIM. In particular, the theory assessed three main perspectives: (1) How enforcing instruments assign specific megaproject roles to critical SPE, (2) how critical SPEs are governed by megaproject investors, and (3) how critical SPEs govern the SPE-network on behalf of their investors.

8.4. Concluding remarks

This research provides six main concluding remarks: (1) the term SPE alone is almost meaningless because too generic, (2) SPEs are formal instruments, (3) only some types of SPE are relevant for the governance of FGIM, (4) critical SPEs are contractual hubs governing infrastructure megaprojects, (5) lenders play a relevant governance role in megaprojects through SPEs, (6) the conflict of interest of appointed directors is one of the most significant governance challenges for SPEs in megaprojects.

(1) The term SPE alone is almost meaningless because too generic.

This research highlighted that there is a wide range of organisations which can be labelled as SPE. Some SPEs are merely incorporated companies with neither personnel, physical venue or management; these SPEs are just formal instruments exploiting the legal personality (provided by the incorporating vehicle) to enclose and isolate specific assets or liabilities. Other types of SPE are large organisations used to either build or operate infrastructure megaprojects. SPEs are employed in a variety of sectors, mainly for financial, accounting and tax related applications. In practice, SPEs can be too many things, and the term itself is far too generic to characterise specific types of organisations. In the project management literature, the term SPE is abused as it seems to indicate a particular type of organisation. This research showed that there are different types of SPEs having very different functions for infrastructure megaprojects. This research helped to recognise and distinguish alternative types of SPEs reducing the ambiguity associated with these organisations.

(2) SPEs are hybrid instruments.

SPEs are characterised by both the incorporating vehicles, and the additional formal instruments limiting their purpose, e.g. contracts, concessions. The incorporating vehicles alone are not sufficient to understand the formal governance of SPEs.

Therefore, SPEs are neither corporations nor contracts, but a combination of the two. Like corporations, SPEs have legal personality and can own assets, establish contractual relationships, etc. Like contracts, SPEs are embedded in economic transactions, and their existence is subordinated to predefined purposes. SPEs can combine the features of corporations and contracts in a very flexible way, making them versatile instruments. Concerning the FGIM, SPEs can frame *ad hoc* structures and processes accommodating the bespoke characteristics of infrastructure megaprojects. This research recognises the potential and versatility of SPEs, and it provides the theoretical lenses to understand and investigate further their role for megaprojects.

(3) Only some types of SPE are relevant for the governance of FGIM.

This research showed that only some types of SPEs are relevant for the FGIM, the critical SPEs, i.e. PCs and IVs. PCs are widely used to collect the finance and to secure the revenue stream for infrastructure megaprojects. PCs tend to have substantial debt and own the most critical assets associated with megaprojects, including the infrastructure. When PCs are employed, sponsors use them to govern infrastructure megaprojects. Similarly, lenders control infrastructure megaprojects indirectly through PCs. IVs are also relevant for the FGIM when they are used. Critical contractors govern the project delivery chain through IVC. IVOs steer the infrastructure supply chain during the operating phase of infrastructure megaprojects. This research explained the mechanisms by which critical SPEs influence the FGIM. There is tacit knowledge concerning how SPEs influence the FGIM. This research made this knowledge explicit enhancing their understanding for both practitioners and academics, contributing to improve the FGIM.

(4) Critical SPEs are contractual hubs governing infrastructure megaprojects.

Critical SPEs (i.e. PCs and IVs) interlink contractually the most relevant stakeholders of infrastructure megaprojects, including sponsors, lenders, contractors, suppliers, Governments, operators and final users. As a result, SPEs act as hubs for the contracting network, particularly the SPE-network. Relevant information and decisions pass through critical SPEs, which control megaprojects on behalf of their investors. The control of critical SPEs corresponds to the governance of infrastructure megaprojects. Sponsors and lenders control PC to govern megaproject. Similarly, critical contractors control IVCs to steer the project delivery chain, and operators

control IVOs to govern the infrastructure supply chain during their operation. Critical SPEs are contractual hubs underlying the governance, as well as other aspects such as the financing. The megaproject finances are collected and managed by the PC on behalf of the megaprojects investors. This research explained the relevance and role of SPEs for the FGIM enhancing their understanding and contributing to better negotiation and design.

(5) Lenders play a relevant governance role in megaprojects through SPEs.

This research shows the relevant role that lenders might have for the FGIM. In PF, megaprojects are financed "off-balance sheet", and most funds are provided in the form of debt, usually by a syndicate of lenders. In this scenario lenders negatively control the delivery and operation of the infrastructure megaproject, until the original debt is repaid. This research showed the prominent governance role of lenders in infrastructure megaprojects. This critical role is under-investigated in the project management literature. The research explained how lenders control PC (and the infrastructure megaprojects) and which formal instruments empower them. This research clarified the role of lenders and their controlling power in infrastructure megaprojects, enhancing transparency and understanding of the FGIM.

(6) The conflict of interest of appointed directors is one of the most significant governance challenges for SPEs in megaprojects.

The agency problem occurring between the appointed directors of the SPE (i.e. agents) and sponsors (i.e. principals) does not seem to be critical. The research highlighted that the appointed directors are aligned with the interests of the sponsors who appointed them. Conversely, the conflict of interests is a critical governance issue for SPEs in infrastructure megaprojects. The appointed directors might be in the positions to favour their principals at the expense of the general purposes of the SPEs. Typically, the sponsors of SPEs are also contractors, and their interest lies on two main streams: the return on equity in quality of sponsors, and the contract profitability in quality of contractors. Often, the contract profitability is prominent compared to the return on equity, which generates the conflict of interest of appointed directors. This appears to be a significant governance problem in SPEs, and part of the formal governance of SPEs is designed to limit this problem. This research explained the formal remedies to this problem. This research highlighted a relevant governance issue often neglected

in the project management literature, i.e. the conflict of interest infrastructure megaproject. Furthermore, the research provided new theoretical lenses to investigate the issue of conflict of interest in infrastructure megaprojects.

In summary, this research provided six relevant insights for the FGIM. These insights and the detailed propositions contribute to the project governance literature in infrastructure megaprojects. The research disclosed and explained critical governance mechanisms of the FGIM, allowing practitioners and academic to understand the complex architecture of FGIM when SPEs are employed. This enhanced understanding favours further researches on a relevant topic and the better negotiation and design of infrastructure megaprojects.

8.5. Research Rigour: reliability, and internal and external validity

This research complies with of rigour criteria considered: (1) confirmability, (2) dependability/audibility, (3) internal consistency, and (4) transferability.

8.6. Contribution to knowledge and theoretical implications

This Section discusses how the findings of the research contributed to knowledge, mainly in project management. The research addressed the gap in knowledge identified in the literature review. In particular, it explained how the critical SPEs influence the FGIM. The research provided five main contributions to knowledge, mainly in the area of project management.

The **first contribution to knowledge** is a novel **definition of SPE** generalising between different knowledge domains, including the financial, legal and project management domains. The existing definitions are specific and empirical, and did not permit generalisations about SPEs. Therefore, the existing definitions of SPEs are heterogeneous and inconsistent with each other. The proposed definition of SPE bridges different knowledge domains.

The **second contribution to knowledge** is the **classification of SPEs**. The research differentiated between different types of SPEs. The research described in detail the functions assumed by different types of SPE in infrastructure megaprojects.

Consistently, the research indicated the types of SPE that mostly impact on the FGIM. This differentiation is not available in the project management literature, which does not distinguish between very different types of SPEs.

The **third contribution to knowledge** lies in the **identification** of a meaningful unit of analysis for investigating the FGIM. In off-balance sheet transactions, the **SPE-network** is the most relevant portion of the contracting network for the FGIM. The research showed that the SPE-network is negotiated and designed systemically. This contribution is in contrast with the traditional governance theories in the project management, which often focus on independent enforcing instruments and do not recognise their compound effects.

The **fourth contribution to knowledge** is the identification of **alternative configurations of SPE-networks** in infrastructure megaprojects. The research identified the most common configurations and explained their governance rationales. This contribution was not explicitly available in the literature.

The **fifth contribution to knowledge** is **the theory** describing how SPEs influence the FGIM. The theory explains:

- (A) the roles of critical SPEs within the SPE-network,
- (B) how the enforceable instruments determine the governance of critical SPEs and which megaproject stakeholders control them,
- (C) how SPEs exercise their control towards the SPE-network, due to the enforcing instruments associated with them.

The theory leverages the concept of positive and negative control derived from the enforcing instruments. The approach is used in public and corporate governance, but not in project management. The same approach could be used in alternative contracting approaches and summarises the controlling powers exercised by the contracting parties in a network. The theory is consistent with some governance theories, in particular, the institutional, shareholder, stakeholder, rational choice, transaction cost, and contingency theories. Other governance theories are only partially applicable to SPEs.

This research showed that some basic assumptions underlying the governance theories are not fully respected, as SPEs are special corporations. Conventional corporations have a defined structure, and their governance is assumed independent from the contracts with external agents. This basic assumption is not respected in SPEs. The governance of SPEs is deeply characterised by external contracts, including the shareholder agreement, the loan agreement, public concessions and other relevant enforcing instruments. The limited applicability of these assumptions jeopardises the application of the traditional agency theory to SPEs. The traditional formulation of agency theory considers the sponsors (i.e. shareholders) as principal and the appointed directors as agents. The misalignment of interest between these agents and principals is critical in conventional corporations but is less critical in SPEs. The extended versions of agency theory consider additional relationships between principals and agents.

These versions apply whenever one agent decides on behalf of others, i.e. principals. In the legal literature, the extended versions of agency theory are often applied to the following relationships (Kraakman *et al.*, 2017):

- Minority shareholders (principals) vs majority shareholders (agents);
- Lenders (principals) vs shareholders (agents);
- Creditors in general (principals) vs shareholders (agents);
- Other stakeholders such as the workforce (principals) vs managers (agents).

The extended version of the agency theory is more suitable for the SPEs, particularly for the relationship between the lenders (principal) vs shareholders (agent). Additionally, the proposed theory emphasises another critical issue that is mainly under-investigated in the FGIM, i.e. the conflict of interest of sponsors.

8.7. Practical implications

The research also has practical implications, as it makes explicit some implicit governance principles in megaprojects. The systemic explanation of the FGIM, the fundamental trade-offs and functional aspects of the enforcing instruments is a complex and multidisciplinary topic. All interviewees confirmed that, at times, megaproject sponsors are reluctant to adopt PPPs or project finance, because they are far more complicated than the traditional contracting approaches. Some sponsors are reluctant to employ a complex contracting framework they do not fully understand.

This thesis makes explicit a systemic focus on the FGIM, explaining how off-balance sheet megaprojects are governed. The research is intended to improve understanding for project managers and middle managers, who, to date, may have only limited knowledge on how off-balance sheet megaprojects are governed. It is argued that improving their understanding will increase the likelihood of success for megaprojects.

8.8. Relevance of the research

The relevance of the research lies in two interconnected propositions.

Firstly, the FGIM is a relevant area of study. Potentially, improvements in this area would affect the performance of megaprojects leading to an impact on the society, economy and environment. The research focuses on how SPEs influence the FGIM. All interviewees emphasised the relevance of the topic because some types of SPEs have a critical role in the FGIM. In the past, the transition from the traditional PFI to the PF2 demonstrated the relevance of this area of study for the economy and society. Critical SPEs are essential governance instruments in all off-balance sheet megaprojects. These types of megaprojects are the standard in some sectors and countries (e.g. energy and transportation in the UK), and they are becoming increasingly widespread worldwide.

Secondly, the research contributed to the relevant area previously described. The research disclosed governance principles and mechanisms describing how SPEs influence the FGIM. The literature review and the interviewees confirmed that there is tacit knowledge on this area. This research paved the way to further awareness on the governance of off-balance sheet megaprojects. This will improve the awareness of investors, policymakers and other stakeholders. The governance of off-balance sheet megaprojects is far more complex and less intelligible than traditional governance approaches. In the past, this inability to understand off-balance sheet governance acted as a significant entry barrier for investors, governments and other stakeholders, as emphasised by most interviewees. This thesis contributes to clarify these governance mechanisms. This research contributes to better awareness and enhanced design of the FGIM.

8.9. Further Research

This thesis paves the way towards a deeper and multidisciplinary understanding of the FGIM. The interaction with interviewees and reflection on the process highlighted four promising future research streams.

Firstly, the research employs a structural/transactional perspective to describe the systemic governance of the SPE-Network. This perspective emerged from the interviewees. An alternative perspective was considered but not included in the current thesis as it did not reach the same level of “saturation” and “cross-confirmation”. This alternative perspective is the “process view”, which describes the decision-making process, i.e. the input information, the decisions steps, the decision criteria, the decision outcome. The structural perspective is complementary to the process view. The process view provides further information concerning the sequencing of decisions. The process view can be applied to many aspects of the research, including: negotiation, due-diligence, design or the execution/performance of either the SPE-network or a sub-part (e.g. the SPE, the enforcing instruments).

Secondly, there is scope for further research towards the dynamic and contingent behaviour of SPEs and SPE-networks. This thesis acknowledges that the governance of some SPEs evolves throughout the megaproject phases. This research also acknowledges that some changes are pre-determined and expected, while others are triggered by specific events such as the bankruptcy of critical stakeholders. The author considered some case studies of dynamic evolution but did not include these results in the thesis as it is extremely difficult to generalise about such changes. However, the author believes that further research on both the dynamic and contingent evolutions of the contracting network would provide meaningful information for the project management community. These aspects of governance are largely overlooked (but particularly important) in the design and negotiation of SPE-networks.

Thirdly, the research focuses exclusively on the formal aspects of governance. However, the informal (or “soft”) aspects of governance would extend and complement the results of the research. Some interviewees emphasised the relevance of “trust” and “reputation” in off-balance sheet financing. The SPE-network is based

on many enforceable relationships. However, the litigation is typically a "last resort" solution. Reputation is deemed to be relevant collateral. Often stakeholders are willing to lose money to preserve their reputation, which is of strategic importance. The author believes that complementary research on the informal aspects of governance in SPE-networks would be particularly relevant given the critical role of these aspects for megaprojects.

Finally, the author's reflection concerning the contribution to knowledge highlighted two "agencies", which require further research. Firstly, the agency between the participants to the SPE-network (agent), and the other stakeholders involved in megaprojects (principal). Secondly, the agency between the Government (principal) and private investors (agents). These agencies would require further empirical studies, which is beyond the scope of this research.

References

- Aaltonen, K. (2011) Project stakeholder analysis as an environmental interpretation process. *International Journal of Project Management*. [Online] 29 (2), 165–183. Available from: doi:10.1016/j.ijproman.2010.02.001.
- Aaltonen, K., Jaakko, K. & Tuomas, O. (2008) Stakeholder salience in global projects. *International Journal of Project Management*. [Online] 26 (5), 509–516. Available from: doi:10.1016/j.ijproman.2008.05.004.
- Aaltonen, K. & Kujala, J. (2010) A project lifecycle perspective on stakeholder influence strategies in global projects. *Scandinavian Journal of Management*. [Online] 26 (4), 381–397. Available from: doi:10.1016/j.scaman.2010.09.001.
- Aaltonen, K. & Sivonen, R. (2009) Response strategies to stakeholder pressures in global projects. *International Journal of Project Management*. [Online] 27 (2), 131–141. Available from: doi:10.1016/j.ijproman.2008.09.007.
- Abdollah, S. (2010) *Applicability of Force Majeure Clause in Construction Contract in Malaysia*.
- Ahola, T., Kujala, J., Laaksonen, T. & Aaltonen, K. (2013) Constructing the market position of a project-based firm. *International Journal of Project Management*. [Online] 31 (3), 355–365. Available from: doi:10.1016/j.ijproman.2012.09.008.
- Ahola, T., Laitinen, E., Kujala, J. & Wikström, K. (2008) Purchasing strategies and value creation in industrial turnkey projects. *International Journal of Project Management*. [Online] 26 (1), 87–94. Available from: doi:10.1016/j.ijproman.2007.08.008.
- Ahola, T., Ruuska, I., Artto, K. & Kujala, J. (2014) What is project governance and what are its origins? *International Journal of Project Management*. [Online] 32 (8), 1321–1332. Available from: doi:10.1016/j.ijproman.2013.09.005.
- Akbiyikli, R. (2013) Performance assessment of a private finance initiative road project. *Transport*. [Online] 28 (1), 11–24. Available from: doi:10.3846/16484142.2013.778899.
- Akintoye, A., Beck, Matthias & Hardcastle, Cliff (2008a) *Public-Private Partnerships: Managing Risks and Opportunities*. John Wiley & Sons.
- Akintoye, A. & Beck, M. (2009) *Policy, Management and Finance for Public-Private Partnerships*. John Wiley & Sons.
- Akintoye, A., Beck, M. & Hardcastle, C. (2008b) *Public-Private Partnerships: Managing Risks and Opportunities*. John Wiley & Sons.
- Akintoye, A., Hardcastle, C., Beck, M., Chinyio, E., et al. (2003) Achieving best value in private finance initiative project procurement. *Construction Management and*

- Economics*. [Online] 21 (5), 461–470. Available from: doi:10.1080/0144619032000087285.
- Alam, S. (2013) *Routledge Handbook of International Environmental Law*. Routledge.
- Alhazmi T. & McCaffer R. (2000) Project Procurement System Selection Model. *Journal of Construction Engineering and Management*. [Online] 126 (3), 176–184. Available from: doi:10.1061/(ASCE)0733-9364(2000)126:3(176).
- Al-Saadi, R. & Abdou, A. (2016) Factors critical for the success of public–private partnerships in UAE infrastructure projects: experts’ perception. *International Journal of Construction Management*. [Online] 16 (3), 234–248. Available from: doi:10.1080/15623599.2016.1146110.
- Altra Capital (2012) *Britain’s Systematic Approach to Public Private Partnerships*.
- Ansar, A. & Flyvbjerg, B. (2016) *Big Is Fragile: Why the UK Government Should Not Approve the Hinkley Point C Nuclear Power Station*. [Online]. Available from: <https://papers.ssrn.com/abstract=2831603> [Accessed: 24 September 2017].
- Ansar, A., Flyvbjerg, B., Budzier, A. & Lunn, D. (2017) *Big is Fragile: An Attempt at Theorizing Scale*. [Online]. Available from: <https://papers.ssrn.com/abstract=2741198> [Accessed: 26 September 2017].
- Ansar, A., Flyvbjerg, B., Budzier, A. & Lunn, D. (2014) Should we build more large dams? The actual costs of hydropower megaproject development. *Energy Policy*. [Online] 69, 43–56. Available from: doi:10.1016/j.enpol.2013.10.069.
- Arnaboldi, M., Azzone, G. & Giorgino, M. (2014) *Performance Measurement and Management for Engineers*. Academic Press.
- Artto, K., Ahola, T. & Vartiainen, V. (2016) From the front end of projects to the back end of operations: Managing projects for value creation throughout the system lifecycle. *International Journal of Project Management*. [Online] 34 (2), 258–270. Available from: doi:10.1016/j.ijproman.2015.05.003.
- Artto, K.A. & Wikström, K. (2005) What is project business? *International Journal of Project Management*. [Online] 23 (5), 343–353. Available from: doi:10.1016/j.ijproman.2005.03.005.
- Atkinson, R. (1999) Project management: cost, time and quality, two best guesses and a phenomenon, its time to accept other success criteria. *International Journal of Project Management*. [Online] 17 (6), 337–342. Available from: doi:10.1016/S0263-7863(98)00069-6.
- Baccarini, D. (1996) The concept of project complexity—a review. *International Journal of Project Management*. [Online] 14 (4), 201–204. Available from: doi:10.1016/0263-7863(95)00093-3.
- Baev, P.K. & Øverland, I. (2010) The South Stream versus Nabucco pipeline race: geopolitical and economic (ir)rationalities and political stakes in mega-projects.

- International Affairs*. [Online] 86 (5), 1075–1090. Available from: doi:10.1111/j.1468-2346.2010.00929.x.
- Bailey, J. (2016) *Construction Law*. CRC Press.
- Basel Committee on Banking Supervision (2009) *The Joint Forum—Report on Special Purpose Entities*.
- Baudistel, K.J. (2013) Bankruptcy-remote special purpose entities: An opportunity for investors to maximize the value of their returns while undergoing more careful and realistic risk analysis. *Southern California Law Review*. 86 (6), 1309–1342.
- Patricia Bazeley & Kristi Jackson (eds.) (2013) *Qualitative Data Analysis with NVivo*. 2nd Revised edition edition. SAGE Publications Ltd.
- Bernardello, R. (2011) *Pension Funds Investment in Infrastructure*. [Online]. Available from: <http://www.oecd.org/finance/private-pensions/49049712.pdf>.
- Bernardo, M. do R. (2014) Performance Indicators for Enhancing Governance of Projects. *Procedia - Social and Behavioral Sciences*. [Online] 119, 55–64. Available from: doi:10.1016/j.sbspro.2014.03.009.
- Bertoldi, P., Rezessy, S. & Vine, E. (2006) Energy service companies in European countries: Current status and a strategy to foster their development. *Energy Policy*. [Online] 34 (14), 1818–1832. Available from: doi:10.1016/j.enpol.2005.01.010.
- Bevir, M. (2013). *A Theory of Governance*. University of California Press.
- Biesenthal, C. & Wilden, R. (2014) Multi-level project governance: Trends and opportunities. *International Journal of Project Management*. [Online] 32 (8), 1291–1308. Available from: doi:10.1016/j.ijproman.2014.06.005.
- Bing, L., Akintoye, A., Edwards, P.J. & Hardcastle, C. (2005) The allocation of risk in PPP/PFI construction projects in the UK. *International Journal of Project Management*. [Online] 23 (1), 25–35. Available from: doi:10.1016/j.ijproman.2004.04.006.
- Blankenburg, E. (1994) The Infrastructure for Avoiding Civil Litigation: Comparing Cultures of Legal Behavior in the Netherlands and West Germany. *Law & Society Review*. [Online] 28 (4), 789–808. Available from: doi:10.2307/3053997.
- Bluhm, C. & Overbeck, L. (2006) *Structured Credit Portfolio Analysis, Baskets and CDOs*. CRC Press.
- Booth, L. & Starodubtseva, V. (2015) *PFI: costs and benefits*. [Online] Available from: <http://researchbriefings.parliament.uk/ResearchBriefing/Summary/SN06007> [Accessed: 16 January 2017].
- Bovis, C. (2012) *EU Public Procurement Law*. Edward Elgar Publishing.

- Brady, T. & Davies, A. (2004) Building Project Capabilities: From Exploratory to Exploitative Learning. *Organization Studies*. [Online] 25 (9), 1601–1621. Available from: doi:10.1177/0170840604048002.
- Brealey, R.A., Cooper, I.A. & Habib, M.A. (1996) Using project finance to fund infrastructure investments. *Journal of Applied Corporate Finance*. [Online] 9 (3), 25–39. Available from: doi:10.1111/j.1745-6622.1996.tb00296.x.
- Bredillet, C.N. (2008) Learning and acting in project situations through a meta-method (MAP) a case study: Contextual and situational approach for project management governance in management education. *International Journal of Project Management*. [Online] 26 (3), 238–250. Available from: doi:10.1016/j.ijproman.2008.01.002.
- Bredillet, C.N., Turner, J.R. & Anbari, F.T. (2008) Exploring research in project management: nine schools of project management research. *Proj. Manag. J.* 1–23.
- Bredimas, A. & Nuttall, W.J. (2008) An international comparison of regulatory organizations and licensing procedures for new nuclear power plants. *Energy Policy*. [Online] 36 (4), 1344–1354. Available from: doi:10.1016/j.enpol.2007.10.035.
- Brinkerhoff, D.W. & Brinkerhoff, J.M. (2011) Public–private partnerships: Perspectives on purposes, publicness, and good governance. *Public Administration and Development*. [Online] 31 (1), 2–14. Available from: doi:10.1002/pad.584.
- Brookes, N., Locatelli, G. & Mikic, M. (2015a) *Learning Across Megaprojects*. [Online]. Available from: https://www.researchgate.net/profile/Miljan_Mikic/publication/279982574_Learning_Across_Megaprojects/links/55a19dbf08aea815dffc082e.pdf.
- Brookes, N., Locatelli, G. & Mikic, M. (2015b) *Learning Across Megaprojects*.
- Brookes, N., Sage, D., Dainty, A., Locatelli, G., et al. (2017) An island of constancy in a sea of change: Rethinking project temporalities with long-term megaprojects. *International Journal of Project Management*. [Online] 35 (7), 1213–1224. Available from: doi:10.1016/j.ijproman.2017.05.007.
- Brookes, N.J. & Locatelli, G. (2015) Power plants as megaprojects: Using empirics to shape policy, planning, and construction management. *Utilities Policy*. [Online] 36, 57–66. Available from: doi:10.1016/j.jup.2015.09.005.
- Brunet, M. & Aubry, M. (2016) The three dimensions of a governance framework for major public projects. *International Journal of Project Management*. [Online] 34 (8), 1596–1607. Available from: doi:10.1016/j.ijproman.2016.09.004.
- Bruyere, R., Copinot, R., Fery, L., Jaeck, C., et al. (2006) *Credit Derivatives and Structured Credit: A Guide for Investors*. John Wiley & Sons.
- Burke, R. (2013) *Project Management - Planning & Control Techniques 5E*. 5th Revised ed. edition. Chichester, West Sussex, United Kingdom, John Wiley & Sons.

- Callahan, C.M., Smith, R.E. & Spencer, A.W. (2012) An examination of the cost of capital implications of FIN 46. *Accounting Review*. 87 (4), 1105–1134.
- Cantarelli, C.C., Flyvbjerg, B., van Wee, B. & Molin, E.J.E. (2010) Lock-in and its Influence on the Project Performance of Large-Scale Transportation Infrastructure Projects: Investigating the Way in Which Lock-in Can Emerge and Affect Cost Overruns. *Environment and Planning B: Planning and Design*. [Online] 37 (5), 792–807. Available from: doi:10.1068/b36017.
- Carter, L.J. (2015) *Nuclear Imperatives and Public Trust: Dealing with Radioactive Waste*. Routledge.
- Cartlidge, D. (2006a) *Public Private Partnerships in Construction*. New York, NY, USA, Taylor and Francis.
- Cartlidge, D. (2006b) *Public Private Partnerships in Construction*. Routledge.
- Caselli, S. & Gatti, S. (2005) *Structured Finance: Techniques, Products and Market*. Springer Science & Business Media.
- Černoch, F. & Zapletalová, V. (2015) Hinkley point C: A new chance for nuclear power plant construction in central Europe? *Energy Policy*. [Online] 83 (Supplement C), 165–168. Available from: doi:10.1016/j.enpol.2015.04.002.
- Chang, C.-Y. (2013) Understanding the hold-up problem in the management of megaprojects: The case of the Channel Tunnel Rail Link project. *International Journal of Project Management*. [Online] 31 (4), 628–637. Available from: doi:10.1016/j.ijproman.2012.10.012.
- Chapman, C. & Ward, S. (2003) *Project Risk Management*. Ltd John Wiley & Sons (ed.).
- Charmaz, K. (2014) *Constructing Grounded Theory*. SAGE.
- Chasteen, L.G. (2005) Teaching variable interest entities under FIN 46: Untangling risks, expected losses, and expected residual returns. *Journal of Accounting Education*. 23 (1), 47–66.
- Chern, C. (2016) *The Law of Construction Disputes*. CRC Press.
- Chinowsky, P.S., Price, J.C. & Neumann, J.E. (2013) Assessment of climate change adaptation costs for the U.S. road network. *Global Environmental Change*. [Online] 23 (4), 764–773. Available from: doi:10.1016/j.gloenvcha.2013.03.004.
- Chowdhury, A.N., Chen, P.-H. & Tiong, R.L.K. (2012) Establishing SPV for power projects in Asia: an analysis of critical financial and legal factors. *Journal of Business Economics and Management*. [Online] 13 (3), 546–566. Available from: doi:10.3846/16111699.2011.643446.

- Ciarreta, A. & Nasirov, S. (2012) Development trends in the Azerbaijan oil and gas sector: Achievements and challenges. *Energy Policy*. [Online] 40 (Supplement C), 282–292. Available from: doi:10.1016/j.enpol.2011.10.002.
- Clarke, T. (1998) The stakeholder corporation: A business philosophy for the information age. *Long Range Planning*. [Online] 31 (2), 182–194. Available from: doi:10.1016/S0024-6301(98)00002-8.
- Clarkson, C.M.V., Keating, H.M., Cunningham, S., Cunningham, S.K., et al. (2014) *Clarkson and Keating Criminal Law: Text and Materials*. Croydon, Sweet & Maxwell Limited.
- Clegg, S.R. & Hardy, C. (1999) *Studying Organization: Theory and Method*. SAGE.
- Clegg, S.R., Hardy, C., Lawrence, T. & Nord, W.R. (2006) *The SAGE Handbook of Organization Studies*. SAGE.
- Clegg, S.R., Pitsis, T.S., Rura-Polley, T. & Marosszeky, M. (2002) Governmentality Matters: Designing an Alliance Culture of Inter-Organizational Collaboration for Managing Projects. *Organization Studies*. [Online] 23 (3), 317–337. Available from: doi:10.1177/0170840602233001.
- Cliffe, L., Ramsay, M. & Bartlett, D. (2000) *The Politics of Lying: Implications for Democracy*. Springer.
- Clifton, C. & Duffield, C.F. (2006) Improved PFI/PPP service outcomes through the integration of Alliance principles. *International Journal of Project Management*. [Online] 24 (7), 573–586. Available from: doi:10.1016/j.ijproman.2006.07.005.
- Clough, R.H., Sears, G.A., Sears, S.K., Segner, R.O., et al. (2015) *Construction Contracting: A Practical Guide to Company Management*. John Wiley & Sons.
- Coase, R.H. (1937) The Nature of the Firm. *Economica*. [Online] 4 (16), 386–405. Available from: doi:10.1111/j.1468-0335.1937.tb00002.x.
- Corbin, J.M. & Strauss, A.L. (2015) *Basics of qualitative research : techniques and procedures for developing grounded theory*. 4th Revise. Los Angeles, SAGE Publications, Inc.
- Corielli, F., Gatti, S. & Steffanoni, A. (2010) Risk Shifting through Nonfinancial Contracts: Effects on Loan Spreads and Capital Structure of Project Finance Deals. *Journal of Money, Credit and Banking*. [Online] 42 (7), 1295–1320. Available from: doi:10.1111/j.1538-4616.2010.00342.x.
- Crawford, L., Cooke-Davies, T., Hobbs, B., Labuschagne, L., et al. (2008) Governance and support in the sponsoring of projects and programs. *Project Management Journal*. [Online] 39 (S1), S43–S55. Available from: doi:10.1002/pmj.20059.
- Cumming, D. (2009) *Private Equity: Fund Types, Risks and Returns, and Regulation*. John Wiley and Sons.

- Cumming, D. (2012) *The Oxford Handbook of Private Equity*. Oxford University Press, USA.
- Dai, C.X. & Wells, W.G. (2004) An exploration of project management office features and their relationship to project performance. *International Journal of Project Management*. [Online] 22 (7), 523–532. Available from: doi:10.1016/j.ijproman.2004.04.001.
- Dale, S. (2017) *BP Energy Outlook*. [Online]. Available from: <https://www.bp.com/content/dam/bp/pdf/energy-economics/energy-outlook-2017/bp-energy-outlook-2017.pdf>.
- Damodaran, A. (2010) *Applied Corporate Finance*. John Wiley & Sons.
- Davies, A. (2004) Moving base into high-value integrated solutions: a value stream approach. *Industrial and Corporate Change*. [Online] 13 (5), 727–756. Available from: doi:10.1093/icc/dth029.
- Davies, A., Gann, D. & Douglas, T. (2009) Innovation in Megaprojects: Systems Integration at London Heathrow Terminal 5. *California Management Review*. [Online] 51 (2), 101–125. Available from: doi:10.2307/41166482.
- Davies, A. & Hobday, M. (2005) *The Business of Projects: Managing Innovation in Complex Products and Systems*. Cambridge University Press.
- Davis, J.H., Schoorman, F.D. & Donaldson, L. (1997) Toward a Stewardship Theory of Management. *Academy of Management Review*. [Online] 22 (1), 20–47. Available from: doi:10.5465/AMR.1997.9707180258.
- De Schepper, S., Doms, M. & Haezendonck, E. (2014) Stakeholder dynamics and responsibilities in Public–Private Partnerships: A mixed experience. *International Journal of Project Management*. [Online] 32 (7), 1210–1222. Available from: doi:10.1016/j.ijproman.2014.01.006.
- Dedman, E. (2002) The Cadbury Committee recommendations on corporate governance – a review of compliance and performance impacts. *International Journal of Management Reviews*. [Online] 4 (4), 335–352. Available from: doi:10.1111/1468-2370.00091.
- Della Croce, R. & Gatti, S. (2014) Financing infrastructure – International trends. *OECD Journal: Financial Market Trends*. [Online] Available from: <http://www.oecd.org/finance/financial-markets/Financing-infrastructure-international-trends2014.pdf>.
- Delmon, J. (2009) *Private Sector Investment in Infrastructure: Project Finance, PPP Projects and Risks*. Kluwer Law International.
- Demirag, I., Khadaroo, I., Stapleton, P. & Stevenson, C. (2011b) Risks and the financing of PPP: Perspectives from the financiers. *The British Accounting Review*. [Online] 43 (4), 294–310. Available from: doi:10.1016/j.bar.2011.08.006.

- Dentons (2016) *A guide to project finance*. [Online]. Available from: <https://www.dentons.com/en/insights/guides-reports-and-whitepapers/2013/april/1/a-guide-to-project-finance>.
- Denzin, N.K. & Lincoln, Y.S. (2008) *The Landscape of Qualitative Research*. SAGE.
- Denzin, N.K. & Lincoln, Y.S. (2011) *The SAGE Handbook of Qualitative Research*. SAGE.
- Department for Education GOV.UK (2010) *Building Schools for the Future*. [Online]. 2010. Available from: <https://www.gov.uk/government/publications/building-schools-for-the-future> [Accessed: 12 October 2017].
- Dewar, J. (2011) *International Project Finance: Law and Practice*. OUP Oxford.
- Dewey, J. (2013) *Logic - The Theory of Inquiry*. Read Books Ltd.
- Dimitriou, H.T., Ward, E.J. & Wright, P.G. (2013) Mega transport projects—Beyond the ‘iron triangle’: Findings from the OMEGA research programme. *Progress in Planning*. [Online] 86, 1–43. Available from: doi:10.1016/j.progress.2013.03.001.
- Dominion Bond Rating Service (2014) *Legal Criteria for U.S. Structured Finance*.
- Donaldson, L. (1987) Strategy and Structural Adjustment to Regain Fit and Performance: In Defence of Contingency Theory. *Journal of Management Studies*. [Online] 24 (1), 1–24. Available from: doi:10.1111/j.1467-6486.1987.tb00444.x.
- Donaldson, L. & Davis, J.H. (1991) Stewardship Theory or Agency Theory: CEO Governance and Shareholder Returns. *Australian Journal of Management*. [Online] 16 (1), 49–64. Available from: doi:10.1177/031289629101600103.
- Drazin, R. & Van de Ven, A.H. (1985) Alternative Forms of Fit in Contingency Theory. *Administrative Science Quarterly*. [Online] 30 (4), 514–539. Available from: doi:10.2307/2392695.
- Drummond, H. (1998) Is Escalation Always Irrational? *Organization Studies*. [Online] 19 (6), 911–929. Available from: doi:10.1177/017084069801900601.
- Easterby-Smith, M., Thorpe, R. & Jackson, P.R. (2012) *Management Research*. SAGE.
- Eccles, R.G. (1981) The quasifirm in the construction industry. *Journal of Economic Behavior & Organization*. [Online] 2 (4), 335–357. Available from: doi:10.1016/0167-2681(81)90013-5.
- Edhlund, B. & McDougall, A. (2012) *NVivo 10 Essentials*. Lulu.com.
- Edhlund, B. & McDougall, A. (2016) *NVivo 11 Essentials*. Lulu.com.
- Edkins, A., Geraldi, J., Morris, P. & Smith, A. (2013) Exploring the front-end of project management. *Engineering Project Organization Journal*. [Online] 3 (2), 71–85. Available from: doi:10.1080/21573727.2013.775942.

- Eggleston, B. (2015) *The NEC 3 Engineering and Construction Contract: A Commentary*. John Wiley & Sons.
- Eisenhardt, K. (1989a) Building theories from case study research. *Academy of management review*. [Online] Available from: <http://amr.aom.org/content/14/4/532.short>.
- Eisenhardt, K.M. (1989b) Agency Theory: An Assessment and Review. *Academy of Management Review*. [Online] 14 (1), 57–74. Available from: doi:10.5465/AMR.1989.4279003.
- Eliasson, J. & Fosgerau, M. (2013) Cost overruns and demand shortfalls – Deception or selection? *Transportation Research Part B: Methodological*. [Online] 57 (Supplement C), 105–113. Available from: doi:10.1016/j.trb.2013.09.005.
- Elliott, M. (2014) Constitutional Legislation, European Union Law and the Nature of the United Kingdom’s Contemporary Constitution. *European Constitutional Law Review*. [Online] 10 (3), 379–392. Available from: doi:10.1017/S1574019614001291.
- Elliott, M. & Feldman, D. (2015) *The Cambridge Companion to Public Law*. Cambridge University Press.
- Engwall, M. (2003) No project is an island: linking projects to history and context. *Research Policy*. [Online] 32 (5), 789–808. Available from: doi:10.1016/S0048-7333(02)00088-4.
- Esty, B.C. (2008) *Modern Project Finance: A Casebook*. 1 edition. New York, John Wiley & Sons.
- European Commission (2017) *Glossary:Special-purpose entity (SPE) - Statistics Explained*. [Online]. 2017. Available from: [http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Special-purpose_entity_\(SPE\)](http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Special-purpose_entity_(SPE)) [Accessed: 25 September 2017].
- European PPP Expertise Centre (2012) *Market Update: Review of the European PPP Market in 2012*.
- Eurostat (2017) *Europa - RAMON - Nomenclature Detail View*. [Online]. 2017. Available from: http://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=DSP_GLOSSARY_NOM_DTL_VIEW&StrNom=CODED2&StrLanguageCode=EN&IntKey=25391501 [Accessed: 25 September 2017].
- Eweje, J., Turner, R. & Müller, R. (2012) Maximizing strategic value from megaprojects: The influence of information-feed on decision-making by the project manager. *International Journal of Project Management*. [Online] 30 (6), 639–651. Available from: doi:10.1016/j.ijproman.2012.01.004.
- Fabozzi, F.J. & Kothari, V. (2008) *Introduction to Securitization*. 1 edition. Hoboken, N.J, John Wiley & Sons.

- Fama, E.F. & Jensen, M.C. (1983) Separation of Ownership and Control. *The Journal of Law and Economics*. [Online] 26 (2), 301–325. Available from: doi:10.1086/467037.
- Farrell, S. (2012) The ownership and management structure of container terminal concessions. *Maritime Policy & Management*. [Online] 39 (1), 7–26. Available from: doi:10.1080/03088839.2011.642317.
- Feng, M., Gramlich, J.D. & Gupta, S. (2009a) Special Purpose Vehicles: Empirical Evidence on Determinants and Earnings Management. *Accounting Review*. [Online] 84 (6). Available from: doi:10.2139/ssrn.931214.
- Figlewski, S. & Levich, R.M. (2012) *Risk Management: The State of the Art*. Springer Science & Business Media.
- Finnerty, J.D. (2013) *Project Financing: Asset-Based Financial Engineering*. John Wiley & Sons.
- Floricel, S. & Miller, R. (2001) Strategizing for anticipated risks and turbulence in large-scale engineering projects. *International Journal of Project Management*. [Online] 19 (8), 445–455. Available from: doi:10.1016/S0263-7863(01)00047-3.
- Flyvbjerg, B. (2007a) Cost Overruns and Demand Shortfalls in Urban Rail and Other Infrastructure. *Transportation Planning and Technology*. [Online] 30 (1), 9–30. Available from: doi:10.1080/03081060701207938.
- Flyvbjerg, B. (2006) From Nobel Prize to project management: getting risks right. *Project management journal*. 37 (3), 5–15.
- Flyvbjerg, B. (2013a) Mega delusional: the curse of the mega project. *New Scientist*. [Online] 220 (2945), 28–29. Available from: doi:10.1016/S0262-4079(13)62793-1.
- Flyvbjerg, B. (2003) *Megaprojects and Risk: An Anatomy of Ambition*. First Edition, Sixth Impression edition. United Kingdom ; New York, Cambridge University Press.
- Flyvbjerg, B. (2007b) Policy and Planning for Large-Infrastructure Projects: Problems, Causes, Cures. *Environment and Planning B: Planning and Design*. [Online] 34 (4), 578–597. Available from: doi:10.1068/b32111.
- Flyvbjerg, B. (2013b) Quality control and due diligence in project management: Getting decisions right by taking the outside view. *International Journal of Project Management*. [Online] 31 (5), 760–774. Available from: doi:10.1016/j.ijproman.2012.10.007.
- Flyvbjerg, B. (2017) *The Oxford Handbook of Megaproject Management*. Oxford University Press.
- Flyvbjerg, B. (2014) What You Should Know About Megaprojects and Why: An Overview. *Project Management Journal*. [Online] 45 (2), 6–19. Available from: doi:10.1002/pmj.21409.

- Flyvbjerg, B., Bruzelius, N. & Rothengatter, W. (2003) *Megaprojects and Risk: An Anatomy of Ambition*. Cambridge University Press.
- Flyvbjerg, B., Garbuio, M. & Lovallo, D. (2009) Delusion and Deception in Large Infrastructure Projects: Two Models for Explaining and Preventing Executive Disaster. *California Management Review*. [Online] 51 (2), 170–194. Available from: doi:10.2307/41166485.
- Flyvbjerg, B., Holm, M.S. & Buhl, S. (2002) Underestimating Costs in Public Works Projects: Error or Lie? *Journal of the American Planning Association*. [Online] 68 (3), 279–295. Available from: doi:10.1080/01944360208976273.
- Frick, K.T. (2008) The cost of technological sublime: daring ingenuity and the new San Francisco-Oakland Bay Bridge. In: *Decision Making on Mega Projects. Cost Benefit Analysis, Planning and Innovation*. pp. 1–22.
- Friedman, M. (2007) The Social Responsibility of Business Is to Increase Its Profits. In: *Corporate Ethics and Corporate Governance*. [Online]. Springer, Berlin, Heidelberg. pp. 173–178. Available from: doi:10.1007/978-3-540-70818-6_14 [Accessed: 25 September 2017].
- Friese, S. (2014) *Qualitative Data Analysis with ATLAS.ti*. SAGE.
- Fujiwara-Greve, T. (2015) *Non-Cooperative Game Theory*. Springer.
- Furmston, M.P., Cheshire, G.C. & Fifoot, C.H.S. (2012) *Cheshire, Fifoot and Furmston's Law of Contract*. OUP Oxford.
- Gaddis, P.O. (1959) The project manager. *Harvard Business Review*. (3), 89–97.
- Garcia, A., Reitzes, J.D. & Benavides, J. (2005) Incentive Contracts for Infrastructure, Litigation and Weak Institutions. *Journal of Regulatory Economics*. [Online] 27 (1), 5–24. Available from: doi:10.1007/s11149-004-4416-y.
- Gatev, I. & Diesen, G. (2016) Eurasian encounters: the Eurasian Economic Union and the Shanghai Cooperation Organisation. *European Politics and Society*. [Online] 17 (sup1), 133–150. Available from: doi:10.1080/23745118.2016.1171364.
- Gatti, S. (2007) *Project Finance in Theory and Practice: Designing, Structuring, and Financing Private and Public Projects*. 1st edition. Burlington, MA, Academic Press.
- Gellert, P.K. & Lynch, B.D. (2003) Mega-projects as displacements*. *International Social Science Journal*. [Online] 55 (175), 15–25. Available from: doi:10.1111/1468-2451.5501002.
- Gemson, J., Gautami, K.V. & Thillai Rajan, A. (2012) Impact of private equity investments in infrastructure projects. *Utilities Policy*. [Online] 21, 59–65. Available from: doi:10.1016/j.jup.2011.12.001.
- Gidado, K. (1993a) *Numerical index of complexity in building construction to its effect on production time*. Ph.D. [Online]. University of Brighton. Available from:

- <http://ethos.bl.uk/OrderDetails.do?uin=uk.bl.ethos.357220> [Accessed: 25 October 2016].
- Gidado, K.I. (1996) Project complexity: The focal point of construction production planning. *Construction Management and Economics*. [Online] 14 (3), 213–225. Available from: doi:10.1080/014461996373476.
- Giezen, M. (2012) Keeping it simple? A case study into the advantages and disadvantages of reducing complexity in mega project planning. *International Journal of Project Management*. [Online] 30 (7), 781–790. Available from: doi:10.1016/j.ijproman.2012.01.010.
- Gil, N.A. & Pinto, J. (2016) Collective Action at the Complex Systems Project Front-end: Governance and Performance Implications. *Academy of Management Proceedings*. [Online] 2016 (1), 17194. Available from: doi:10.5465/AMBPP.2016.17194abstract.
- Gilson, R.J. (1996) Corporate Governance and Economic Efficiency: When Do Institutions Matter. *Washington University Law Quarterly*. 74, 327.
- Glaser, B. & Strauss, A. (1967) Grounded theory: The discovery of grounded theory. *Sociology The Journal Of The British Sociological Association*. 12, 27–49.
- Glaser, B.G. (1998) *Doing Grounded Theory: Issues and Discussions*. Sociology Press.
- Glaser, B.G. (1992) *Emergence Vs Forcing: Basics of Grounded Theory Analysis*. Sociology Press.
- Glaser, B.G. (1978) *Theoretical sensitivity: advances in the methodology of grounded theory*. Sociology Press.
- Glaser, C.L. (2010) *Rational Theory of International Politics: The Logic of Competition and Cooperation*. Princeton University Press.
- Glover, J. & Hughes, S. (2011) *Understanding the FIDIC Red Book: A Clause by Clause Commentary*. Sweet & Maxwell.
- Gorton, G. & Souleles, N. (2007) Special purpose vehicles and securitization. In: *The risks of financial institutions*. The University of Chicago Press. p.
- GOV.UK (2012) *Private Finance 2 (PF2)*. [Online]. Available from: <https://www.gov.uk/government/publications/private-finance-2-pf2> [Accessed: 15 October 2017].
- Goyer, M. (2011) *Contingent Capital: Short-term Investors and the Evolution of Corporate Governance in France and Germany*. OUP Oxford.
- Greiman, V.A. (2013) *Megaproject Management: Lessons on Risk and Project Management from the Big Dig*. John Wiley & Sons.

- Grimsey, D. & Lewis, M. (2007) *Public private partnerships: The worldwide revolution in infrastructure provision and project finance*.
- Grimsey, D. & Lewis, M.K. (2005b) Are Public Private Partnerships value for money?: Evaluating alternative approaches and comparing academic and practitioner views. *Accounting Forum*. 29 (4), 345–378.
- Grimsey, D. & Lewis, M.K. (2002) Evaluating the risks of public private partnerships for infrastructure projects. *International Journal of Project Management*. 20 (2), 107–118.
- Gruber, J. & Köszegi, B. (2001) Is Addiction “Rational”? Theory and Evidence. *The Quarterly Journal of Economics*. [Online] 116 (4), 1261–1303. Available from: doi:10.1162/003355301753265570.
- Grün, O. (2004) *Taming Giant Projects: Management of Multi-Organization Enterprises*. Springer Science & Business Media.
- Hage, J. (1972) *Techniques and Problems of Theory Construction in Sociology*. New York, John Wiley & Sons,.
- Hall, P. (1982) *Great Planning Disasters: With a New Introduction*. University of California Press.
- Han, S.H., Yun, S., Kim, H., Kwak, Y.H., et al. (2009) Analyzing Schedule Delay of Mega Project: Lessons Learned From Korea Train Express. *IEEE Transactions on Engineering Management*. [Online] 56 (2), 243–256. Available from: doi:10.1109/TEM.2009.2016042.
- Han, W.S., Yusof, A.M., Ismail, S. & Aun, N.C. (2012) Reviewing the notions of construction project success. *Int. J. Bus. Manag.* 7 (1), 90–101.
- Harris, F., McCaffer, R. & Edum-Fotwe, F. (2013) *Modern Construction Management*. 6th Edition edition. Oxford ; Malden, MA, Wiley-Blackwell.
- Hart, O. (1995) *Firms, Contracts, and Financial Structure*. Clarendon Press.
- Hart, O. (2003) Incomplete Contracts and Public Ownership: Remarks, and an Application to Public-Private Partnerships*. *The Economic Journal*. [Online] 113 (486), C69–C76. Available from: doi:10.1111/1468-0297.00119.
- Hart, O.D. (1988) Incomplete Contracts and the Theory of the Firm. *Journal of Law, Economics, & Organization*. 4 (1), 119–139.
- Hassan, T.M., Mccaffer, R. & Thorpe, T. (1999) Emerging clients’ needs for Large Scale Engineering projects. *Engineering Construction and Architectural Management*. [Online] 6 (1), 21–29. Available from: doi:10.1046/j.1365-232x.1999.00097.x.
- Hellowell, M., Vecchi, V. & Caselli, S. (2015) Return of the state? An appraisal of policies to enhance access to credit for infrastructure-based PPPs. *Public Money &*

- Management*. [Online] 35 (1), 71–78. Available from: doi:10.1080/09540962.2015.986896.
- Helminen, M. (1999) *The Dividend Concept in International Tax Law: Dividend Payments Between Corporate Entities*. Kluwer Law International.
- Hill, F. (2004) Pipelines in the Caspian: Catalyst or Cure-all? *Georgetown Journal of International Affairs*. 5 (1), 17–25.
- Hillson, D. (2002) Extending the risk process to manage opportunities. *International Journal of Project Management*. [Online] 20 (3), 235–240. Available from: doi:10.1016/S0263-7863(01)00074-6.
- Hirschman, A.O. (2014) *Development Projects Observed*. Brookings Institution Press.
- Hodge, G.A. & Greve, C. (2005) *The Challenge of Public-private Partnerships: Learning from International Experience*. Edward Elgar Publishing.
- Hu Yi, Chan Albert P. C., Le Yun & Jin Run-zhi (2015) From Construction Megaproject Management to Complex Project Management: Bibliographic Analysis. *Journal of Management in Engineering*. [Online] 31 (4), 04014052. Available from: doi:10.1061/(ASCE)ME.1943-5479.0000254.
- Hueskes, M., Verhoest, K. & Block, T. (2017) Governing public–private partnerships for sustainability: An analysis of procurement and governance practices of PPP infrastructure projects. *International Journal of Project Management*. [Online] 35 (6), 1184–1195. Available from: doi:10.1016/j.ijproman.2017.02.020.
- Hufty, M. (2011) *Investigating Policy Processes: The Governance Analytical Framework (GAF)*.
- Hughes, W., Champion, R. & Murdoch, J. (2015) *Construction Contracts: Law and Management*. 5 edizione. Routledge.
- Huse, J.A. (2002) *Understanding and Negotiating Turnkey and EPC Contracts*. Sweet & Maxwell.
- IAEA (2014) *Alternative Contracting and Ownership Approaches for New Nuclear Power Plants*. [Online]. Available from: <http://www-pub.iaea.org/books/IAEABooks/10733/Alternative-Contracting-and-Ownership-Approaches-for-New-Nuclear-Power-Plants>.
- IAEA (2004) *Regulatory Control of Nuclear Power Plants*. [Online]. Available from: http://www-pub.iaea.org/MTCD/Publications/PDF/TCS-15_web.pdf.
- IASC (1999) *Draft Interpretation SIC – D12, consolidation of special purpose entities*.
- Ika, L.A. (2009) Project success as a topic in project management journals. *Project Management Journal*. [Online] 40 (4), 6–19. Available from: doi:10.1002/pmj.20137.
- Inderst (2009) *Pension Funds Investment in Infrastructure*. [Online]. Available from: <http://www.oecd.org/finance/private-pensions/42052208.pdf>.

International Accounting Standards Board (IASB)-Standard Interpretations Committee (SIC) (2009) *SIC Interpretation 12- Consolidation—Special Purpose Entities*.

Ismail, Z. & Hassan, F. (2011) Sustainable private financing initiative contracts. In: *2011 IEEE Symposium on Business, Engineering and Industrial Applications (ISBEIA)*. [Online]. September 2011 IEEE. pp. 452–457. Available from: doi:10.1109/ISBEIA.2011.6088857.

Jacob, W.F. & Kwak, Y.H. (2003) In search of innovative techniques to evaluate pharmaceutical R&D projects. *Technovation*. [Online] 23 (4), 291–296. Available from: doi:10.1016/S0166-4972(01)00116-X.

Jensen, M.C. (2003) *A Theory of the Firm: Governance, Residual Claims, and Organizational Forms*. Harvard University Press.

Jensen, M.C. & Meckling, W.H. (1976) Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*. [Online] 3 (4), 305–360. Available from: doi:10.1016/0304-405X(76)90026-X.

Jørgensen, M., Halkjelsvik, T. & Kitchenham, B. (2012) How does project size affect cost estimation error? Statistical artifacts and methodological challenges. *International Journal of Project Management*. [Online] 30 (7), 839–849. Available from: doi:10.1016/j.ijproman.2012.01.007.

Joslin, R. & Müller, R. (2016) The relationship between project governance and project success. *International Journal of Project Management*. [Online] 34 (4), 613–626. Available from: doi:10.1016/j.ijproman.2016.01.008.

Kardes, I., Ozturk, A., Cavusgil, S.T. & Cavusgil, E. (2013) Managing global megaprojects: Complexity and risk management. *International Business Review*. [Online] 22 (6), 905–917. Available from: doi:10.1016/j.ibusrev.2013.01.003.

Kasimati, E. & Dawson, P. (2009) Assessing the impact of the 2004 Olympic Games on the Greek economy: A small macroeconomic model. *Economic Modelling*. [Online] 26 (1), 139–146. Available from: doi:10.1016/j.econmod.2008.06.006.

Ketokivi, M. & Choi, T. (2014) Renaissance of case research as a scientific method. *Journal of Operations Management*. [Online] 32 (5), 232–240. Available from: doi:10.1016/j.jom.2014.03.004.

Ketz, J.E. (2003) *Hidden Financial Risk: Understanding Off-Balance Sheet Accounting*. John Wiley & Sons.

Blakeegg, O.J., Williams, T. & Shiferaw, A.T. (2016) Taming the ‘trolls’: Major public projects in the making. *International Journal of Project Management*. [Online] 34 (2), 282–296. Available from: doi:10.1016/j.ijproman.2015.03.008.

Klijn, E.H. & Koppenjan, J. (2016) The impact of contract characteristics on the performance of public–private partnerships (PPPs). *Public Money & Management*. [Online] 36 (6), 455–462. Available from: doi:10.1080/09540962.2016.1206756.

- Knight, L., Harland, C., Telgen, J., Thai, K.V., et al. (2012) *Public Procurement: International Cases and Commentary*. Routledge.
- Kobayashi, M. & Osano, H. (2012) Nonrecourse financing and securitization. *Journal of Financial Intermediation*. [Online] 21 (4), 659–693. Available from: doi:10.1016/j.jfi.2012.04.001.
- Kollruss, T. (2012) Tax structuring and the value of the firm. Utilization of affiliated financial intermediary SPEs and hybrid instruments in investment banking. *Investment Management and Financial Innovations*. 9 (2), 128–135.
- Koppenjan, J. (Joop) F.M. (2005) The Formation of Public-Private Partnerships: Lessons from Nine Transport Infrastructure Projects in The Netherlands. *Public Administration*. [Online] 83 (1), 135–157. Available from: doi:10.1111/j.0033-3298.2005.00441.x.
- Koppenjan, J.F.M. & Enserink, B. (2009) Public–Private Partnerships in Urban Infrastructures: Reconciling Private Sector Participation and Sustainability. *Public Administration Review*. [Online] 69 (2), 284–296. Available from: doi:10.1111/j.1540-6210.2008.01974.x.
- Kraakman, R., Hansmann, H., Hertig, G., Kanda, H., et al. (2017) *The Anatomy of Corporate Law: A Comparative and Functional Approach*. Oxford University Press.
- Krebsz, M. (2011) *Securitization and Structured Finance Post Credit Crunch: A Best Practice Deal Lifecycle Guide*. John Wiley & Sons.
- Kujala, S., Artto, K., Aaltonen, P. & Turkulainen, V. (2010) Business models in project-based firms – Towards a typology of solution-specific business models. *International Journal of Project Management*. [Online] 28 (2), 96–106. Available from: doi:10.1016/j.ijproman.2009.08.008.
- Kwak, Y.H. & Smith, B.M. (2009) Managing risks in mega defense acquisition projects: Performance, policy, and opportunities. *International Journal of Project Management*. [Online] 27 (8), 812–820. Available from: doi:10.1016/j.ijproman.2009.02.002.
- Lakicevic, M., Shachmurove, Y. & Vulcanovic, M. (2014) Institutional changes of Specified Purpose Acquisition Companies (SPACs). *The North American Journal of Economics and Finance*. [Online] 28, 149–169. Available from: doi:10.1016/j.najef.2014.03.002.
- Lander, G.H. & Auger, K.A. (2008) The Economic Impact of the Lack of Transparency in Financial Reporting. *Atlantic Economic Journal*. [Online] 36 (1), 105–116. Available from: doi:10.1007/s11293-007-9107-5.
- Larsen, A., Pedersen, L.H., Sørensen, E.M. & Olsen, O.J. (2006) Independent regulatory authorities in European electricity markets. *Energy Policy*. [Online] 34 (17), 2858–2870. Available from: doi:10.1016/j.enpol.2005.05.003.

- Larson, R.K. (2008) An examination of comment letters to the IASC: Special purpose entities. *Research in Accounting Regulation*. 20 (C), 27–46.
- Larson, R.K. (2002) The IASC's search for legitimacy: An analysis of the IASC's standing interpretations committee. *Advances in International Accounting*. [Online] 15, 79–120. Available from: doi:10.1016/S0897-3660(02)15020-3.
- Larson, R.K. & Herz, P.J. (2013) A Multi-Issue/Multi-Period Analysis of the Geographic Diversity of IASB Comment Letter Participation. *Accounting in Europe*. [Online] 10 (1), 99–151. Available from: doi:10.1080/17449480.2013.772716.
- Lee, N. & Lings, I. (2008) *Doing Business Research: A Guide to Theory and Practice*. SAGE.
- Leland, H.E. (2007) Financial Synergies and the Optimal Scope of the Firm: Implications for Mergers, Spinoffs, and Structured Finance. *The Journal of Finance*. [Online] 62 (2), 765–807. Available from: doi:10.1111/j.1540-6261.2007.01223.x.
- Lemmon, M., Liu, L.X., Mao, M.Q. & Nini, G. (2014) Securitization and Capital Structure in Nonfinancial Firms: An Empirical Investigation. *The Journal of Finance*. [Online] 69 (4), 1787–1825. Available from: doi:10.1111/jofi.12128.
- Li, B., Akintoye, A., Edwards, P.J. & Hardcastle, C. (2005) Critical success factors for PPP/PFI projects in the UK construction industry. *Construction Management and Economics*. [Online] 23 (5), 459–471. Available from: doi:10.1080/01446190500041537.
- Li, T.H.Y., Ng, S.T. & Skitmore, M. (2013) Evaluating stakeholder satisfaction during public participation in major infrastructure and construction projects: A fuzzy approach. *Automation in Construction*. [Online] 29 (Supplement C), 123–135. Available from: doi:10.1016/j.autcon.2012.09.007.
- Lim, C.S. & Mohamed, M.Z. (1999) Criteria of project success: an exploratory re-examination. *International Journal of Project Management*. [Online] 17 (4), 243–248. Available from: doi:10.1016/S0263-7863(98)00040-4.
- Lindkvist, C., Stasis, A. & Whyte, J. (2013) Configuration management in complex engineering projects. *Procedia CIRP*. 11, 173–176.
- Lindley, R. (1980) Lying: Moral Choice in Public and Private Life. *Philosophical Books*. [Online] 21 (3), 173–175. Available from: doi:10.1111/j.1468-0149.1980.tb01844.x.
- LinkedIn (2017) *Official internet website*.
- Litmanen, T. & Kojo, M. (2011) Not excluding nuclear power: the dynamics and stability of nuclear power policy arrangements in Finland. *Journal of Integrative Environmental Sciences*. [Online] 8 (3), 171–194. Available from: doi:10.1080/1943815X.2011.585652.

- Locatelli, G., Invernizzi, D.C. & Brookes, N.J. (2017) Project characteristics and performance in Europe: An empirical analysis for large transport infrastructure projects. *Transportation Research Part A: Policy and Practice*. [Online] 98 (Supplement C), 108–122. Available from: doi:10.1016/j.tra.2017.01.024.
- Locatelli, G., Littau, P., Brookes, N.J. & Mancini, M. (2014) Project Characteristics Enabling the Success of Megaprojects: An Empirical Investigation in the Energy Sector. *Procedia - Social and Behavioral Sciences*. [Online] 119, 625–634. Available from: doi:10.1016/j.sbspro.2014.03.070.
- Locatelli, G., Mariani, G., Sainati, T. & Greco, M. (2016) Corruption in Public projects and Megaprojects: There is an elephant in the room! *International Journal of Project Management*. [Online] Available from: <http://eprints.whiterose.ac.uk/105253/> [Accessed: 24 October 2016].
- Locatelli, G., Mikic, M., Brookes, N., Kovacevic, M., et al. (2017) The successful delivery of megaprojects: a novel research method. *Project Management Journal*. 48 (5), 78–94.
- Lovullo, D. & Kahneman, D. (2003) Delusions of success. *Harvard business review*. 81 (7), 56–63.
- Loveland, I. (2012) *Constitutional Law, Administrative Law, and Human Rights: A Critical Introduction*. OUP Oxford.
- Lundin, R.A. & Söderholm, A. (1995) A theory of the temporary organization. *Scandinavian Journal of Management*. [Online] 11 (4), 437–455. Available from: doi:10.1016/0956-5221(95)00036-U.
- Manzoni, A. & Islam, S.M.N. (2009) *Performance Measurement in Corporate Governance: DEA Modelling and Implications for Organisational Behaviour and Supply Chain Management*. [Online]. Springer Science & Business Media.
- van Marrewijk, A., Clegg, S.R., Pitsis, T.S. & Veenswijk, M. (2008) Managing public–private megaprojects: Paradoxes, complexity, and project design. *International Journal of Project Management*. [Online] 26 (6), 591–600. Available from: doi:10.1016/j.ijproman.2007.09.007.
- van Marrewijk, A. & Smits, K. (2016) Cultural practices of governance in the Panama Canal Expansion Megaproject. *International Journal of Project Management*. [Online] 34 (3), 533–544. Available from: doi:10.1016/j.ijproman.2015.07.004.
- van Marrewijk, A., Ybema, S., Smits, K., Clegg, S., et al. (2016) Clash of the Titans: Temporal Organizing and Collaborative Dynamics in the Panama Canal Megaproject. *Organization Studies*. [Online] 37 (12), 1745–1769. Available from: doi:10.1177/0170840616655489.
- Matinheikki, J., Arto, K., Peltokorpi, A. & Rajala, R. (2016) Managing inter-organizational networks for value creation in the front-end of projects. *International Journal of Project Management*. [Online] 34 (7), 1226–1241. Available from: doi:10.1016/j.ijproman.2016.06.003.

- McKendrick, E. (2013) *Force Majeure and Frustration of Contract*. CRC Press.
- McRaney, D. (2012) *You Are Not So Smart: Why You Have Too Many Friends on Facebook, Why Your Memory Is Mostly Fiction, and 46 Other Ways You're Deluding Yourself*. Gotham Books.
- Medda, F.R., Carbonaro, G. & Davis, S.L. (2013) Public private partnerships in transportation: Some insights from the European experience. *IATSS Research*. 36 (2), 83–87.
- Megaproject COST Action (2014) *Official internet website*. [Online]. 2014. Available from: <http://www.mega-project.eu/> [Accessed: 23 September 2017].
- Megaproject cost action (2014) *Project portfolio*. [Online]. 2014. Available from: <http://www.mega-project.eu/portfolio/>.
- Melo Zurita, M. de L., Cook, B., Harms, L. & March, A. (2015) Towards New Disaster Governance: Subsidiarity as a Critical Tool. *Environmental Policy and Governance*. [Online] 25 (6), 386–398. Available from: doi:10.1002/eet.1681.
- Merkert, R. & O'Fee, B. (2013) Efficient procurement of public air services—Lessons learned from European transport authorities' perspectives. *Transport Policy*. [Online] 29 (Supplement C), 118–125. Available from: doi:10.1016/j.tranpol.2013.04.008.
- Morrow, E.W. (2011) *Industrial Megaprojects: Concepts, Strategies, and Practices for Success*. 1 edition. Hoboken, N.J., John Wiley & Sons.
- Meunier, D. & Quinet, E. (2010) Tips and Pitfalls in PPP design. *Research in Transportation Economics*. [Online] 30 (1), 126–138. Available from: doi:10.1016/j.retrec.2010.10.013.
- Miller, R. & Hobbs, B. (2009) The Complexity of Decision-Making in Large Projects with Multiple Partners: Be Prepared to Change. In: Terry M. Williams, Knut Samset, & Kjell J. Sunnevåg (eds.). *Making Essential Choices with Scant Information*. [Online]. Palgrave Macmillan UK. pp. 375–389. Available from: doi:10.1057/9780230236837_18 [Accessed: 14 February 2017].
- Miller, R. & Lessard, D. (2001) Understanding and managing risks in large engineering projects. *International Journal of Project Management*. [Online] 19 (8), 437–443. Available from: doi:10.1016/S0263-7863(01)00045-X.
- Miller, R., Lessard, D., Michaud, P. & Floricel, S. (2001) *The strategic management of large engineering projects: Shaping institutions, risks, and governance*.
- Misangyi, V.F., Weaver, G.R. & Elms, H. (2008) Ending Corruption: The Interplay Among Institutional Logics, Resources, and Institutional Entrepreneurs. *Academy of Management Review*. [Online] 33 (3), 750–770. Available from: doi:10.5465/AMR.2008.32465769.

- Mitnick, B.M. (1973) *Fiduciary Rationality and Public Policy: The Theory of Agency and Some Consequences*. [Online]. Available from: <https://papers.ssrn.com/abstract=1020859> [Accessed: 25 September 2017].
- Montesquieu, C. de S. baron de & Varnet, J.J. (1748) *De l'esprit des lois: ou Du rapport que les loix doivent avoir avec la constitution de chaque gouvernement, les moeurs le climat, la religion, le commerce, &c. ; à quoi l'auteur a ajouté. Des recherches nouvelles sur les loix romaines touchant les successions, sur les loix françoises, & sur les loix féodales*. Chez Barrillot & fils.
- Morris, P.W.G. (1997) *The Management of Projects*. Thomas Telford.
- Müller, D.R. (2012) *Project Governance*. Gower Publishing, Ltd.
- Müller, M. (2011) State Dirigisme in Megaprojects: Governing the 2014 Winter Olympics in Sochi. *Environment and Planning A*. [Online] 43 (9), 2091–2108. Available from: doi:10.1068/a43284.
- Müller, R., Andersen, E.S., Kvalnes, Ø., Shao, J., et al. (2013) The Interrelationship of Governance, Trust, and Ethics in Temporary Organizations. *Project Management Journal*. [Online] 44 (4), 26–44. Available from: doi:10.1002/pmj.21350.
- Müller, R., Shao, J. & Pemsel, S. (2016) *Organizational Enablers for Project Governance*. Newtown Square, Pennsylvania, Project Management Institute.
- Müller, R. & Turner, J.R. (2005) The impact of principal–agent relationship and contract type on communication between project owner and manager. *International Journal of Project Management*. [Online] 23 (5), 398–403. Available from: doi:10.1016/j.ijproman.2005.03.001.
- Musawir, A. ul, Serra, C.E.M., Zwikael, O. & Ali, I. (2017) Project governance, benefit management, and project success: Towards a framework for supporting organizational strategy implementation. *International Journal of Project Management*. [Online] Available from: doi:10.1016/j.ijproman.2017.07.007.
- Mutka, S. & Aaltonen, P. (2013) The impact of a delivery project's business model in a project-based firm. *International Journal of Project Management*. [Online] 31 (2), 166–176. Available from: doi:10.1016/j.ijproman.2012.07.006.
- National Audit Office (2011a) *Lessons from PFI and other projects*. [Online]. Available from: <https://www.nao.org.uk/report/lessons-from-pfi-and-other-projects/> [Accessed: 14 January 2017].
- National Audit Office (2013) *Review of the VFM assessment process for PFI*. [Online]. Available from: <https://www.nao.org.uk/report/review-vfm-assessment-process-pfi/> [Accessed: 14 January 2017].
- National Audit Office (2011b) *Savings from operational PFI contracts*. [Online]. Available from: <https://www.nao.org.uk/report/savings-from-operational-pfi-contracts/> [Accessed: 14 January 2017].

- National Audit Office (2009) *The Building Schools for the Future Programme: Renewing the secondary school estate*. [Online]. 2009. National Audit Office. Available from: <https://www.nao.org.uk/report/the-building-schools-for-the-future-programme-renewing-the-secondary-school-estate/> [Accessed: 12 October 2017].
- National Audit Office (2015) *UK Guarantees scheme for infrastructure*. [Online]. Available from: <https://www.nao.org.uk/report/uk-guarantees-scheme-for-infrastructure/> [Accessed: 14 January 2017].
- De Nederlandsche Bank (2004) *Definition of Special Purpose Entities - IMF*.
- Neumann, J. von & Morgenstern, O. (2007) *Theory of Games and Economic Behavior*. Princeton University Press.
- Nevitt, F.J. & Fabozzi, P.K. (2000) *Project Financing: 7th edition*. 7th edition. London, Euromoney Books.
- Nielsen, B.B. (2010) Strategic fit, contractual, and procedural governance in alliances. *Journal of Business Research*. [Online] 63 (7), 682–689. Available from: doi:10.1016/j.jbusres.2009.05.001.
- Nisar, T.M. (2013) Implementation constraints in social enterprise and community Public Private Partnerships. *International Journal of Project Management*. [Online] 31 (4), 638–651. Available from: doi:10.1016/j.ijproman.2012.08.004.
- Nuclear Energy Agency OECD (2011) *Nuclear Legislation in OECD Member Countries - France*. [Online]. Available from: <https://www.oecd-nea.org/law/legislation/france.html> [Accessed: 13 October 2017].
- Nye, D.E. (1996) *American Technological Sublime*. MIT Press.
- OECD (2017a) *Glossary of Statistical Terms - Special purpose entities (SPEs) Definition*. [Online]. 2017. Available from: <https://stats.oecd.org/glossary/detail.asp?ID=2515> [Accessed: 25 September 2017].
- OECD (2001) *Governance in the 21st Century*. [Online]. Paris, Organisation for Economic Co-operation and Development. Available from: <http://www.oecd-ilibrary.org/content/book/9789264189362-en>.
- OECD (1996) *OECD Benchmark Definition of Foreign Direct Investment: Third Edition*. OECD Publishing.
- OECD (2017b) *OECD Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations*. [Online]. Available from: <http://www.oecd.org/tax/transfer-pricing/oecd-transfer-pricing-guidelines-for-multinational-enterprises-and-tax-administrations-20769717.htm> [Accessed: 15 October 2017].
- OECD (1999) *Principles of Corporate Governance*. [Online]. Available from: [http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=C/MIN\(99\)6&docLanguage=En](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=C/MIN(99)6&docLanguage=En).

- Open Oil (2012) *Oil Contracts: How to read and understand them*. [Online]. Linz, Open Oil. Available from: <http://www.eisourcebook.org/cms/January%202016/Oil%20Contratcs,%20How%20to%20Read%20and%20Understand%20them%202011.pdf>.
- O'Reilly, K., Paper, D. & Marx, S. (2012) Demystifying Grounded Theory for Business Research. *Organizational Research Methods*. [Online] 15 (2), 247–262. Available from: doi:10.1177/1094428111434559.
- Orr, R.J. & Scott, W.R. (2008) Institutional exceptions on global projects: a process model. *Journal of International Business Studies*. [Online] 39 (4), 562–588. Available from: doi:10.1057/palgrave.jibs.8400370.
- Orueta, F.D. & Fainstein, S.S. (2008) The New Mega-Projects: Genesis and Impacts. *International Journal of Urban and Regional Research*. [Online] 32 (4), 759–767. Available from: doi:10.1111/j.1468-2427.2008.00829.x.
- Osei-Kyei, R. & Chan, A.P.C. (2017) Perceptions of stakeholders on the critical success factors for operational management of public-private partnership projects. *Facilities*. [Online] 35 (1/2), 21–38. Available from: doi:10.1108/F-10-2015-0072.
- Osei-Kyei, R. & Chan, A.P.C. (2015) Review of studies on the Critical Success Factors for Public–Private Partnership (PPP) projects from 1990 to 2013. *International Journal of Project Management*. [Online] 33 (6), 1335–1346. Available from: doi:10.1016/j.ijproman.2015.02.008.
- Osei-Kyei, R., Chan, A.P.C., Javed, A.A. & Ameyaw, E.E. (2017) Critical success criteria for public-private partnership projects: international experts' opinion. *International Journal of Strategic Property Management*. [Online] 21 (1), 87–100. Available from: doi:10.3846/1648715X.2016.1246388.
- Oxford Living Dictionary (2016) *Definition of consortium*. [Online]. Available from: <https://en.oxforddictionaries.com/definition/consortium> [Accessed: 25 September 2016].
- Painter, C., Isaac–Henry, K. & Rouse, J. (1997) Local Authorities and Non–elected Agencies: Strategic Responses and Organizational Networks. *Public Administration*. [Online] 75 (2), 225–245. Available from: doi:10.1111/1467-9299.00058.
- Parker, D. & Hartley, K. (2003) Transaction costs, relational contracting and public private partnerships: a case study of UK defence. *Journal of Purchasing and Supply Management*. [Online] 9 (3), 97–108. Available from: doi:10.1016/S0969-7012(02)00035-7.
- Parkhe, A. (1993) Strategic Alliance Structuring: A Game Theoretic and Transaction Cost Examination of Interfirm Cooperation. *Academy of Management Journal*. [Online] 36 (4), 794–829. Available from: doi:10.2307/256759.
- Pasian, B. (2016) *Designs, Methods and Practices for Research of Project Management*. Routledge.

- Patanakul, P. (2014) Managing large-scale IS/IT projects in the public sector: Problems and causes leading to poor performance. *The Journal of High Technology Management Research*. [Online] 25 (1), 21–35. Available from: doi:10.1016/j.hitech.2013.12.004.
- Patanakul, P. & Omar, S.S. (2011) Common Problems and Lessons Learned from Managing Large-Scale US Government IS/IT Projects. *International Journal of Social Ecology and Sustainable Development (IJSESD)*. [Online] 2 (3), 94–111. Available from: doi:10.4018/jsesd.2011070106.
- Pazarbasioglu, C., Zhou, M.J.-P., Leslé, V.L. & Moore, M. (2011) *Contingent Capital: Economic Rationale and Design Features*. International Monetary Fund.
- Pellegrinelli, S., Partington, D., Hemingway, C., Mohdzain, Z., et al. (2007) The importance of context in programme management: An empirical review of programme practices. *International Journal of Project Management*. [Online] 25 (1), 41–55. Available from: doi:10.1016/j.ijproman.2006.06.002.
- Phillips, N., Lawrence, T.B. & Hardy, C. (2000) Inter-organizational Collaboration and the Dynamics of Institutional Fields. *Journal of Management Studies*. [Online] 37 (1), no-no. Available from: doi:10.1111/1467-6486.00171.
- Pittaway, L., Robertson, M., Munir, K., Denyer, D., et al. (2004) Networking and innovation: A systematic review of the evidence. *International Journal of Management Reviews*. 5–6 (3–4), 137–168.
- Poblete, J. & Spulber, D. (2012) The form of incentive contracts: agency with moral hazard, risk neutrality, and limited liability. *The RAND Journal of Economics*. [Online] 43 (2), 215–234. Available from: doi:10.1111/j.1756-2171.2012.00163.x.
- Powers, B.A. & Knapp, T.R. (2010) *Dictionary of Nursing Theory and Research: Fourth Edition*. Springer Publishing Company.
- Pricewaterhouse Coopers (2011) *Structured finance-accounting developments: Special purposes entities – Consolidation and Disclosure*.
- PriceWaterhouseCoopers LLP (2006) *Mergers and Acquisitions: A Global Tax Guide*. John Wiley & Sons.
- Priemus, H., Flyvbjerg, B. & Wee, B. van (2008) *Decision-making on Mega-projects: Cost-benefit Analysis, Planning and Innovation*. Edward Elgar Publishing.
- Project Management Institute (2013) *Glossary: definition of project*. [Online]. Available from: <https://www.pmi.org/about/learn-about-pmi/what-is-project-management>.
- Puhr, K., Schultz, S., Pikelj, K., Petricioli, D., et al. (2014) The performance, application and integration of various seabed classification systems suitable for mapping *Posidonia oceanica* (L.) Delile meadows. *Science of the Total Environment*. [Online] 470, 364–378. Available from: doi:10.1016/j.scitotenv.2013.09.103.

- Rabin, M. (1993) Incorporating Fairness into Game Theory and Economics. *The American Economic Review*. 83 (5), 1281–1302.
- Resnik, J. (2014) Diffusing Disputes: The Public in the Private of Arbitration, the Private in Courts, and the Erasure of Rights. *Yale Law Journal*. 124, 2804.
- Rijke, J., van Herk, S., Zevenbergen, C., Ashley, R., et al. (2014) Adaptive programme management through a balanced performance/strategy oriented focus. *International Journal of Project Management*. [Online] 32 (7), 1197–1209. Available from: doi:10.1016/j.ijproman.2014.01.003.
- Ross, J. & Staw, B.M. (1993) Organizational Escalation and Exit: Lessons From the Shoreham Nuclear Power Plant. *Academy of Management Journal*. [Online] 36 (4), 701–732. Available from: doi:10.2307/256756.
- Ross, S.A. (1973) The Economic Theory of Agency: The Principal's Problem. *The American Economic Review*. 63 (2), 134–139.
- Rui, Z., Peng, F., Ling, K., Chang, H., et al. (2017) Investigation into the performance of oil and gas projects. *Journal of Natural Gas Science and Engineering*. [Online] 38 (Supplement C), 12–20. Available from: doi:10.1016/j.jngse.2016.11.049.
- Ruuska, I., Ahola, T., Artto, K., Locatelli, G., et al. (2011) A new governance approach for multi-firm projects: Lessons from Olkiluoto 3 and Flamanville 3 nuclear power plant projects. *International Journal of Project Management*. [Online] 29 (6), 647–660. Available from: doi:10.1016/j.ijproman.2010.10.001.
- Ruuska, I., Ahola, T., Martinsuo, M. & Westerholm, T. (2013) Supplier capabilities in large shipbuilding projects. *International Journal of Project Management*. [Online] 31 (4), 542–553. Available from: doi:10.1016/j.ijproman.2012.09.017.
- Ruuska, I., Artto, K., Aaltonen, K. & Lehtonen, P. (2009) Dimensions of distance in a project network: Exploring Olkiluoto 3 nuclear power plant project. *International Journal of Project Management*. [Online] 27 (2), 142–153. Available from: doi:10.1016/j.ijproman.2008.09.003.
- Sainati, T., Brookes, N. & Locatelli, G. (2014) Special purpose entities and their role in megaprojects: a new focus for understanding megaproject behavior. In: *Proceeding of the1 EURAM 2014 Annual Conference*. 2014 Valencia. p.
- Sainati, T., Brookes, N.J. & Locatelli, G. (2017) Special Purpose Entities in Megaprojects: Empty Boxes or Real Companies? *Project Management Journal*. 48 (2), 55–73.
- Sainati, T., Brookes, N.J. & Locatelli, G. (2016) Special Purpose Entities in Megaprojects: empty boxes or real companies? Literature Review. *Project Management Journal*. Accepted.
- Sainati, T., Locatelli, G. & Brookes, N. (2015a) Organisational forms in Megaprojects: Understanding the 'Special purpose Entities'". In: *Proceeding of the1 EURAM 2015 Annual Conference*. 2015 Warsaw. p.

- Sainati, T., Locatelli, G. & Brookes, N. (2015b) Small Modular Reactors: Licensing constraints and the way forward. *Energy*. [Online] 82, 1092–1095. Available from: doi:10.1016/j.energy.2014.12.079.
- Samset, K., Berg, P. & Klakegg, O.J. (2006) Front end governance of major public projects. In: *EURAM 2006 Conference in Oslo, May*. [Online]. 2006 p. Available from: https://www.ntnu.no/documents/1261860271/1262022437/058_2006_samset_paper_euram_v4.pdf [Accessed: 8 April 2017].
- Samset, K. & Volden, G.H. (2016) Front-end definition of projects: Ten paradoxes and some reflections regarding project management and project governance. *International Journal of Project Management*. [Online] 34 (2), 297–313. Available from: doi:10.1016/j.ijproman.2015.01.014.
- Sanderson, J. (2012) Risk, uncertainty and governance in megaprojects: A critical discussion of alternative explanations. *International Journal of Project Management*. [Online] 30 (4), 432–443. Available from: doi:10.1016/j.ijproman.2011.11.002.
- Sarmiento, J.M. & Renneboog, L. (2015) Anatomy of public-private partnerships: their creation, financing and renegotiations. *International Journal of Managing Projects in Business*. [Online] 9 (1), 94–122. Available from: doi:10.1108/IJMPB-03-2015-0023.
- Saunders, M.N.K., Lewis, P. & Thornhill, A. (2015) *Research Methods for Business Students*. 7 edition. New York, Pearson.
- Schipper, K. & Yohn, T.L. (2007) Standard-Setting Issues and Academic Research Related to the Accounting for Financial Asset Transfers. *Accounting Horizons*. [Online] 21 (1), 59–80. Available from: doi:10.2308/acch.2007.21.1.59.
- Schleifer, A. & Vishny, R. (1997) *Large Shareholders and Corporate Control*. 52 (2), 737–783.
- Schwarcz, S.L. (2008) Disclosure's Failure in the Subprime Mortgage Crisis. *Utah Law Review*. 2008, 1109.
- Schwarcz, S.L. (2006) Enron and the Use and Abuse of Special Purpose Entities in Corporate Structures. *University of Cincinnati Law Review*. 70 (28), 1309.
- Schwarcz, S.L. (2012) The Use and Abuse of Special-Purpose Entities in Public Finance. *Minnesota Law Review*. [Online] 97 (2). Available from: <https://papers.ssrn.com/abstract=1927253> [Accessed: 25 September 2017].
- Scott, G. (2003) US CMBS Legal and Structured Finance Criteria. *Standard & Poors, Structured Finance Publications*.
- Scott, W.R. (2005) Institutional theory : contributing to a theoretical research program. *Great minds in management : the process of theory development*.
- Scott, W.R. (2012) The institutional environment of global project organizations. *Engineering Project Organization Journal*. [Online] 2 (1–2), 27–35. Available from: doi:10.1080/21573727.2011.634546.

- Sewell, D.J. (2006) *Effective Use of Special Purpose Entities*.
- Shen, L., Zeng, S. & Tam, V.W.Y. (2017) Special edition: Social responsibilities for the management of megaprojects. *International Journal of Project Management*. [Online] 35 (7), 1336–1337. Available from: doi:10.1016/j.ijproman.2017.06.001.
- Shi, L., Onishi, M. & Kobayashi, K. (2007) A Public-Private-Partnership model with moral hazard of SPC and bank. In: *2007 IEEE International Conference on Systems, Man and Cybernetics*. [Online]. 2007 IEEE. pp. 1824–1829. Available from: doi:10.1109/ICSMC.2007.4413727.
- Skype Communications SARL (2017) *Skype Homepage*. [Online]. 2017. Available from: https://login.skype.com/login?message=signin_continue [Accessed: 10 October 2017].
- Smith, D. (2011) Perspectives: Hidden Debt: From Enron’s Commodity Prepays to Lehman’s Repo 105s. *Financial Analysts Journal*. 67 (5).
- Smyth, H. & Edkins, A. (2007) Relationship management in the management of PFI/PPP projects in the UK. *International Journal of Project Management*. [Online] 25 (3), 232–240. Available from: doi:10.1016/j.ijproman.2006.08.003.
- Sobhiyah, M.H., Bemanian, M.R. & Kashtiban, Y.K. (2009) Increasing VFM in PPP power station projects – Case study: Rudeshur gas turbine power station. *International Journal of Project Management*. [Online] 27 (5), 512–521. Available from: doi:10.1016/j.ijproman.2008.07.002.
- Sovacool, B.K. & Cooper, C.J. (2013) *The Governance of Energy Megaprojects: Politics, Hubris and Energy Security*. Edward Elgar Publishing.
- Standard & Poor’s (2003) *U.S. CMBS Legal and Structured Finance Criteria*.
- Steen, J., Coopmans, C. & Whyte, J. (2006) Structure and agency? Actor-network theory and strategic organization. *Strategic Organization*. [Online] 4 (3), 303–312. Available from: doi:10.1177/1476127006067033.
- Stiglitz, J.E. (1989) Principal and Agent. In: *Allocation, Information and Markets*. The New Palgrave. [Online]. Palgrave Macmillan, London. pp. 241–253. Available from: doi:10.1007/978-1-349-20215-7_25 [Accessed: 24 September 2017].
- Stinchcombe, A.L. (1959) Bureaucratic and Craft Administration of Production: A Comparative Study. *Administrative Science Quarterly*. [Online] 4 (2), 168–187. Available from: doi:10.2307/2390676.
- Stoiber, C. & Agency, I.A.E. (2010) *Handbook on Nuclear Law: Implementing Legislation*. International Atomic Energy Agency.
- Stoiber, C., Baer, A., Pelzer, N. & Tonhauser, W. (2003) *Handbook on Nuclear Law*. [Online]. Available from: http://www-pub.iaea.org/MTCD/publications/PDF/Pub1160_web.pdf.

- Stoiber, C., Cherf, A., Tonhauser, W. & de Lourdes Vez Carmona, M. (2010) *Handbook on Nuclear Law implementing legislation*. [Online]. Available from: http://www-pub.iaea.org/books/IAEABooks/8374/Handbook-on-Nuclear-Law-Implementing-Legislation###ctl00_cphRDBBooksHomeMain_FormViewBookDetails_rightsdivdiv.
- Strauss, A. & Corbin, J.M. (1998) *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory*. SAGE Publications.
- Strauss, H. (2010) Involving the Finnish public in nuclear facility licensing: participatory democracy and industrial bias. *Journal of Integrative Environmental Sciences*. [Online] 7 (3), 211–228. Available from: doi:10.1080/1943815X.2010.506486.
- Taleb, N.N. (2011) *The Black Swan: The Impact of the Highly Improbable*. Allen Lane.
- Tan, W. (2007) *Principles of Project and Infrastructure Finance*. 1 edition. London ; New York, Routledge.
- Tang, L., Shen, Q. & Cheng, E.W.L. (2010) A review of studies on Public–Private Partnership projects in the construction industry. *International Journal of Project Management*. [Online] 28 (7), 683–694. Available from: doi:10.1016/j.ijproman.2009.11.009.
- Tassef, G. (1991) The functions of technology infrastructure in a competitive economy. *Research Policy*. [Online] 20 (4), 345–361. Available from: doi:10.1016/0048-7333(91)90094-7.
- Taylor, S. (2016) *The Fall and Rise of Nuclear Power in Britain: A History*. UIT Cambridge.
- Thai, K.V. (2008) *International Handbook of Public Procurement*. CRC Press.
- The Omega Centre (2017) *Official internet website*. [Online]. 2017. Available from: <http://www.omegacentre.bartlett.ucl.ac.uk/home/home-no-seminars/> [Accessed: 23 September 2017].
- The University of Leeds (2017) *Regulations, codes, policies and procedures for postgraduate researchers*. [Online]. 2017. Available from: http://ses.leeds.ac.uk/info/22172/research_degrees/1030/regulations_codes_policies_and_procedures_for_postgraduate_research [Accessed: 12 October 2017].
- The World Bank Group (2014) *Public-private partnerships : reference guide version 2.0*. [Online]. pp.1–232. Available from: <http://documents.worldbank.org/curated/en/600511468336720455/Public-private-partnerships-reference-guide-version-2-0> [Accessed: 14 January 2017].
- Tom Christensen (2011) The Norwegian front-end governance regime of major public projects: A theoretically based analysis and evaluation. *International Journal of Managing Projects in Business*. [Online] 4 (2), 218–239. Available from: doi:10.1108/17538371111120216.

- Too, E.G. & Weaver, P. (2014) The management of project management: A conceptual framework for project governance. *International Journal of Project Management*. [Online] 32 (8), 1382–1394. Available from: doi:10.1016/j.ijproman.2013.07.006.
- Toor, S.-R. & Ogunlana, S.O. (2010) Beyond the ‘iron triangle’: Stakeholder perception of key performance indicators (KPIs) for large-scale public sector development projects. *International Journal of Project Management*. [Online] 28 (3), 228–236. Available from: doi:10.1016/j.ijproman.2009.05.005.
- Tserng H. Ping, Russell Jeffrey S., Hsu Ching-Wen & Lin Chieh (2012) Analyzing the Role of National PPP Units in Promoting PPPs: Using New Institutional Economics and a Case Study. *Journal of Construction Engineering and Management*. [Online] 138 (2), 242–249. Available from: doi:10.1061/(ASCE)CO.1943-7862.0000398.
- Tsunokawa, K. & Schofer, J.L. (1994) Trend curve optimal control model for highway pavement maintenance: Case study and evaluation. *Transportation Research Part A: Policy and Practice*. [Online] 28 (2), 151–166. Available from: doi:10.1016/0965-8564(94)90035-3.
- Turner, J.R. (2006) Towards a theory of project management: The nature of the functions of project management. *International Journal of Project Management*. [Online] 24 (4), 277–279. Available from: doi:10.1016/j.ijproman.2006.03.002.
- Turner, J.R. & Keegan, A. (2001) Mechanisms of governance in the project-based organization:: Roles of the broker and steward. *European Management Journal*. [Online] 19 (3), 254–267. Available from: doi:10.1016/S0263-2373(01)00022-6.
- Turner, J.R. & Müller, R. (2003) On the nature of the project as a temporary organization. *International Journal of Project Management*. [Online] 21 (1), 1–8. Available from: doi:10.1016/S0263-7863(02)00020-0.
- Turner, R. & Zolin, R. (2012) Forecasting Success on Large Projects: Developing Reliable Scales to Predict Multiple Perspectives by Multiple Stakeholders Over Multiple Time Frames. *Project Management Journal*. [Online] 43 (5), 87–99. Available from: doi:10.1002/pmj.21289.
- Turner, R.J. (2009) *The Handbook of Project-Based Management: leading strategic change in organizations*. McGraw Hill Professional.
- Underhill, M.D. (2010) *The Handbook of Infrastructure Investing: Building the Optimal Portfolio*. 1 edition. Hoboken, N.J, John Wiley & Sons.
- United Nations Economic Commission for Europe (UNECE) (2011) *The impact of globalization on national accounts*.
- Van de Graaf, T. & Sovacool, B.K. (2014) Thinking big: Politics, progress, and security in the management of Asian and European energy megaprojects. *Energy Policy*. [Online] 74 (Supplement C), 16–27. Available from: doi:10.1016/j.enpol.2014.06.027.

- Vanston, J.H. & Vanston, L.K. (2004) Testing the Tea Leaves: Evaluating the Validity of Forecasts. *Research-Technology Management*. [Online] 47 (5), 33–39. Available from: doi:10.1080/08956308.2004.11671649.
- Viegas, J.M. (2010) Questioning the need for full amortization in PPP contracts for transport Infrastructure. *Research in Transportation Economics*. 30 (1), 139–144.
- Vinter, G.D. & Price, G. (2006) *Project Finance: A Legal Guide*. Sweet & Maxwell.
- Vinter, G.D., Price, G. & Lee, D. (2013) *Project Finance*. 4th Revised edition edition. Sweet & Maxwell.
- Vuorinen, A. (2008) Regulators' role in development of Finnish nuclear waste disposal program. *Progress in Nuclear Energy*. [Online] 50 (2), 674–679. Available from: doi:10.1016/j.pnucene.2007.11.055.
- Walker, D. & Rowlinson, S. (2007) *Procurement Systems: A Cross-Industry Project Management Perspective*. Routledge.
- Wee, B. van (2007) Large Infrastructure Projects: A Review of the Quality of Demand Forecasts and Cost Estimations. *Environment and Planning B: Planning and Design*. [Online] 34 (4), 611–625. Available from: doi:10.1068/b32110.
- Whitley, R. (2006) Project-based firms: new organizational form or variations on a theme? *Industrial and Corporate Change*. [Online] 15 (1), 77–99. Available from: doi:10.1093/icc/dtj003.
- Michael Whitman & Amy Woszczyński (eds.) (2004) *The Handbook of Information Systems Research*. [Online]. IGI Global. Available from: <http://services.igi-global.com/resolvedoi/resolve.aspx?doi=10.4018/978-1-59140-144-5> [Accessed: 10 October 2016].
- Whitticks, E. (2013) *Construction Contracts*. Elsevier.
- Whyte, J. (2011) Managing digital coordination of design: emerging hybrid practices in an institutionalized project setting. *Engineering project organization journal*. 1 (3), 159–168.
- Whyte, J. (2016) The future of systems integration within civil infrastructure: A review and directions for research. In: *INCOSE International Symposium*. 2016 Wiley Online Library. pp. 1541–1555.
- Whyte, J., Stasis, A. & Lindkvist, C. (2016) Managing change in the delivery of complex projects: Configuration management, asset information and 'big data'. *International Journal of Project Management*. [Online] 34 (2), 339–351. Available from: doi:10.1016/j.ijproman.2015.02.006.
- Wikström, K., Artto, K., Kujala, J. & Söderlund, J. (2010) Business models in project business. *International Journal of Project Management*. [Online] 28 (8), 832–841. Available from: doi:10.1016/j.ijproman.2010.07.001.

- Wilemon, D.L. & Cicero, J.P. (1970) The Project Manager—Anomalies and Ambiguities. *Academy of Management Journal*. [Online] 13 (3), 269–282. Available from: doi:10.2307/254964.
- Williams, T., Klakegg, O.J., Magnussen, O.M. & Glasspool, H. (2010) An investigation of governance frameworks for public projects in Norway and the UK. *International Journal of Project Management*. [Online] 28 (1), 40–50. Available from: doi:10.1016/j.ijproman.2009.04.001.
- Williams, T. & Samset, K. (2010) Issues in front-end decision making on projects. *Project Management Journal*. [Online] 41 (2), 38–49. Available from: doi:10.1002/pmj.20160.
- Williams, T.M. (1999) The need for new paradigms for complex projects. *International Journal of Project Management*. [Online] 17 (5), 269–273. Available from: doi:10.1016/S0263-7863(98)00047-7.
- Williamson, O.E. (1985) *The Economic Institutions of Capitalism*. Simon and Schuster.
- Williamson, O.E. (1981) The Economics of Organization: The Transaction Cost Approach. *American Journal of Sociology*. [Online] 87 (3), 548–577. Available from: doi:10.1086/227496.
- Williamson, O.E. (1979) Transaction-Cost Economics: The Governance of Contractual Relations. *The Journal of Law and Economics*. [Online] 22 (2), 233–261. Available from: doi:10.1086/466942.
- Winch, G.M. (2014) Three domains of project organising. *International Journal of Project Management*. [Online] 32 (5), 721–731. Available from: doi:10.1016/j.ijproman.2013.10.012.
- Wiseman, R.M., Cuevas-Rodríguez, G. & Gomez-Mejia, L.R. (2012) Towards a Social Theory of Agency. *Journal of Management Studies*. [Online] 49 (1), 202–222. Available from: doi:10.1111/j.1467-6486.2011.01016.x.
- Wittendorff, J. (2010) *Transfer Pricing and the Arm's Length Principle in International Tax Law*. Kluwer Law International.
- Wood, P. (2007) *The Law and Practice of International Finance*. University Edition edition. London, Sweet & Maxwell.
- Wood, P.R. (1995) *Project Finance, Subordinated Debt and State Loans*. London, Sweet & Maxwell.
- Wu, A., Wang, Z. & Chen, S. (2017) Impact of specific investments, governance mechanisms and behaviors on the performance of cooperative innovation projects. *International Journal of Project Management*. [Online] 35 (3), 504–515. Available from: doi:10.1016/j.ijproman.2016.12.005.

Xie, L., Xia, B., Hu, Y., Shan, M., et al. (2017) Public participation performance in public construction projects of South China: A case study of the Guangzhou Games venues construction. *International Journal of Project Management*. [Online] 35 (7), 1391–1401. Available from: doi:10.1016/j.ijproman.2017.04.003.

Yescombe, E.R. (2013b) *Principles of Project Finance*. Academic Press.

Yin, R.K. (2013) *Case Study Research: Design and Methods*. [Online]. SAGE Publications.

Zhang, S., Chan, A.P.C., Feng, Y., Duan, H., et al. (2016) Critical review on PPP Research – A search from the Chinese and International Journals. *International Journal of Project Management*. [Online] 34 (4), 597–612. Available from: doi:10.1016/j.ijproman.2016.02.008.

Zidane, Y.J.-T., Johansen, A. & Ekambaram, A. (2013) Megaprojects-Challenges and Lessons Learned. *Procedia - Social and Behavioral Sciences*. [Online] 74, 349–357. Available from: doi:10.1016/j.sbspro.2013.03.041.

Zilber, T.B. (2002) Institutionalization as an Interplay Between Actions, Meanings, and Actors: The Case of a Rape Crisis Center in Israel. *Academy of Management Journal*. [Online] 45 (1), 234–254. Available from: doi:10.2307/3069294

Appendix 1

Appendix 1 includes the list of interviews to be used as reference within the thesis body text. Table 10-1 provides the list of interviews with their reference code. The code is used as a reference similarly to bibliographic sources. To clarify the coding system adopted by the research an illustrative example is reported as follows:

Among the others, almost all interviewees confirmed that SPEs are relevant for governance (Appendix 1: I01-E01, I02-E02, I03-E03, I03-E04, I04-E01, I05-E02, I06-E05, I07-E06, I08-E07, I09-E08, I10-E09, I11-E10, I12-E11, I13-E12, I15-E14, I16-E15, I18-E17, I19-E18, I20-E19, I21-E2, I23-E21, I24-E22, I25-E23, I26-E24, I27-E25, I28-E26, I30-E28).

The code under brackets highlights how the statement was confirmed by the interviewees (E01) during the first interview (I01), the interviewees (E02) during the second interview, etc. until the twentieth interviewees during the thirtieth interview.

Appendix 1 summarises a sample of quotes from the interviewees. For confidentiality reasons, the research cannot disclose all interviews scripts from all experts. The sample of quotes from the interviewees is classified according to the following clusters:

- Unit of Analysis.
 - A1. Relevance of SPEs for the governance;
 - A2. Unit of analysis- SPE-network;
 - A3. Purposes and functions of SPEs;
 - A4. Different types of SPEs;
 - A5. Configurations of the SPE-network;
- Governance Rationales
 - A6. Incompleteness of contracts interpretation;
 - A7. Single point responsibility;
 - A8. Conflict of interest and remedies;
 - A9. Procurement;

- Check and balances
 - A10. Negative control of investors;
 - A11. Trust and reputation;
 - A12. Security package;
 - A13. De-risking the project company;
- Governance design instruments
 - A14. Shareholding;
 - A15. Shareholder agreement;
 - A16. Loan agreement;
 - A17. Board of directors;
 - A18. Internal policies;
 - A19. Article of incorporation;
- Context.
 - A20. Context;

The sample of quotes is not exhaustive because, for confidential reasons, some interviewees are not disclosable. The author agrees not to the disclosure of the transcripts entirely and to protect the identity of interviewees and their associated organisations. This was also imposed by the Ethical form obtained at the University of Leeds.

The sample includes direct quotes as highlighted in italic and with the quotation marks. For some interviews, the audio record was not available either because the interviewee did not accept to be recorded. In such circumstances, the quotes are indirect and derived from the notes taken by the author. The apteryx symbol indicates a reference to written documents that were collected in association to the interview. Particularly, the E02 (Appendix 1: I02-E02) wrote a lengthy document in repose to a general questions sent by email after the meeting (I02), namely “which questions provide SPEs for the infrastructure megaprojects?”

Appendix 1

Code Interview	Date Interview	Code interview	Code Interviewees
I01-E1	21/05/2014	I01	E1
I02-E2	11/11/2014	I02	E2
I03-E3	26/03/2015	I03	E3
I03-E4			E4
I04-E1	21/04/2015	I04	E1
I05-E2	28/04/2015	I05	E2
I06-E5	22/06/2015	I06	E5
I07-E6	23/06/2015	I07	E6
I08-E7	25/06/2015	I08	E7
I09-E8	26/06/2015	I09	E8
I10-E9	29/06/2015	I10	E9
I11-E10	08/07/2015	I11	E10
I12-E11	09/07/2015	I12	E11
I13-E12	14/07/2015	I13	E12
I14-E13	15/07/2015	I14	E13
I15-E14	20/07/2015	I15	E14
I16-E15	21/07/2015	I16	E15
I17-E16	30/07/2015	I17	E16
I18-E17	26/08/2015	I18	E17
I19-E18	14/10/2015	I19	E18
I20-E19	19/10/2015	I20	E19
I21-E2	30/10/2015	I21	E2
I22-E20	08/04/2016	I22	E20
I23-E21	13/05/2016	I23	E21
I24-E22	16/06/2016	I24	E22
I25-E23	17/06/2016	I25	E23
I26-E24	10/07/2016	I26	E24
I27-E25	14/10/2016	I27	E25
I28-E26	01/11/2016	I28	E26
I29-E27	16/11/2016	I29	E27
I30-E28	18/11/2016	I30	E28

Table 10-1: List of interviews

Unity of Analysis

Relevance of SPEs for the governance

I08

E07: *“I think they affect it to a great extent. Because when you establish and SPV you have to identify the board of directors. And they also agree what powers, the board of directors, are delegating to, for instance, the project manager of the chief executive of the SPV. And therefore what powers are reserved to the board. Ad of course at the board level, you have people representing the different investors.”*

I11:

E10: *“From one side, the SPV objective is to make money. The other party in infrastructure should be to provide good quality service, more efficiently than the state itself. That's basically mean that there is an inherent conflict between the two parties. However, the banks balance that's out. Because the banks can only get their money back if the service is delivered. From one side, you might think the lenders on the same side of the SPV's shareholders. They have got a common interest in the public sector as well, because if the service isn't provided with the money won't be there. And the banks only interest is getting their capital back plus the interest that was agreed in the various contract documents. So you have these three parties who are aligned in the most unnatural way, but it is hugely successful.”*

E10: *“everybody who tried to do differently has failed all over the world. So, I come to a conclusion that this kind of approach is the one that succeed. In the same way that we might not like capitalism but there is no other system in the world that ever been particularly successful for a long time. You know, It may be not perfect but is the one that delivers.”*

I12

E11: *“It is critically important to whether the project... its one of the, it is one of the very important factors to whether a project will succeed, and to what degree it will succeed, so what problems it has and where it will fail or not. so, why do I say that? I mean, on the assumption that the project governance package and the SPV is set up. and on the working assumption that it is commercially and financially viable.”*

I17

E16: *“My answer is simply yes. Usually, the SPV has a large finical input...I think it is normal I think an SPV to have a major representation, or a significant representation from bankers, or financiers. When it comes to the governance within an SPV, that aspect of it, often it determines both the shape of the project and how it is governed from the SPV as owner and sometimes as an operator.”*

[...]

E16: *“What it shows is that the way the SPV is governed, or the governance of the SPV, often will determine whether the project is successful or not.”*

E16: *“Generally it is a good way of delivering the project. But, I would clarify that answer by saying that a project has to have its own life, If I can call like that. If you are talking about a project who has robust revenue stream, and that is either a transport project or a piece of infrastructure, which the SPV is able to manage in terms of the revenue stream than I think it works extremely well. Where I do get very worry is where the SPV model is often used in a situation where there is not a robust revenue stream. And the revenue stream is what I call a contrived revenue stream.”*

[...]

E16: *“There were schemes, particularly for schools where the SPV would take over the construction of the school, and indeed the running of the school. And its revenue stream would be based on a return per capita, or per people, in the school in the period of 20 years or similar. So I am just trying to use it as an example of what I would call a robust revenue stream, where you have got physical money going into a project. As compared with a contrived revenue stream. Personally, I don't like and I don't think that SPV should be used for that purpose.”*

Unit of analysis- SPE-network

I01

E01 suggests to define more in detail both:

- Megaproject performance: how can you define Megaproject performance? Are you looking for quantitative metrics?

Appendix 1

- SPE governance: what does it mean project governance? At which level do you want to focus on?
- E01 mentions some possible levels of governance:
- o Number of organisations involved into the SPE
 - o SPE procedures
 - o Management structure
- E01 emphasises that the understanding of the SPE may be different depending on the level of governance considered.

I02*

E02: *“The SPE is not limited to one vehicle but describes the totality of the project vehicles that relate to the support of financing of the project. The securities in such multi-vehicle may be “stapled together” to create a proportionate ownership interest in the overall project, or not.*

Note that often people structure deals using the phrase “limited purpose entity or group” (LPE) where the enabling entities may include SPEs for issuing, asset owning (with or without subsidiaries) and a separate operating company.

In both a simple ownership structure SPE or more complicated LPE (together “SPV”) the SPV will own the project assets i.e. be party to any Concession or Master Project Agreement with for example the relevant Government Entity, enter into the relevant Project and Security Agreements and be the beneficiary of any liquidity buffers or compensating liquidity contributions such as conditional equity which might trigger from specified events or circumstances (risk events) which might trigger such contingent sponsor or third party support.”

Purposes and functions of SPEs

I02*

E02: *“As indicated in the introduction, this is a function of how much the SPE performs itself and how much it administers.*

Depending on the underlying nature of the Project (e.g. whether it is a new asset or transformation of an existing asset) it will need an operational strategy proportionate to the purpose. All projects have standard and bespoke characteristics. All operations require that managers can:

- o *Create/Import/Adapt Process - under heavy contractual constraint*
- o *Manage Process – with many interfaces and stakeholders*

The operations function is the co-ordination and effectiveness of resources and managing the interfaces with those matters that are self-performed and those matters which are sub-contracted.

The strategy decision will be based upon the likely efficiency and effectiveness of the operations and an impact assessment of the quality of the decision making from the very beginning will reduce the overall costs of delivery and/or increase the revenue and reduce the use of the risk contingency to a minimum.

In particular this is very relevant to life-cycle, heavy maintenance decision making. There will be significant capital built into the capital structure to allow for this and there is great opportunity and vulnerability – in particular to future investors returns, depending on the quality of this decision making.

All of the above improve the free cash flow and give options for further investment in the community.

A fully resourced substantially self-performing SPE will have budgeted to attract marketing and technical staff and will have to have made, and will continue to make, operational decisions relating to service delivery, resourcing, systems and supporting stakeholder engagement.

A fully functioning SPE therefore has to have the right level of quality of people and leadership.

- o *Executive Directors: day to day responsibility – sanctioned by all Shareholders, often Lenders*
- o *Non-Executive Directors: certain PPP transactions*
- o *Directors Duties established – contract and law, remuneration etc – most important thing is usually deal team supporting for three months and producing an idiots guide to the SPC of the documentation, time periods and controls; management information checklist.*
- o *Finance Systems and ability to drawdown money and control payments – should all be in place quickly, theoretically there should be a dry-run before financial close and go-live. I always negotiated a special period for first drawdown – the last thing you want is a Turnkey Contractor’s claim arriving by not paying the first payment, often 15% on time.*

- *Controls - Decision Rights Technical, Cost, Management*

- o Audit and Accountability – in the shareholders Agreement, issue is usually co-ordination of internal audit rights as well as choice of firm for external audit*
- o Internal Controls and Risk Management – control environment to add detail to the contractual obligations establishment and maintenance. Risk Management is at the heart of the Project and the Risk Registers have to become operational registers very quickly.*
- o Social and Ethical Values and normative behaviour have to be established in the mobilisation period leading to close and quickly thereafter. The Codes of Ethics etc will be in the schedules to the Shareholders Agreement but have to become real quickly.*
- o New team – be clear on the RASCI (Responsibilities, Accountabilities, Shared, Consulted, Informed) and follow the new team – forming, storming, norming and performing cycle. Often different nationalities, experience levels and systems. It takes time and leadership and you can never start too early to get the team shadow running before financial close – particularly if taking over existing assets and not just Greenfield.”*

I03

E03: *“Why do we structure. Why is this form of financing available? What is it? What’s the point of doing in this way? It is high leverage, so a lot of the debt comes from financing institutions. When the deal is structured in this way, it is highly and tightly controlled, even if it is all about the revenue stream, they don't take security over the asset itself, they can't provide exceptionally cheap. So in terms of pricing, typically project financing is normally the cheapest. Corporate lending, the on balance sheet lending, is normally the most expensive. and the, sort of asset financing is probably in between, broadly speaking. So it is a very efficient way of lending, or financially structuring a project. But with it comes the price, which is very highly controlled, very inflexible; and then to do it, you create a SPE who's structured in this way. The benefit of the SPE, the SPE is a product of financing something in this way.”*

I05

E02: *“If you speak to a lawyer, they would focus on the functionality. They would go for a checklist of functions of the SPVs. If you step back and you ask, what is the purpose? The purpose is to deliver the project, in a certain way. The biggest question, the difficult question that people in the business are focusing with, is about the purpose. The SPE, for a megaproject, is the only vehicle with the minimum amount of functionality for the total project perspective, to enable the purposes of the different stakeholders to be achieved.*

[...]

E02: *“The key driver there, is to structure it in some way for it not to be on the balance sheet. So your choice of vehicle has to meet that design criteria. Purpose and the design criteria come together as certain constraint if you like.”*

I07

E07: *“In other markets, I saw SPVs for entering in new markets for new sales. Penetrate new market.”*

I11:

E10: *“The purpose is usually to keep the cash flow and the guarantees of the parent companies off balance sheet.”*

E10: *“This is part of the..., and of course if it is using project finance, non-recourse finance, this is very important. Otherwise, there is no point in doing it. This is generally how I see it. You might not agree with everything either, but... it is a single purpose company, probably for a long period of time to be fair, but it doesn't have the same incentives that a conventional company has. Therefore for the motives of its manager have to be treated differently from a conventional business.”*

E10: *“Yes, I mean there are all sort of other things that come into that. But usually, the reason for having a Special Purpose Vehicle is financial, instead of doing the same things with the same people in a different form of contracting.”*

[...]

E10: *“you probably know already, it largely dated back to the introduction of project finance, non-recourse finance, in the oil industry in the North Sea. Designed by Americans for funding the off-shore facilities in the North Sea. That's really is the modern approach. In project Finance was about forever, but the high-risk version of the whole thing that we see today, and it was very much to avoid the sort of issue that xxx has just suffered in Gulf of Mexico, to be honest. It was to place the high risks in a separate entity, but still to have the level of control that the operator wanted. And also for the banks to have the control the needed. The SPV doesn't use the company money other than the shareholder equity, that they try to keep as small as possible. For the reason that in most modern society, you get tax benefits by having lots of debt.”*

[...]

E10: *“Because of the sort of history of ... that you probably know already, it largely dated back to the introduction of project finance, non-recourse finance, in the oil industry in the North Sea. Designed by Americans for funding the off-shore facilities in the North Sea. That's really is the modern approach. In project Finance was about forever, but the high-risk version of the whole thing that we see today, and it was very much to avoid the sort of issue that xxx has just suffered in Gulf of Mexico, to be honest. It was to place the high risks in a separate entity, but still to have the level of control that the operator wanted. And also for the banks to have the control the needed. The SPV doesn't use the company money other than the shareholder equity, that they try to keep as small as possible. For the reason that in most modern society, you get tax benefits by having lots of debt. The SPV, very often is something that the banks insist as well, but they will have rights over the bank accounts and assets for the SPV. On the other side of it, ... SPV is designed by private sector enterprises not as a vehicle to deliver public infrastructure. But with PFI and other PPP approaches, it became the vehicle to ... Now, from the public side, if they are intelligent, if they are looking after the public and they are not corrupt, I am afraid, lots of public officials are corrupt all over the world. Their objectives is to guarantee day in, day out, high-quality delivery of whatever service that used to be, or might be provided, by public entity. So from one side the SPV objective is to make money. The other party in infrastructure should be to provide good quality service, more efficiently than the state itself.”*

I15

E14: SPVs are designed primarily for taxes and accounting purposes

Different types of SPEs

I02*

E02: *“In terms of operational obligations, and to the extent these are not back to back with sub-contractors, the lenders will seek to have third-party expert advice to ensure that, depending on the complexity of the operations, the right resources and experience is made available to or is within the OpsCo consistent with their residual obligations.”*

[...]

E02: *“Yes some types of SPEs can be very important for the governance of megaprojects.”*

I03

E03: *“Sometimes the EPC is a Joint Venture, a major construction joint venture. Sometimes are unincorporated. Sometimes incorporated. Often they are incorporated as SPV”*

I06

E05: *“The thing is, you know, typically, the first..the the...so, you have probably heard about this,sometimes we self-perform the operation. So then you have what they call set-up. SPV, so we would, you know, set up the an operation with maybe 100-150 people employed, and even the type of project, so, or in stance, our, we have a toll road down in xxxx outsource the operation: so you have an operator and that is responsible for the operation, performs loans and contracts, and in that case you probably have and SPV running up with 6-7 employees and 12 during the construction, when it gets a little more over-sized, when, you know, you have engineer. But basically, so, I think, ehm, you know, if you have 7 employees or 120, obviously you need, you know, a heavier governance structure, being in the biggest company.”*

I11

E10: Sometimes, the SPV is incorporated to build the infrastructure. Typically, it assumes the role of the main contractor for the megaproject.

E10: *“Exactly! Probably more of them have no staff. Because the SPV subcontract as much as possible because the banks don't want the SPV to take on any risk. Risk is a commodity just like anything else. Now, the propension to absorb risk is purely the ability to pay for things to going wrong. If you have an SPV where the only thing is the shareholder equity, which is a tiny part of it,... lenders don't want the risk to be placed where there is a lot of money to be taken away. So again, this risk contracted. You have the contractor, the operator, their subcontractors. Their subcontractors have the insurance company one way or another. And before you know it, this SPV to deliver a road, has the risk dispersed all over the economy, maybe in several countries. It is an interesting area you are looking at.”*

I15

E14: You have a single SPV that carries out the project. Separate finance SPV and then leads to the project company, construction SPV, JV consortium. There are different Types of SPVs carrying out different functions.

E14: Some SPVs perform industrial activities such as the construction or the operation of the infrastructure.

E14: Other SPVs intermediate and interpose other contracting agents including other SPVs. [...] like in mergers and acquisitions, some SPVs are used to optimise specific transactions such as the purchase of the target company. In project financing, some “intermediating SPVs” can be used to separate the sponsors from the proper SPV used to finance. These “intermediating SPVs” enhance the application of the bankruptcy remoteness principle for the main SPV. Besides, they can be used in certain jurisdictions to realise off-balance sheet vehicles.

I16

E15: *“We had SPV-xxxx which the seats shareholder that was the umbrella company, also responsible for the overall financing for the authority engineering, the European Commission and the regulatory authorities, and then we had, if you call it the “satellites” that were the nation xxx companies, in xxx, xxx, xxx, xxx, etc. These national companies have the national footprint in the country to built with the regional governments, the landowners, with farmers, with municipalities, with majors, etc. Because there you have to bring in people with native language and with knowledge and understanding of the regional problems etc.”*

I24

E22: Some SPEs are incorporated purely for jurisdictional and reasons. Sometimes this is required by the Law. In the Islamic countries, you are required to incorporate the SPV in the country where you develop the infrastructure.

Governance design Rationales

Configurations SPE networks

I03

E03: *“Typical scheme is the financial SPE plus an existing EPC contractor and an existing Operator. The SPE serves centre a single point of responsibility for all the parties”.*

[...]

E03: *“SPEs will be formed by a number of interested parties. Lets do a motorway. You are going to have:*

- 1. Government entity , in the UK there was the highway agency (now highways England). They may decide they want to protect tenders and the ongoing maintenance of the new highway. They realise there a demand for something. The need to engage to somebody to built the motorway and look after for a period of time.*
- 2. When the opportunity arises, companies that develop motorways and funds the provision of motorways will com together (in one form or another) because they are interested in tendering. Typically, the ownership of the SPV will be: and EPC(typically, not in al cases), and Operator, and institutional investors (which are not interested in senior debt but in equity).
The SPV will be created.”*

[...]

E03: *“There will be the contract between the government entity and the SPV: the concession. It specifies what the government wants, and how much they will pay in revenue; and all the circumstances where they can terminate, and all the rest of it...”*

E04: *“In theory you can do anything. If you have got the power to do that. Whether to tell you what is the role of the SPEs, I don't know. Because in scenario where you have to structure things in a certain way, what are the rules? I don't know the answer.”*

I15

E14: *“There are project companies that do everything. But they are very unusual, I have never seen one. Less common to have the project company do the operation and maintenance services...you have to convince the banks of this.”*

I16

E15: *"We had a unified shareholding that means that all shareholders are directly shareholder in xxxx (umbrella company), and this company was 100% shareholder of the national xxx companies. That break to a certain extent because national xxx companies received instructions from xxx international than the national xxx companies have on one hand the xxx international as unique shareholder, but to certain extent they also had to take in consideration, and have to follow, ehhe let me call it to the advise for the national government. Because the national companies in xx cannot 100% follow my instructions if at the same time the work is somehow in contradiction to the government in that country. Then this company will not survive."*

[...]

E15: *"The main advantage was that the national shareholder, you have strong link and direct access to political decision-makers in the country. The disadvantage is of course that national shareholders have to follow the expectations of the national governments. The expectations of government is not always identical of the expectations of shareholders."*

E15: *"Yes. The main issue, the real "hot potato" was the scope as you mentioned to me. The scope change and the scope planning."*

E15: *"Yeah, the Joint Venture Agreement and this kind of shareholder agreement, normally foresee, to certain extent such flexibility for scope changes. But real fundamental scope changes ... then most likely that's not foreseen in the JV agreement and the in the shareholder agreement needs certain extensions. and the maintenance of these agreements... The sooner you start to renegotiate and amend them, every shareholder comes with certain wishes ...and then it is not very easy to manage these amendments in the most efficient and effective manner. And that could lead to a seta back of the project. Or, it could lead to hesitation that the one or the other shareholder loose the interest in the project and therefore the SPV loose the support from one or the other shareholder."*

E15: *"Yes, yes! and the SPV then is in a kind of sandwich position."*

E15: *"Yes, yes. And that have of course a negative spill over to the financing and the bankability. Because as soon as financing institutions, like export credit agencies, or institutional financing companies like EIB etc. as soon as you realise that there is a lot of politic influence in the project...that makes bankability of the project not easy."*

[...]

E15: *"I really have to confess that unfortunately we could not take any kind of standards and etc. It was in our case, with such configuration and combination of shareholders and interest, and multi-cross boarder.... it was a pilot and we had to invent everything from scratch. Green field. We had not state of the art. We had standardisation for environmental impact assessment, and for these kind of procedures. and project management, state of the art PM, insurance. But not for the governance, for the leadership, for the rules and procedures, for the shareholder agreement, and for all these stuff. There was no standard."*

I17

E16: *"I would say the generalisation that SPVs work very well where you have got a simple project structure and organisation. They do not work where you have a complex structure organisation."*

Interpretation Incompleteness of contracts

I05

E02: *"If you are poorly drafted and understood decision-making in the contract, that's bad. It is not functioning, particularly of people change. Because if you are negotiating a contract, you have to recognise that, the people sitting on the table may not be the same people who are going to deliver it. So in designing and testing it, you are making sure it survives."*

[...]

E02: *"You contract for clarity, but you interpret in context. If you look xxx as a project (in UK), for example, there are 650 pages of project documentation. However, there were errors in there is incompleteness. The gaps are filled by secondary documentation. Sometimes, operating process and procedures, within an SPE, for example, that recognise, how people get to work together, and in the context of the contract project agreement. Inevitably, that's also a function of the people around the table, which are going to operate it. If you get the project xxx in Sweden, that has thirteen pages, I think, of functional specs. Some of these projects, going back 20 years ago, but you know, it is thirteen pages. So in designing you have to look at the whole system of the*

project. And that has two SPVs. Because it was specifically designed to be an enabler of things to happen. Within the negotiation, by definition, you are dealing with the characters of the people in front of you, but as an output you always say to people: "that's good enough, isn't?". My question, I ask myself, always, is: if someone else came and interpret these documents, is that going to be good grey or bad grey? So if it is a good grey, you can get some advantage out of the grey."

I11

E10: *"There is another thing on governance here, that the people that will be looking after the project, will not be there from the beginning. There is a big governance issue there. How do you organise these things so that everybody understands it properly, all the contract covered, all other things."*

Integration Single point of Responsibility

I11

E10: *"I believe yes. Because what are you trying to completely bundling up all the obligations. Traditionally, procurement by other sectors is to unbundle things. Somebody has the idea, somebody design something, somebody will operate it. and you don't get responsibility all the way across the pieces. The SPV, and the people that engages it, have the responsibility for the full timescale. What you are doing... you are bringing the responsibilities to a single source rather than and that as a huge... Most of SPVs design projects that cost more for the construction but they cost less during the operation period. Because you have the guarantee for high-quality delivery throughout, and the legal document has to reflect that. The other thing that is quite important is, that it needs to be independence between the procuring authority of the SPV; in a FIDIC type contract, that is the independent engineers. But in the case of an SPV for a sophisticated project, the same concept of the independent engineers is led by the lawyer and the financiers than the actual engineers if you see what I mean. Because neither party has the right to say yes, it did, no it didn't. Because that argument might go on not delivering the service. This is all deliberate by the way."*

Double role of industrial shareholder and conflict of interest

I03

E04: *"These people (the banks) will be very worried about that. Because they need to get the debt back in 20 or something years. A bad road doesn't work for the bank."*

E03: *"It is a shareholder in English law, as shareholders their contractual arrangement in the shareholder agreement, will legislate for how many directors they can appoint to the board of the company (SPV). And the company organises as its director; there will be directors. Let's keep simple for the example, there is one for each institution, A,B, C. If the company, find itself in the position where it is in dispute with the EPC contractor, the article of the company, will ask the EPC director to step aside. He needs to declare the conflict of interest, he needs to leave the meeting. They conduct the business against the EPC contractor. This how they continue to make decisions as a company even if there is a conflict of interest."*

E04: *"I guess the biggest picture about the conflict of interest is I said, you don't get rewarded for doing a bad job. Because the banks won't let you because their money is gone. They have spent all these money and will end up with a loss if they can't get the debt repaid; so that's why they would want independent surveyors looking at things. And the won't give you money the way you draw down is quite regimented. There will be a certificate for the technical advisors. And that is the very limits for frauds, and misuses of funds, because the banks really have an eye to that and to making sure things are done properly. Because otherwise, they loose out. If it goes wrong there is nothing here. They really want that road to be built, these above all others."*

I06

E05: *"Yeah, I, I, no I agree, that's to be...the way we're set up, we have a separate company dealing with the investment, so we're...in xxx's infrastructure development we're about 120 people that is only working with investments. And we're, you know, we're remunerated on the performance of the equities, so we don't get any...and we have our own, you know, performance requirement, that's as an investment business, so I would say we're, you know, it's a benefit being in the construction group and there's a better way, you know, of working together, and if you have a difficult issue, you can always come to a common view internally and look at it because we're on both sides, you understand. But I would say we're, you know, from a conflict of interest's perspective, we're...we're all almost like two separate entities: you know, we don't share offices, we don't really share any numbers or anything, like we're operating under different systems."*

I15

E14: *Normally, conflict of interest arises with problems in the projects such as construction delay, cost overrun poor maintenance, etc. Therefore, the shareholder agreement has normally some provisions under the name of:*

dis-enfranchise or conflict of interest. There is normally a procedure set out for the escalation of that dispute. Including the mediation and arbitration process. Normally, the shareholder agreement says that the appointed director cannot take part of that discussion to the specific matters in conflict. Depending on the subject matter considered, appointed directors are provided by different powers, for example:

They cannot access to specific information

- They can be informed but not to speak or vote during the directors meeting
- They can participate to the meeting without speaking
- They can vote, but if it goes to a second vote they cannot participate
- Etc.

Procurement

I02*

E02: *“Sponsors have elected to pursue an opportunity; in their assessment they have looked at how they will win the bid and have decided that the opportunity will be bid and won with a project finance solution and they need partners to share the development risk and if successful to co-invest in the SPE to share risk and to keep ownership at a level that doesn't require them to consolidate.”*

I05

E02: *“This is to give you an illustration if you do do this....there are some general commercial people that have the appetite. Senior people that just say: you are right, I just need to close the project. and there are others that are more: how are we going to implement this approach. and lawyers are very good, I have to say, in training in detail: so, what if? is it clear enough?”*

I11

E10: *“Absolutely, may I give you a little example of an SPV very largely misunderstood, and most of you have The two SPEs that are operating for xxx. One of the two used all of their companies for every part of it. So the Engineer xxx Company 1 xxx did the design, the contractor did the contracting and so on, so on. And that's the one that went burst first. The other one, went to the market to get everything. So shareholders again were contractors, etc. They took the view that their principal job was to manage the SPV and they will end to the market to get the right price for everything. The xxx Company 1 xxx one got it wrong because basically, they were stilling money for each other by inflating their prices without competition. Just that alone it is an interesting thing. If you don't go to the market, the SPV will no more successful than anybody else without any competition.”*

Check and balances

Negative control of investors

I03

E3: *“Number one party that dictates are banks! The shareholder claims are subordinated to the banks as part of the corporate (SPV) structure”*

[...]

E3: *“Don't forget, if you are looking at the traditional project finance, which means the security is the revenue stream. The security is not the asset. You are looking again, typically:*

- 90% come from the financial institutions - most of the risk is here
- 10% come from the sponsors of the SPV”

[...]

E03: *“The contract here, this loan arrangement here, will have a significant number of provisions in it, which entitle the banks to direct the company to do things. and they are like to say, you must terminate that EPC contract and appoint another EPC contractor. So the decision making powers of the directors to act independently to that are....They are not suspended, but their duty is to the company. and now I have to do what the bank told me to do because if I don't there will be a default of my financing arrangement and my company (SPV) will be insolvent. So I have to take that decision the bank is telling me. That's another way of looking at.”*

I05

E02: *“If you think about the corporate decision-making, to support that, this is very recent. But If am looking at an acquisition, there is a tendency in any organisation to go for yes, or no, or a fuzzy grey maybe that sits in the middle. It is very rare to get a clear yes or not. You get some fuzzy half grey that sits there. So when I do, you can't have that. You can have a conditional yes, or a conditional no. A conditional yes is: you write up all you need to do, and this are the things you are going to focus in the meantime. A conditional no is: you don't rump up this stuff until you solve these problems.”*

[...]

E02: *“On a critical infrastructure, the government may decide to take , what is essentially a class of two shares or something, are called golden share, which has negative control on the operation of the SPE or they have an infringement rights to be able to stop things to happening, even sending shares or other things.”*

I16

E15: *“They are two.*

One is ... Once an SPV will be formed, you have to see who are the shareholders and if they...In my xxx pipeline project, I had 6 shareholders. three of them, state own companies from xxx, xxx, xxx. and three stocked listed companies, from xxx, xxx, xxx. To form an SPV with stoked listed companies and state public companies, it is a special challenge with respect to the scope of the project, the scope of the business, the overall business plan, etc., etc.

Rules and procedures, decision-making...because state own companies have a totally different decision-making structure, guidance rules and regulations they need for the decisions compared to stock listed companies. And that make things no easier. Furthermore, for state owned companies, you always have the risk that any change in the minister, change in the government, election campaigns, pre and post election phases, government build up... You loose part of your network, you loose maybe your contact person inside the state company because they change on a regular basis. State owned companies have totally different scope and objective for other issues than stock listed companies. Stock listed companies are structured and their leaders focus on figures, earnings, rate of return, economics, forth, buyback period, etc. That's totally different to state own companies, so if you have a group of these and a group of the others, it is very difficult as SPV to manage these expectations. That is one aspect.

The second is, especially for energy projects. And that is not only for state owned companies and for the government of such countries. But, also for the European commission for regulatory authorities, and for any government involved.

Energy business, it is closely related to Energy policy. And energy policy, unfortunately I would say, is very strongly related to development policy.

So people believes and government believe if a pipeline is constructed across one country. That needs automatically an increase of jobs, of supplies, of material, of everything. And they miss the obligation ad the need for international tenders, for international construction company and engineering companies breaking in such megaprojects because mostly you do not find the local content in this.

And this mismatch of energy policy and development policy, sometimes lead to very strange decisions on government level and on the commission level compared to very rational decisions made by shareholders.

And the hummus economical and the hummus political have totally different objectives.

This emphasis is even more important by considering the fact that there are different countries involved, with different parties involved that change differently because of the political winds and because of their policies.

Especially because xxx pipeline pass trough xxx, but involves also the Asiatic part... I think that the political philosophies are very different, aren't they?”

E15: *“That is something you cannot foresee. and you cannot anticipate and you cannot plan. Because, I mean, we had different...and this is also one learning. You need to have a very robust scope of the project.*

xx pipeline started xx years ago with a clear plan to evacuate xxx gas to Europe. That was the original plan. Nobody thought about what happens if Sections will be applied to that country? At that it was the case (xxx avoid such factual detail). Then you have to ship the xx gas and we started to plan xxx line to the xxx, ad to xxx. Then in xxx we had the problem with the xxx government and the state government in xxx. Therefore, we had to skip xxx and fully concentrate in xxx. There we saw that xxx went back to xxx and to xxx as export market. And we had to focus on xxx. And the xxx decided to cooperate to xxx and not with the EU. and therefore, the concluded xxx. We had, in this time period, we took too long for the first idea to the planning and development, and realisation. If you have a too long time period fro the first idea to the final investment decision, the likelihood that you have to totally re-engineer your project is very high. And then of course, you just set back for the project and for shareholders, and then sometimes shareholders loose interest to continue.”

I12

E11: *“You are absolutely correct. Clearly the most... If you have the financing it creates additional complexity and more direct governance, and more control if you like. Because governance.. but again, the context of that it depends. The banks will want to insure that the company, the SPV, ca operate, it can manage, it can do.*

Because the banks don't wanna do what the SPE, and the shareholders have been evaluated to to, and the job to do. However, if there is a problem, if it is minor, the banks won't get involved. Nothing in the financing agreement will trigger. But also comes down to the determination of wishes and negotiation, so the banks may want to have something immaterial changes. Because a breach under the construction contract has the value OF X, whatever that's mean. So and the shareholder will say no... The breach under the contract is material only when it has some value and therefore you shouldn't be worried about.. That's the kind of thing where it is just question where the people see materiality and the banks need to act on it. But yes is the answer to your question. It is not hidden governance, it is all legal, it is ultimately the shareholder agreement and the financing documents and the contracts within the SPV. Only can fit together in a system that is workable."

E11: *"Well they can't. In limited recourse financing, what that means that the banks... If you have a project that cost 100 euros, and the banks are funding 70 euros. If the, Ultimately they want the ability to act in the event there is a problem the deemed to be important. Now do they want that ability? In the bank's mind, if there is a problem, and it is triggered, and then the question is why it is triggered? The banks will assume that there is a management or operation or contractual issue that is not been dealt with professionally, industry standards, or whatever. So, they want the option then to force. They want to say to the company, well it happens this problem you have two months to sort it out, if they don't then the banks ultimately can either. If they are notable to solve it by themselves, they may want to change the management... They may want to change... They may say you failed, you failed... I want you shareholder to change the management of the SPE. Or, I want you to change the operator of the SPE because it is not operating good. Or whatever, that mechanic they legally can enact the problem or they may use just the stop funding. So, it is an ability to act and force the shareholders and ll the management to do something."*

Trust and reputation

I12

E11: *"Then, what we are talking about is the arrangements to where the shareholders and the other contracting parties, ehms... Communicate, manage, decide and .. and effectively operate the SPV itself. Now, it also manages the interface between the management of the SPV, the employees of the SPV and also the shareholders in context.*

There are many example, where I can think in my experience, where the governance structure has been so badly put together, either because there was no trust between the shareholders themselves, or the shareholders and the management. If you like the micro-management situation. Thereby, it is made the actual development of the project itself extremely difficult, extremely cumbersome and therefore creates, what I would call avoidable risks. If you are an SPV, for example you are bidding to get the mandate for the megaproject. Let say for example a government nationalisation of an oil project, a bridge, or whatever it may be, clearly , you know, your people become un competitive to others if your governance structure is less efficient.

So, in addition it can talk lighter in time and costs... If that that governance structure is inappropriate for the purpose it has. So and ultimately, it comes where the governance structure is about the requirement of all the shareholders and the main contracting parties. To cover what they foresees as risks and therefore ultimately is a distribution of control and trust. And, I use the word trust because ultimately you take from one extreme... I have see governance structure for shareholder at leas during the development phase where they are approving every toilet paper acquisition. And therefore there is no trust in the management and no flexibility for the management to move. So this is ridiculously stupid. and for me ... because ultimately the shareholder don't trust each others, they don't trust the management, the ultimately they shouldn't be doing this all together. Sometimes it is a normal situation at the beginning of the project and become more flexible later.

... in good governance structure, when problems arise it allows to foresee a solution . UI can think about at problematic governance structure, is when you have 100% voting. When you have 100% voting requirements, clearly that means significant problems, it can leads to significant problems. So no action, inactivity, games, whatever you wanna call it. For me that's why the governance structure if an SPV is important for the success of the project. you may have the best project in the World, but if you have bunch of shareholders and the management that do not have a framework to operate efficiently and delay with problems that come up, then you have a mistrust between the counterparties, which ultimately adds a significant risk to the potential success of the project."

Security package

I03

E03: *"The banks have the prime security over the other claims, All, or almost all, agreements have subordination arrangements."*

I08

E07: *“At the end of the day it is about two or more organisations coming together, they form the SPV in accordance with a certain shareholding proportion and then argue very much about who has control. In case if it goes wrong is designed to avoid liability back to the investors.”*

I15

E14: The direct Agreement enter into force when other contracts are terminated. The concession agreement, under certain conditions, gives to the Government the ability to terminate the concession and therefore the project. In other conditions, the project can terminate, therefore the lenders want to be compensated and need to guarantees their finances. The Direct agreement involves the Government and the lenders. It converts the fact that in the case of termination of the project, the government compensate the financiers. Others aspects enable the banks to step into the projects.

De-risk the project company

I03

E03: *“You think in this way, Tristano. the underlying principle: we never ever ever forget, it is all about preservation of the revenue stream. Because all they have got security. So the revenue stream can't start until the asset is created and starts.”*

E03: *“To enable the SPV to discharge the construction responsibility, it is going to borrow from banks or other financial institutions. And it is going to borrow for these people.”*

[...]

E03: *“The performance risk is discharged through here because the borrowers aren't taking the risk.”*

E04: *“it is pushed down, by doing so the insolvency risk is mitigated.”*

E03: *“... Because all they are worried about (the banks), the greatest risk is during the construction period. You want to switch the payment from these people (ECP contractors). You want to make all you can do about the liquidate damages. To squeeze them, make sure they keep building, bonds, everything like that, because of these companies, stays clean. It has the contract it can pursue other people and sue them to deliver the what it is needed, which is the road. So the risk is pushed down at that level.”*

I05

E02: *“In risk profile, that sits on the SPE, there is a tolerance that sits in there. To price in all the risks at this level would make it, probably unviable. So, everyone is getting a slice of risk. So everyone is taking some degree of contract risk and project risk, which otherwise that wouldn't be.”*

I11

E10: *“Exactly! Probably more of them have no staff. Because the SPV subcontract as much as possible because the banks don't want the SPV to take on any risk. Risk is a commodity just like anything else. Now, the propension to absorb risk is purely the ability to pay for things to going wrong. If you have an SPV where the only thing is the shareholder equity, which is a tiny part of it,... Lenders don't want the risk to be placed where there is a lot of money to be taken away. So again, this risk contracted. You have the contractor, the operator, their subcontractors. Their subcontractors have the insurance company one way or another. And before you know it, this SPV to deliver a road, has the risk dispersed all over the economy, maybe in several countries.”*

I17

E16: *“The thing, I would say, and I am sure you must pick this up, one of the problems with the finical interest within an SPV is that Usually people who are providing funding for projects, will not bear any risk at all. and the way SPVs, in my experience, tend to operate is to...hemmm they want to transfer all the risk further down the line, within the project organisation. Whether it is trough an operator, or a whatever. And personally I feel this is fundamentally wrong.”*

[...]

E16: *“I would say the generalisation, that SPVs work very well where you have got a simple project structure and organisation. They do not work where you have a complex structure organisation. I think that the proliferation of different agreement start to built complexity into project, Often unnecessarily. Bit it usually occurs as a result of a lack of understanding of how managing the risk and I mentioned that typically bank will not take risk, and they look to transfer that risk whenever they can, and often the agreement we are talking about*

are constructed in such a way that the members of the SPV, or the owners of project are exonerated, or relieved of any responsibility for risks. In my experience Tristano... That is fundamentally wrong. In my experience, within a contract the client has to understand that he cannot transfer all the risk. In this case, the owner of an SPV has to understand that he can't transfer all the risk of the SPV. It goes on how the project is set up using an SPV and who is providing the real leadership within the project.

The success will determined by the quality of t even though leadership, which is coming form the SPV. And I regret saying more often it s not very good."

Governance design instruments

Shareholding

I01

E01: The percentage of share is a good proxy about decision-making power toward the SPE and this information is usually available. Another level of analysis may be the negotiation process and the determination of the managers of SPE (selected across the different organisations composing the consortiums). This second level of analysis is mostly determined by politics, experience and seniority of the managers involved: in this case may be difficult to gather information.

I03

E03: *"Equity negotiation. It is function of the negotiation power. They focus on the amount of equity and on the control. Some equity holders are not interested in the control of SPEs."*

I05

E02: *"Sometimes the government has a share. Sometimes has the golden share, which means certain things can't happen. For a critical infrastructures, the government may decide to take, what is essentially a class of two shares or something, are called golden share, which has negative control on the operation of the SPE or they have an infringement rights to be able to stop things to happening, even sanding shares or other things. The way to think of an SPE, to me, is... Equity is a bundle of rights. When you think of it, that is where the dotted lines, and that right is sometimes few differences with the contractual rights, expect; there are laws surrounding there. So the government may decide to do that way. Or it might have direct agreements, with the shareholders. Or it might have both. It does quite often."*

I06

E04: *"It's really a good way from the business point of view. that, you know, we have five years construction and the equity...we have the risk, we have the commitment, but we don't necessarily have to part with our funds, not until the end of construction"*

I08:

E07: *"Yes, yes. Some organisations, absolutely always require greater than 50%, so they can have control. Otherwise, they may require at least to be the largest shareholder. Other investor shareholders do not require that control. And happily take 10, 15%/ As you know, there are thresholds. 5% is what allow you to get a resolution to the annual leasing, 10% etc, ect."*

E07: *"Yes, of course. You can have negative control, which is far greater than your shareholding that would otherwise normally permit. There can be things that are not allowed to happen even if you are tiny shareholders or you have no shares at all but you are a lender, for example. I agree with that."*

Shareholder agreement

I02*

E02: *"The shareholders' agreement may contain a number of the provisions commonly found in the Articles. Other provisions might include:*

- *Purpose of the SPE – taken from the Concession or Project Agreement with the Client.*
- *Capitalisation and funding (initial and ongoing) or other contributions (for example, intellectual property rights, know-how, secondment of staff, provision of premises).*
- *The composition of the board, roles and responsibilities and management arrangements.*
- *Approval of business plan and budgets and tolerance levels – usually a RAG and Bridges reporting mechanism. Also levels of approval to release contingency.*
- *Distribution policy. This is prohibited for many years under project financings. Most of the equity return is back ended and the return on investment is released by selling down all or part of their equity or equity equivalent interest as the SPE business matures and takes on the features of an annuity backed by asset profile.*

Appendix 1

- *Transferability of shares in different circumstances – again restrictions under the Lenders Agreements with the SPC and shareholders directly.*
 - *Deadlock and termination (including compulsory transfer events, and drag along and tag along rights) – these are really hard to negotiate. Lenders won't permit so some creativity always required. In the end the ship floats or the ship sinks – not really any lifeboats.*
 - *Minority protection, if any (for example veto rights on certain matters, also known as "reserved matters"). Really important to get the balance right – the tail cannot wag the dog.*
 - *Restrictive covenants on the company and the participants – usually no poaching of staff!*
 - *Confidentiality and Announcements – takes a lot of co-ordination with in-house marketing. Even more so if websites and other day to day publicity. Often new brand created for marketability.*
- It is quite normal for the shareholders' agreement to act as the master or framework agreement for the completion of the subsidiary documentation, for example:*
- *A management agreement.*
 - *Contracts for the purchase of assets and/or businesses.*
 - *Intellectual property rights contracts or licences.*
 - *Services and secondment agreements.*
- Where there are requirements under civil jurisdictions to have a Supervisory Board for example, then this would be accommodated within the structure."*

I06

E05: *"Yeah, I think, I don't think the the the, ehm, you know, the shareholder's agreements in real, they are not very, they are very, you know.....almost like any standard you could down from from...from the internet. You know, it's gonna be very... very similar provision, there isn't really any magic or any used secret in the shareholder agreement. The tricky parts, I believe, in the LS view or in the shareholders agreements are really around, you know, the conflict of interests and how you deal with that and, you know, deadlock provisions, if you get to stand still in the company, how do you deal with that, but then it's ehm...it's a normally the list of those who matters, you know, list of the shareholders will have to vote on, the things that the board has to vote on, and the percentages, like this decision to be done by simple par..., simple majority, this decision needs 45 majority...But I would say the 90, and then I guess, you know, more and more thisthe transport provisions, you know, when you want to sell your share, is the right or wrong offer, you know, how that...is going to work, but then I would say, you know 80-90% of the shareholders agreements are very standard in terms and the things I talked to you about now are those that may vary and be different from one project to another."*

I15

E14: *The shareholder agreement is the more important piece of documentation formalising the governance of SPVs*

Loan agreement

I03

E03: *"The contract here, this loan arrangement here, will have a significant number of provisions in it, which entitle the banks to direct the company to do things. and they are like to say, you must terminate that EPC contract and appoint another EPC contractor. So the decision making powers of the directors to act independently to that are....They are not suspended, but their duty is to the company. and now I have to do what the bank told me to do because if I don't there will be a default of my financing arrangement and my company (SPV) will be insolvent. So I have to take that decision the bank is telling me. That's another way of looking at."*

Board of directors

I08

E07: *"We all know that a director as a duty to acting in the best interest of the company. However, in reality, he is appointed, usually, by an investor, a shareholder and he is there to (where it is possible) to safeguard the interest of the shareholder. I think this is a reality even if, strictly speaking, is there supposed to be acting solely in the best interests of the company. If you are a director of the SPV, your powers and your responsibilities, are what is leftover after you have delegated to the project manager and after what have been reserved to the shareholder. Because there are some powers that are reserved to the shareholder anyway. It is not to the board to take certain decisions; they have to go to a shareholder vote. You are in the middle."*

I09

E08: In my experience the roles of the director rotate every two years to don't give too much control to one party (i.e. shareholder). Benefits: Good balance of power between sponsors. Downside: you lose the expertise gained by the managers, and it is difficult to find the correct person every two years.

[...]

E08: Three directors. The votes are in line with the shareholders. Is down to the owners to how they want to appoint the directors. The directors also change depending on the phases, they are more specific to the phase/ issues encountered. The number and powers of the directors are balanced and negotiated between the companies.

Internal policies

I06

E05: *"Ehm, but, we say: the starting point for both of them is aof policies that we, we, that we agree upon among the shareholders, you know, that could be a support of contract that obviously in the event of crisis management policies,standards, environmental standards, sustainability, financial policies and so forth. So, there is, you know, communication policy, there is really a framework so, if you go down from the shareholders' agreement, you have the articles and obviously by-laws, but the next level of framework is in policies that we agreed upon."*

[...]

E05: *"We normally agree, you know, at shareholders how is that policies, which policies goes into the policy agreement, but not all of them, part from it. And, the thing is, if you if you have a policy like a contract document, then you cannot have demand the contract if you see that you have demand the policy."*

[...]

E05: *"That's normally a collaborative paper, so we as shareholders, we provide something that we think it would fit, and then the management would take it further to the...to kind of being more specific and then it goes the way or propose it the way they like it and then they send it to the board for adoption, or to the shareholders for adoption."*

[...]

E05: *"You know, I think we have been in the business for quite some time, and we normally have policies that don't have to be updated all the time, but generally the board should review the policies on a yearly basis to make sure that there are updates and that there are now changes in the business that requires that the policies should be updated. Something that it's good governance practice, to have a look"*

I08

E07: *"You can call the policies, you might call them LWIs: Local Work Instructions. I would expect that in the shareholder agreement. There are big issues of how to address and resolve disputes. So you are right, there are many other things to day to day operations. Which may be, even not drafted at the time the shareholder agreement was signed. But there is the belief that it was necessary to document those procedures. I haven't, in my experience, come across them....not with regards to, you know, between shareholders. Clearly, is shareholders create an SPV, and that SPV has to do certain things, then, it is good practice to document the internal procedures. That is more about the operations than any sort of governance issues."*

[...]

E07: *"I think in the end, one has to be pragmatic: is it an important procedure? It is important that is similar or aligned to my own procedures? Or, I do not care? One way that I have seen it is that the policies are allocated to the different stakeholders, to prepare the first draft. And then those draft are circulated for comments to each other. And then they will try to reconcile all of the different comments into an agreed position. And then they will vote on this agreed position."*

I15

E14: *"The internal procedures evolve over time, particularly the ones related to the operation and maintenance. These are really practical statements. The degree of involvement of negotiating lawyers in these is minimal."*

Article of incorporation

I02*

E02: *“The articles govern the underlying structure of the SPE, and the shareholders’ agreement seeks to agree how the day to day running of the SPE will function. In the articles it is possible to entrench rights in respect of:*

- *Separate classes of shares and their respective [voting and distribution] rights and provisions relating to the variation of those rights. There may be a different economic distribution than economic interest. Note that some governments may seek to have a “golden share” in some projects to ensure that they have access to management information and can veto certain actions/activities.*
- *Procedures for the issue and transfer of shares (including pre-emption rights and restrictions on transfer). Again subject to Lenders restrictions.*
- *Notice and proceedings at formal shareholder and director meetings (including quorum and voting). In practice there are meetings under the Shareholder Agreements that allow for all such matters to be agreed wherever practical in advance of any public meeting.*
- *Appointment, powers and duties of directors (and company secretary if one is to be appointed).*
- *Provisions for the authorization and management of directors’ conflicts of interest. There is usually an adjustment for majority voting in the event that there is a manifest conflict of interest. This helps prevent the above “who pays my pension” issue.*
- *Drawdown, budget variances and certain other restricted or reserved matters.”*

Context factors

Context

I01

E01: We have purely private megaprojects, or where at least the most relevant actors are private. Besides, it is difficult to find purely private SPE in oil & gas sector because the government is usually involved. In most of the cases because it has an important percentage of ownership over the utility).

I03

E4: *“In my experience, there is not a large change of the SPV structures in different types of infrastructure. The big difference is with the oil & gas. They don’t need bank debt.”*

I08

E07: *“In other markets, I see SPEs being about entering in new markets for new sales. So you know, you join up to enter a new market, and you find a local partner, for example. In the energy sector, we are still very much a national market. Therefore, JVs or SPVs in the generation tend to include a company that want to manufacture the power station, or to build it. As someone who to operate it. There is an alignment of interests. Whereas in other markets, I see some people with the same interest, they operate in the same sector, but they are joining up for efficiency or scale. But in the energy sector, the generation power station sector, it tends to be specific skills, and those skills only come from one partner: the built skill or the operation skill.*

That would be one observation. Another observation, is that in the electricity sector, I don’t know anything about oil, clearly there is a very complicated market arrangement. Subsidies, revenues streams. It is very difficult to identify revenue streams and therefore that skills are not always available. It is a very important skill, but it is not always available for a partner. This is one of the first skills that you have to recruit. Somebody that can actually manage the market.”

I11

E10: *“Broadly, in my experience, no. But I am sure in different circumstances they might be.”*

I15

E14: In most cases the Government doesn’t control the SPV. Most PPPs are led by a concession contracts, i.e. SPV Vs. Government. Government is usually not part of the Shareholder Agreement. In a minorities of cases, where the Government take some involvement into the SPV (e.g. middle east Power Projects)

[...]

People designing are not necessarily driven by the infrastructure, much more relevant are the tax aspects, therefore the jurisdiction considered. Also requirements of lenders about the Securities of the SPVs. Ability to enforce security, for practical and legal reasons.

I16

E15: *“Energy business, it is closely related to Energy policy. And energy policy, unfortunately I would say, is very strongly related to development policy.*

So people believes and government believe if a pipeline is constructed across one country. That needs automatically an increase of jobs, of supplies, of material, of everything. And they miss the obligation ad the need for international tenders, for international construction company and engineering companies breaking in such megaprojects because mostly you do not find the local content in this.

And this mismatch of energy policy and development policy, sometimes lead to very strange decisions on government level and on the commission level compared to very rational decisions made by shareholders.”

Appendix 2

Designing the governance of Infrastructure megaprojects with the Special Purpose Vehicles

Keywords: Special Purpose Vehicle, Governance, Infrastructure Megaproject

Contact

PhD Candidate: Tristano Sainati

Affiliation: The University of Leeds, School of Civil Engineering

Email: t.sainati@leeds.ac.uk

Mobile: xxxxx

Introduction – Research Overview

Little is known about how the Special Purpose Vehicles (SPVs) impact the governance of infrastructure megaprojects.

The SPVs are fenced¹² organisations with limited and pre-defined purposes and legal personality. In essence, the SPVs are organizational boxes able to collect and isolate plenty of items, such as concessions, licenses, cash flows, assets, liabilities, etc. and their associated risks. Due to their versatility, SPVs are employed for several purposes, ranging from structured finance to fiscal optimisation.

The research focuses on those SPVs devoted to designing, developing, financing or operating infrastructure megaprojects. Usually, these SPVs are employed to support either Project Finance or Project Partnering (e.g., Public Private Partnership, Incorporated Construction Joint Venture, etc.), or both.

¹² That is, the SPVs are isolated from their sponsors and originators. For example, In case of bankruptcy of the main SPV's shareholder, the SPV cannot be liquidated.

In particular, the research focuses on the governance mechanisms derived from the different uses of the SPVs, and their related contracts (e.g., shareholder agreement, loan agreement, etc.). These governance mechanisms are particularly relevant for the megaprojects' performance, because these mechanisms determine their decision-making.

Research Aims

- To comprehend how the SPVs, and their contracting architectures, influence the governance of infrastructure megaprojects.
- Ultimately, to improve the governance of infrastructure megaprojects through a better design of the SPVs and of their associated contracts.

Methodology

The main challenge lies on the limited information disclosure concerning the SPV's contractual documents. Although the governance of SPV is not well documented, the SPVs are widely employed in megaprojects, suggesting that there is tacit knowledge.

The research methodology is designed to make explicit the existing tacit knowledge on the topic. The Data collection is primarily based on semi-structured interviews with experts; for example, lawyers, SPV's sponsors, financiers, SPV's directors, etc.

I will be grateful if you support the research as a quality expert to interview.

About the Interview

Usually, the interview requires about 45 minutes, but we can accommodate a shorter time if it is more suitable for you. The questions are not entirely pre-defined and depend on the specific experience of the interviewee. It is more like an open discussion around the research topic. Some examples of questions are introduced below. Please, do not waste any time to prepare the interview.

Introduction

- Do you have any experience about the SPVs?
- In which sector?

General Questions

- To what extent do the SPVs affect the governance of infrastructure megaprojects?
- How?

More Specific Questions (sample)

- What are the configurations of SPVs you have encountered in your professional life?
- What are the main advantages or shortcomings associated with these configurations?
- Can you explain how the SPVs work internally? What about the internal policies and Quality manuals?
- How to overcome the conflict of interest arising in the SPVs? In some cases, the main contractor is a sponsor of the project and appoints a director in the SPV. During the SPV lifecycle, the board of directors may face decisions or negotiations concerning the Main contractor. In these circumstances, the director appointed by the main contractor is in conflict of interest. Which measures address this problem? Do you have other examples of conflict of interests involving the SPV?

Follow UP

- May I ask you to introduce me to a colleague, expert of this topic, for the interview?
- Would you suggest any document (e.g. contract template, report, etc.) or case study in particular?