Chapter 1: Introduction and Background

1.1 Introduction

Over the past few decades, large capital projects (LCPs) have had a profound impact on world economies, development of countries and broader societies. Mega transportation projects such as the Euro Tunnel, Øresund Bridge and the new Tokyo Airport changed the way people travel, while big dams such as the Three Gorges impacted millions of peoples' lives and their habitat. Private sector projects in the energy and petrochemical industries have had a significant impact on the economic growth of countries and it is evident that there is still no end to development in these fields.

Obviously, where multi-billions of dollars are flowing at an enormous tempo, the territory becomes fertile for opportunism, corruption, greed and misconduct. Providing a controlling or governing environment becomes a necessary evil and the corporate world has reacted strongly by incorporating corporate governance, especially for companies listed on stock exchanges. For the single, large project, no formal governance framework exists and the time may be opportune to investigate the format and structure of a new, generally applicable project governance framework. The positioning of the practice of project management in large strategic initiatives has become crucial. The development of a project governance framework requires sound knowledge of the main drivers for project management performance, the basic principles of corporate governance and the formulation of the concept of project governance.

1.2 Project management

The international community's interest in project management has increased exponentially in recent years (Kloppenberg and Opfer, 2000). As an organised activity of mankind, projects can probably be found in all

civilisations. Coupled with the accelerating momentum of globalisation, mastering the concepts of project management is viewed by many as a progressive step towards improved productivity, efficiency, effectiveness and competitive advantage.

The definition and development of project management as a management science has attracted contributions from all spheres of private, public and academic institutions, resulting in a plethora of views and concepts. According to Fundahl (1987), the formal definition of project management as a managerial science can be traced back to the introduction of the programme evaluation and review technique (PERT) developed for the Polaris Submarine project during the late 1950s and early 1960s. Subsequently, the further development and introduction of project management as a new managerial approach has provided stimulating debate and creative friction. Melgrati and Damiani (2002) found that the definition and simplification of various project management models has led to the establishment and solidifying of theoretical-epistemological foundations of project management ideology. These foundations have crystallised in various bodies of knowledge, of which the Project Management Institute's (PMI) Project Management Body of Knowledge (PMBoK) (2000) is probably the most well-known internationally.

At present, virtually all industries have adopted some form of project management approach, which is typified by the introduction and completion of activities and deliverables through a structured approach of temporary nature, to eventually serve a specific initiative or goal (Koskela and Howell, 2002). However, the resulting questions remain: "Does it work?" Do the introduction of formal project management and the application of the defined tools and techniques create, sustain or destroy value? How is project performance defined?

The following section will attempt to provide clarity on the issue of project performance and success criteria.

1.3 Historical development and current state of project performance

1.3.1 Evaluating measures of project success

What constitutes a successful or failed project? Nicholas (2001:19-21) refers directly to meeting or exceeding compliance with the original triad criteria of cost, time and meeting client performance requirements. Gray and Larson (2000:4-5), Lientz and Rea (2001:15-16) as well as Burke (1999:4-6) share this view in their various approaches to the management of projects and their eventual definitions of success.

However, this question seems to be increasing in complexity and views are multiplying as globalisation and postulation around the topic of project management take form. Apart from different value systems and cultures around the globe, success themes also seem to be time-based and 'fashionable'. Kerzner (1998:6-7) echoes this evolution in project success parameters by referring the historical definition of the completion of activities within time, cost and performance to the expanded modern criteria of:

- With acceptance by the customer/user
- When you can use the customer's name as a reference
- With minimum or mutually agreed upon scope changes
- Without disturbing the main flow of the organisation, and
- Without changing the corporate culture.

Cleland (1986) suggests: "Project success is meaningful only if considered from two vantage points: the degree to which the project's technical performance objective was attained on time and within budget; and, the contribution that the project made to the strategic mission of the enterprise". With Cleland's reasoning as basis, Shenhar, Levy and Dvir (1997) also cross this traditional view by adopting a four-dimensional model measuring project efficiency, impact on the customer, business and direct success, as well as preparing for the future. Pinto and Mantel (1990) provide yet another

derivation to assessing project success or failure and listed as key parameters:

i) the implementation process itself
ii) the perceived value of the project by the customer, and
iii) client satisfaction.

Complimenting the first parameter from Pinto *et al.* (1990), a study conducted by Rwelamila, Talukhaba and Ngowi (1999) provided evidence that, especially in the developing world, group solidarity among stakeholders throughout the project life-cycle could, in many cases, be a key factor in the perceived success or failure by stakeholders, irrespective of the project outcome. Lastly, but not finally, Dvir and Shenhar (1992) considered:

iv) profitability
v) level of sales and new orders
vi) generating new opportunities for new products and new markets, and
vii) preparing the scientific and technological infrastructure for the development and production of future products.

It is clear from the above paragraphs that measures of project success have moved beyond the traditional cost, time and performance triad. It is evident that salient aspects are becoming more dominant, especially in a globalised environment where Western approaches are being challenged. Despite inconclusiveness regarding project success criteria, research into factors influencing project success continues to evolve around cost, time and operational performance.

1.3.2 How successful are projects?

Scientific and statistically representative research results regarding project performance are not generally available in academic literature. Various reasons could be attributed to the scarcity of results, of which organisational confidentiality, lack of records and protection against poor market perception are but a few. One of the first real quantitative studies published on project

success factors was that by Pinto and Slevin (1988). In their analysis of approximately 600 respondents they found that critical success factors vary across the phases of the project life cycle, with two factors namely mission and client consultation / acceptance being the only two parameters evident in all the project phases studied. Probably the most comprehensive research on the topic of actual performance was done by The Standish Group (1995) in 1994. Even though the research was done mostly on software and information technology projects, the results indicated that, on average, only 16.2% of projects investigated were completed on time and within budget. For larger companies, this figures drops to an average of 9%, with 42% of all projects meeting their original operational intentions. A total of 31% of assessed projects were considered outright failures. With the study being conducted every two years, the latest results of the 2002 survey indicated a marked improvement in on-time and within budget measurements, with 34% of 13,522 projects meeting these criteria (The Standish Group, 2003). Failed projects accounted for 15% of all projects.

Further to the measurement of project success criteria in the information technology industry, Atkinson (1999) questioned the simplistic approach of only evaluating time, cost and quality on projects, especially the quality aspects which he describes as a 'phenomenon' that can vary across the project life-cycle. Atkinson argued that the ultimate measurement should be towards stakeholder satisfaction, but fail to provide any quantitative guidelines and empirically results to substantiate the reasoning.

A more general, industry representative study on project performance was conducted during 1997 by Frame (1999). The study included the results of a global survey on 438 projects, covering private and public industries. The results indicated only 27% of all projects met their original budget, 22% were on time, while 51% met the desired specifications. Supporting this finding, results from a study completed by the International Program in the Management of Engineering and Construction (IMEC) in 2000 (Miller & Lessard, 2000:14) revealed that of 60 large engineering projects with an average capital value of $ 1 billion, undertaken between 1980 and 2000, 18%

incurred extensive cost overruns. They also found that almost 40% of the projects performed so badly that they were either abandoned totally or restructured after experiencing some sort of financial crisis.

Merrow, McDonnel and Argüden (1988) studied 47 'megaprojects' and found that only four of them came in on budget, with the average cost overrun being 88%. Of the 36 projects that had sufficient data, 26 of them (72%) failed to achieve their profit objectives. Based on this analysis, they concluded that projects with a greater fraction of public ownership, as well as larger, first-of-a-kind, and one-of-a-kind projects exhibit a worse performance. Supporting their observation, Morris & Hough (1987:7-15) also provide a comprehensive list of (especially) cost overruns on large projects.

Flyvbjerg, Bruzelius and Rothengatter (2003:12-21) completed a study in 2003 on the performance of large infrastructure projects. Their research was done on projects such as the Channel tunnel, the Øresund Bridge connecting Denmark and Sweden via road transport, as well as the Great Belt Bridge (serving the same purpose for rail), Denver Airport, Calcutta Metro in India and various others, to be discussed in more detail later in this study. The Flyvbjerg *et al.* (2003) study assessed two main performance measures, namely:

- Cost overrun, and
- Benefit overestimation.

According to their research, the general performance on the above variables of large infrastructure projects was appalling. Table 1.1 illustrates the poor cost performance on some well-known transport projects.

A significant finding from the research was the cost performance since the early 1900s of large infrastructure projects. Figure 1.1 illustrates the cost performance of various projects over a period of approximately 90 years.

Table 1.1: Cost overruns on large transport projects

Project	Cost overrun (%)
Boston's artery/tunnel project	196
Humber Bridge, UK	175
Boston-Washington-New York rail, USA	130
Great Belt rail tunnel, Denmark	110
A6 Motorway Chapel-en-le-Frith/Whaley bypass, UK	100
Shinkansen Joetsu rail line, Japan	100
Washington metro, USA	85
Channel Tunnel, UK/ France	80
Karlsruhe-Bretten light rail, Germany	80
Øresund access links, Denmark	70
Mexico City metro line	60
Paris-Auber-Nanterre rail line	60
Tyne-and-Wear metro, UK	55
Great Belt link, Denmark	54
Øresund coast-to-coast link	26

Source: Flyvbjerg *et al.* (2003)

The data shows no visible trend toward improvement, despite the development and availability towards the end of the century of advanced cost estimation and control techniques.

Flyvbjerg *et al.* (2003:16) summarise as follows:

"*We therefor conclude that cost overrun has not decreased in the past ten, thirty or seventy years. If techniques and skills for estimating cost overrun in transport infrastructure projects have improved over time, this does not show in data. No learning seems to take place in this important and highly costly sector of public and private decision-making. This seems strange and invites speculation that the persistent existence over time and space and project type of significant and widespread cost overrun is a sign that equilibrium has been reached: strong incentives and weak disincentives for cost underestimation and thus for cost overrun may have taught project promoters what there is to learn, namely that cost underestimation and overrun pays off. If this is the case overrun must be expected and it must be expected to be intentional.*"

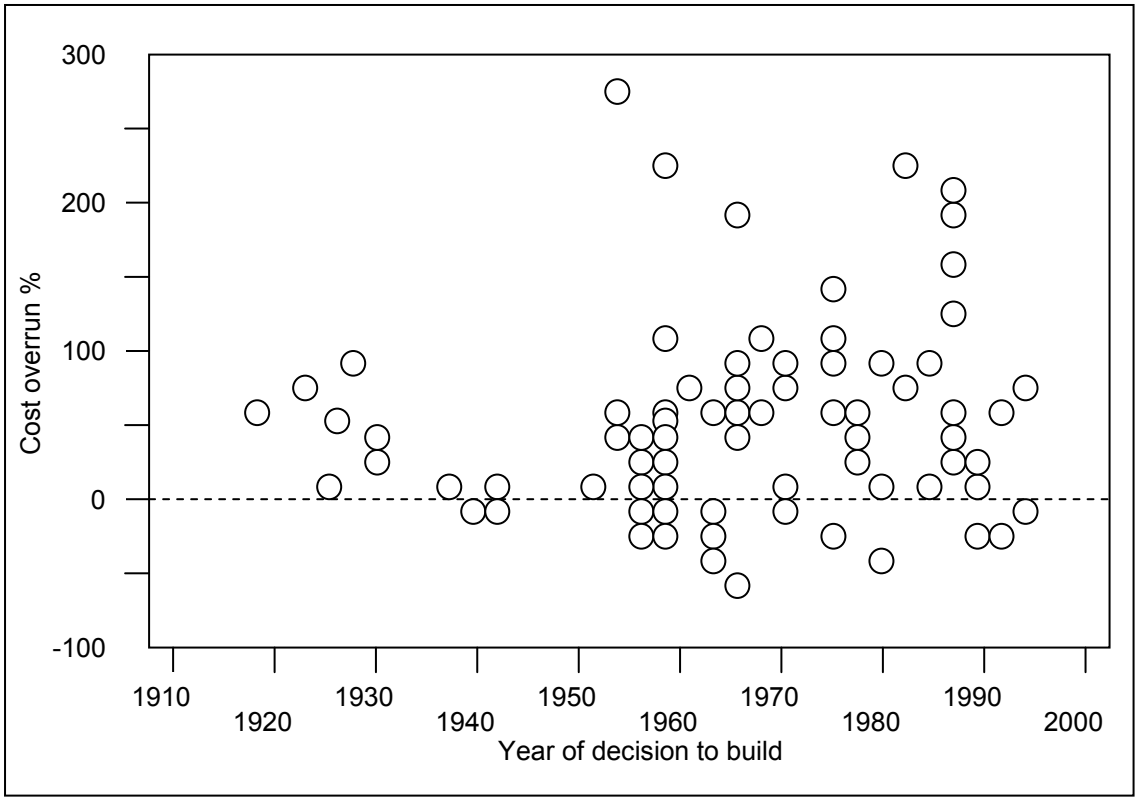


Figure 1.1: A century of cost overrun **Source: Flyvbjerg *et al.* (2003)**

Strong words, which resound with subjectivity. Nevertheless, they remain significant enough to address. The technical, financing and organisational complexity of large projects, high capital, power play and potentially conflicting agendas are all factors that could lead to the creation of caveats for mismanagement, poor communication of implied intentions as well as opportunities for exploitation.

With respect to benefit overestimation, some startling findings have been published by Skamris (Flyvbjerg *et al.,* 2003:25) on recent (since 1970) large transport related projects. The findings are presented in Table 1.2 below and indicate the percentage of actual traffic with respect to original forecast traffic during the opening year.

The original traffic forecast encapsulates the project benefit and is usually the prime motivation to launch a large infrastructure project. Although it is expected that the actual traffic will not necessarily correspond 100% to the

original estimate, deviations of more than 50% less than originally anticipated leave more questions than answers.

Table 1.2: Benefit overestimation

Project	Actual traffic as percentage of forecast traffic during the opening year
Calcutta metro, India	5%
Channel Tunnel, UK and France	15%
Miami metro, USA	18%
Paris Nord TGV line, France	25%
Humber Bridge, UK	25%
M65 Huncoat Junction to Burnley Section, UK	35%
Tyne-and-Wear metro, UK	50%
Mexico City metro	50%
Denver International Airport	55%

Source: Flyvbjerg *et al.* (*2003*)

These figures support the observation of Flyvbjerg *et al.* (2003:16) that politics can lead to deliberate underestimating of cost and overestimating of benefits as a means to get projects accepted.

The significance of performance or non-performance of large infrastructure and industrial projects cannot be overemphasized. In all countries, large infrastructure and industrial projects form the foundation and cornerstone of economic and societal development, while the maximisation of their benefits supports the medium to long-term sustainability of a country as a whole. Therefore a better understanding of the internal process, definition and management of these large projects is pivotal and will be the focus area of this study. The eventual control and steering of these projects, and subsequent performance (or rather lack thereof) in terms of predetermined benefits and variance from original cost estimates, forms the departing platform of this research.

1.4 Factors influencing project success

Even though the topic for investigation might seem relevant, necessary and logical, researchers are quick to acknowledge that research in the field of project management is complex and very much in the exploratory stage. By its very nature, project management is multi-dimensional and multi-disciplinary, covering all aspects of industry and society; thus exposing itself to various forms of internal and external influence. These characteristics are emphasised by various results from empirical and quantitative studies done over the past 25 years. Many of the results are claimed to be statistically representative of the total population and therefore derive specific findings and recommendations. In view of the indicated poor performance of projects, the following paragraphs will review some of the results of research efforts in measuring and evaluating project performance. Most of the past research aimed at finding the main drivers of poor project performance, even though no general consensus exists as to what a successful project entails. Despite the lack of overall agreement, an attempt will be made to conclude with a general consensus regarding causes of project failure.

The investigation into factors influencing project outcome can only be justified by postulating that the result might also shed some clarity on the concept of project success. Thus, the rationale behind reviewing the factors influencing project success is argued from the assumption that commonality in factors influencing project success will improve the definition of project success itself.

Belassi and Tukel (1996) provided a summary of various authors' and researchers' findings on the factors influencing project success. The first seven columns reflect the findings from Belassi and Tukel (1996) and included contributions, with dates of their respective publications, by authors such as Martin, Locke, Cleland and King, Sayles and Chandler, Baker, Murphy and Fisher, Pinto and Slevin, as well as Morris and Hough. Together with other publications such as Gioia (1996) and Black (1996) an updated list of results is provided in Table 1.3 (Factors Influencing Project Success).

Two aspects are evident from the table. Firstly, there is no universal, commonly agreed upon list of causes for project failure or success. It is also alarming to note that the references claim to provide representative results, with seven out of the nine lists being peer reviewed. This phenomenon adds to the dilemma of a lack of commonly agreed upon definitions of project success parameters. These results, mostly from empirical studies, raise quite a few questions for instance:

- Do we really understand the concept of a project and its behaviour through the life-cycle?
- Do projects differ more across industries than is generally realised, making generalisation subjective?
- Could the type of project influence the success parameters?
- Could different types of projects have different causes of failure?
- Do we need to rethink the framework of project management to obtain alternative epistemologies and insights?

These questions surely require close attention for conceptual clarity on project characteristics.

Table 1.3: Factors influencing project success

Martin (1976)	**Locke** (1984)	**Cleland & King** (1983)	**Sayles & Chandler** (1971)	**Baker, Murphy & Fisher** (1983)	**Pinto & Slevin** (1989)	**Morris & Hough** (1987)	**Gioia** (1996)	**Black** (1996)
Define goals	Make project commitments known	Project summary	Project manager competence	Clear goals	Top management support	Project objectives	Understanding complexity	Planning
Select project organisational philosophy	Project authority from the top	Operational concept	Scheduling	Goal commitment of project team	Client consultation	Technical uncertainty innovation	Lack of internal communication	Change of scope
General management support	Appoint competent project manager	Top management support	*** Control systems and responsibilities**	On-site project manager	Personnel recruitment	Politics	Non-integration of key elements	Project manager competence
Organise and delegate authority	Set up communications and procedures	Financial support	*** Monitoring and feedback**	Adequate funding for completion	Technical tasks	Community involvement	*** No measurable controls**	Scheduling
Select project team	*** Set up control mechanisms**	Logistic requirements	Continuing involvement in the project	Adequate project team capability	Client acceptance	Schedule duration urgency	Requirement creep	Management support
Allocate sufficient resources	Progress meetings	Facility support		Accurate initial cost estimates	* **Monitoring and feedback**	Implementation problems	Ineffective implementation strategy	Funding
*** Provide for control and information mechanisms**		Executive development and training		Minimum start-up difficulties	Communication	Financial contract legal problems	Dependency on software tools	Cost containment
Planning and review		Project schedule		*** Planning and control techniques**	Trouble-shooting		Contractor / customer expectations	Resources
		Market intelligence		Task vs. social orientation	Characteristics of the project team leader		No shared 'win-win" attitude	*** Information management and control**
		Manpower organisation		Absence of bureaucracy	Power and politics		Leadership and sponsorship	Incentives
		Acquisition			Urgency		Education	Risk analysis
		*** Information and communication**			Environment events		Not viewed as a start-up business	

Secondly, and to some extent encouraging, is the general consensus that 'control' or lack thereof, is a major contributor to project failure. In total, eight of the nine authors suggest this item to be important (see **bold** items). However, if there was uncertainty regarding the other characteristics of the project life cycle, (stakeholder involvement, objectives, funding and numerous other project variables), control would also be a fallacy.

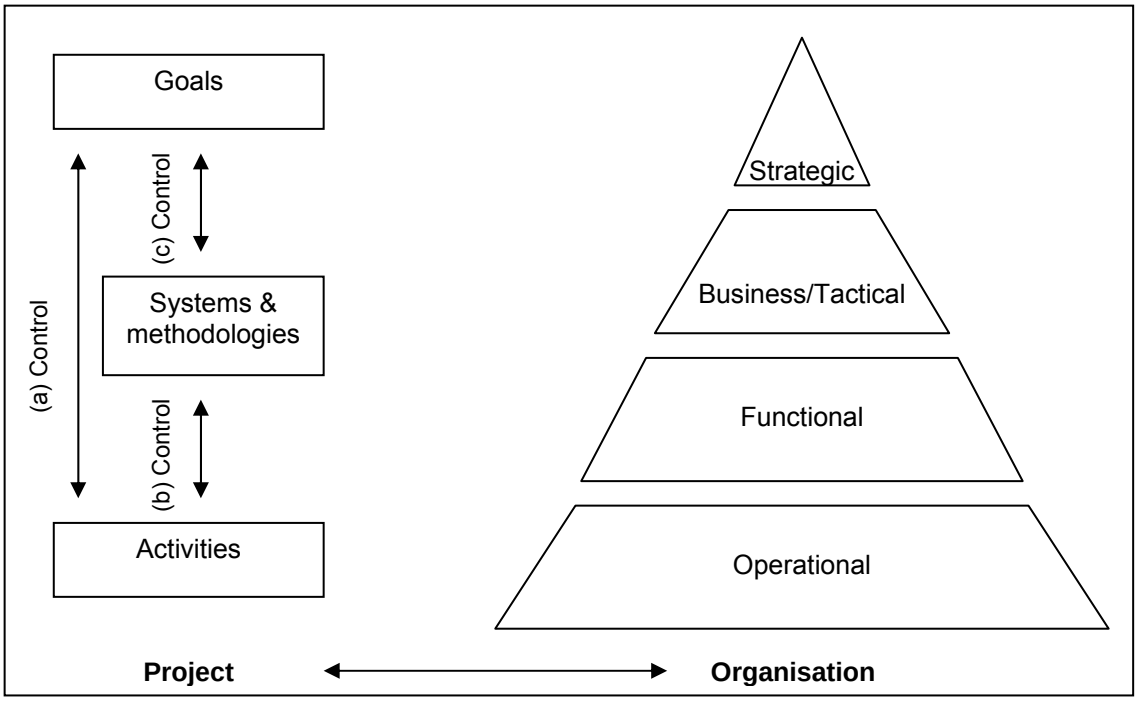
A major shortcoming evident from the research summarised in Table 1.3 is the focus on project control at project manager and lower levels. Control is largely internally focused towards the already defined and approved project. The control mostly addresses day-to-day activities of approved projects through the utilisation of project control tools such as scheduling software, cash flow monitoring, deviation tracking, prevention of scope creep and risk management tools. The challenges surrounding project control are well captured in the fairly extensive research done by Rozenes, Vitmer and Spraggett (2006). They described project control as systems aiming to minimise the gap between project planning and project execution. Their research concluded with the important observation that the various project control systems are largely one-dimensional in their application, with even the most widely used project control system, namely earned value (EV), only addressing cost and scheduling. Much research is required to integrate all the facets of project management into a common control system.

Flyvbjerg *et al.* (2003) take the problematic state of project control further and argue that the lack of control may even start during project decision-making and feasibility studies. In effect, if the decision-making process and those stakeholders who actively steer the initial phases of the project are not controlled, the project might be set up for failure due to cost underestimation and / or benefit overestimation. No 'traditional' project control system is then capable of solving project performance problems. As with the emergence and formalisation of corporate governance in the corporate environment, the initiation of a new project calls for an element of 'independence' to facilitate good decision-making. This might assist in a balanced approach to

addressing relevant stakeholder identification and interest protection, rather than a defence of individual constituencies (Gillibrand, 2004).

1.5 Controlling projects in organisations

The control of projects goes well beyond the use of software tools and evaluation techniques. Although projects are supposed to support organisational goals at a strategic level, they are most often initiated at the business / tactical level, managed at the functional level and duly executed by the operational and functional level (Thompson and Strickland, 1996:38). See Figure 1.2 (Project control within organisational hierarchy).



Source: Thompson and Strickland (1996:38)

Figure 1.2: Project control within organisational hierarchy

The above figure attempts to illustrate the link between a project, the control thereof, and the organisational hierarchy. Projects are there to serve and mobilise the organisation in its quest for competitive advantage. As project goals are aligned with corporate strategies and the systems and methodologies are practised at the tactical / functional level, the management of each project should eventually be subjected to some form of integration and hierarchical control. Control, indicated by (a) in Figure 1.2, demonstrates the measurement required to align operational and functional activities with

strategic goals. The second control tier addresses the next, lower level of control between work methods (indicated by (b) in Figure 1.2). Together with the third level of control, illustrated by (c) in Figure 1.2, the work methods, processes, systems and methodologies aim to eventually address the defined strategic goals. Although it functions within the normal operation of an organisation, projects are by nature temporary and dictated with a defined beginning (PMBoK, 2000:22) and therefore require a more focused approach to overall control.

On large infrastructure and industrial projects, problems with control are further aggravated when multiple owners and sponsors are involved. Especially when multiple countries participate, the interpretation of control might vary between countries.

But what should a typical project control system comprise? In answering this question, the hierarchy illustrated in Figure 1.2 could be used as a point of departure. For example, what project controls are required at each of the levels: strategic, business, functional and operational? These questions should be viewed in terms of:

- Influence of the external environment
- Type of industry
- Type of project
- Project management maturity of the organisation
- Management support
- Type of funding
- Stakeholder profile, and lastly, but most importantly,
- To what extent are corporate governance policies and practices applied on single projects, especially when project ownership is shared?

The above items tend to define more specific project issues: the environment, in which the project functions, conditions, circumstances, criteria for selection and control mechanisms. These issues raise two questions, namely: whether the concept of project management is generally applicable or industry specific;

and secondly, is defining project success parameters not part of the control process?

1.5.1 Existing models for project management and control

The lack of project control, and its subsequent impact on project success, is hardly a new discovery. Various attempts have been made in the past, and surely continue on a daily basis, to develop and implement methodologies and models to assist with the ever elusive control of projects. Methodologies available, and their origination, include:

- PRINCE 2 – originated from the Information Technology industry (Office of Government Commerce, UK: 2003)
- V-Model – developed in the Space and Defence industries (Forsberg and Mooz, 2000)
- P^2M^2 – generic (Kliem, Ludin and Roberts: 1997)
- 5-Phase PM – generic (Weiss and Wysocki, 1992)
- and various others.

A specific model, which pertinently addresses project control in larger, industrial type projects, is the Integrated Planning and Quality Management System (IPQMS), formalised by Goodman and Ignacio (1982). Although this model has been applied to infrastructure project cases in the USA, there appear to be some shortcomings in its structure, especially with reference to stakeholder management.

Project management is not the only operational discipline / phenomenon that has been criticised for lack of control. General corporate management is continuously scrutinised for malpractice and control at all levels of the organisation. However, research and the formalisation of control in the corporate environment tends to be more advanced and provides a platform from which project management can gain knowledge.

Again, the above models contain shortcomings in their exclusiveness of the immediate environment in which the project functions and focus more on the day-to-day controlling activities of projects.

1.6 Project management – generic or industry specific?

The debate regarding the general applicability of project management is continuing. One of the key objectives with the establishment of the PMI in 1969 was the promotion of project management as a management science with general applicability (Burke, 1999:14-20). Although sound in theory, and supported by various tools and techniques (developed mainly in the military environment), reality provided the only true test for sustainability. Practitioners soon realised the importance of a common vocabulary (Forsberg and Mooz, 2000:28) and industry-specific requirements that should always prevail. This led to the establishment of Specific Interest Groups (SIGs). Currently more than 26 active SIGs are registered with the PMI, ranging from oil & gas to military, service projects and outsourcing, information technology, automotive and education. One might argue that all the SIGs find their basis in the foundation laid by the PMI, which is valid, but is it enough to justify a generic mechanism for project control and success?

Apart from the sympathy towards specific industry characteristics, other macro factors may also be worth considering such as politics, economic development status and private versus public sector involvement. With the number of variables increasing in the project environment, it becomes more understandable why confusion and different views exist in terms of a definition of project success parameters and causes of project failure (Crawford and Pollack, 2007).

1.7 Project control – learning from corporate developments

The science of general and business management has been progressively formulated since the late 1800s (Shani and Lau, 1996:8-15). In terms of control, much emphasis has recently been placed on corporate governance.

Well-known incidents of late include the Enron debacle, Worldcom, Parmalat and, in South Africa, PSCGG, Regent Bank and CS Holdings. In the words of the King Committee (King, 2002:20):

"… successful governance in the world in the 21st century requires companies to adopt an inclusive and not an exclusive approach. The company must be open to institutional activism and there must be greater emphasis on the sustainable or non-financial aspects of its performance. Boards must apply the test of fairness, accountability, responsibility and transparency to all acts or omissions and be accountable to the company, but also responsive and responsible towards the company's identified stakeholders. The correct balance in an entrepreneurial market economy must be found, but this will be specific to each company."

Although the above paragraph addresses the corporate environment, it explains the context within which projects, as mobilisers of strategic objectives, should function. Directing corporate progress in the above context necessitates the definition and contextualisation of project control from a strategic level, progressing into the concept of *project governance*. The above quotation also strongly suggests an external approach to control, as opposed to a predominantly internal approach associated with project management.

The word 'govern' is defined by the Cambridge Dictionary (1995) as "to have a controlling influence on, to have a direct effect on or to fix or decide". The term supports the organisational control approach promulgated to address the performance of large, strategic projects and project management as an organisational function.

The concept of governance also provides the opportunity to review control in a project environment. As argued in previous sections (Sections 1.3 and 1.6), project control refers mostly to the day-to-day activities of project management without real consideration of those individuals, forces, motives and other influences, not necessarily internal to the organisation, that steer the project. These aspects characterise the environment within which project managers control projects. The concept is illustrated graphically in Figure 1.3.

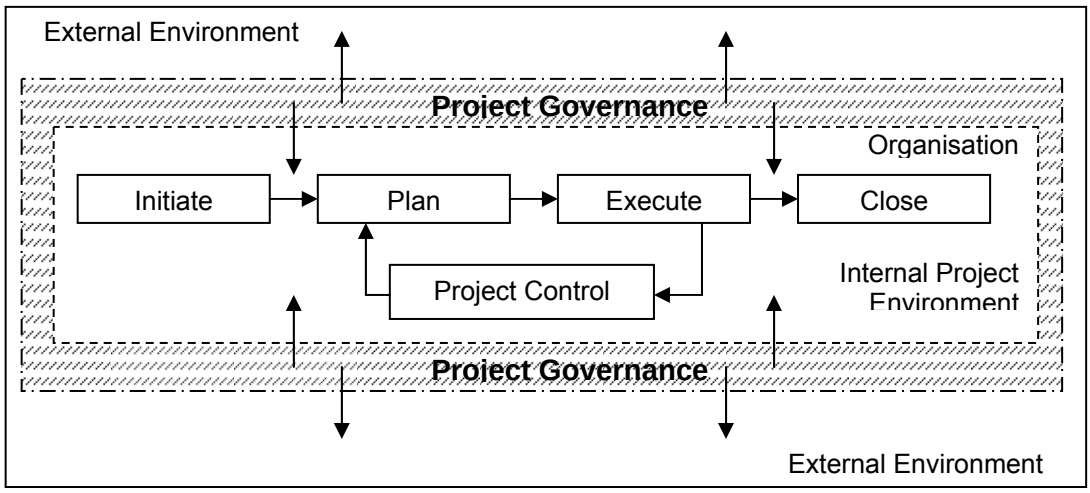


Figure 1.3: Project governance versus project control

Figure 1.3 defines a typical project within an organisation by means of the project process (PMBoK, 2000:31). For the purpose of illustration, the project process is presented in a phased manner, namely Initiate, Plan, Execute and Close. In order to ensure the planned activities are done according to the initially agreed time, cost and quality criteria, Project Control is introduced to serve as a mechanism to validate and verify completed activities against planned intentions. Thus, project control lies within the internal project environment and is one of the key responsibilities of the project manager. The second level, within which the project functions, is that of the organisation itself. This could be any company or organisation that hosts the project. This type of organisation should comply with good corporate control and governance and strive to apply good management practices. The external environment includes the country, shareholders, society, statutory bodies and various other stakeholders that can, or will, be influenced by the project. In the view of good global citizenship, the interaction and cognisance of needs, motives and concerns from this environment should be actively handled in a project. In an attempt to define the term 'project governance' Pinto (2006) provided the following description: *The use of systems, structures of authority and processes to allocate resources and coordinate or control activity in a project*. However, the definition is still an individual attempt and fails to provide clear allocation of responsibilities and is also not based on a clear process of defining 'project governance'. In the continuous attempt to improve the

definition of 'project governance' the fundamental difference between project control and external governance is summarised in a comparative table below (Table 1.4 Internal Project Control versus Project Governance).

The external and organisational environment can, to a large extent, determine the eventual outcome of a project and are therefore key players in determining whether the environment is conducive for practicing good project management. Thus, governance structures and practices provide the atmosphere and environment within which projects are developed and executed.

Table 1.4: Internal project control versus project governance

	Internal Project Control	Project Governance
Objective	To ensure compliance with the Project Plan	To ensure compliance with Good and Responsible Corporate Citizenship
What is measured?	Actual versus planned activities	Acceptance by and accountability to stakeholders
Mechanisms used to measure	Project management tools i.e. Critical path, cash flow, etc.	Stakeholders' response and acceptance as well as level of transparency
Who is responsible?	Project manager	Project sponsor, steering committee and top management
When are control and governance established	Throughout the project life-cycle	Before project feasibility

In large capital projects there could be numerous shareholders and stakeholders, with various companies and organisations participating in the project. Coming from different organisational backgrounds, countries, cultures and various corporate governance models, a unique 'organisation' is established that will cease to exist once the project is completed. Given this temporary nature, the establishment of a formal governance environment within which project control should function seems to be lacking in most cases, thereby aggravating the problem of lack of proactive control needed on projects.

To further elaborate and strengthen the possibility of applying corporate governance mechanisms on projects, which by nature are temporary, it might be worthwhile to first investigate the validity of viewing a project as being a *temporary organisation*. The word *temporary* is linked to the fixed *beginning* and *end* or *once-off occurrence* associated with a project life-cycle, while *organisation* exemplifies the establishment of a group of human resources with the objective to deliver on a defined project product or service.

1.8 Projects as temporary organisations

The notion of governance is well developed well for organisations (corporations). In this section, projects are viewed as temporary organisations. This implies that governance principles can also be applied to projects.

Even though some literature refers to projects and temporary organisations as synonyms, it is worthwhile to review the rationale behind the comparison before investigating the application of corporate governance in the project environment.

In their attempt to construct a theory of the temporary organisation, Lundin and Söderholm (1995), borrowed from the behavioural theory (Cyert and March, 1963) within which the notion of *action* plays a leading role, rather than decision-making. Initially, this approach might seem to be contradicting the view of Flyvbjerg *et al.* (2003) that many large project failures can be contributed to the decision-making process. However, Lundin *et al.* (2003) substantiate their approach by referring to theoretical and logical reasoning, which could support the view of Flyvbjerg *et al.* (2003) from the opposite perspective.

The theoretical reasoning relates to the general criticism of the rational assumptions underlying the decision-making process. Even though much thinking still considers actions as instrumental consequences of decisions, the input-output relation has been questioned (March, 1981; Kreiner, 1992).

Challenging the traditional approach of action follows decision results in views such as:

- Decisions can be made after actions have been taken and they may be made to legitimise actions already taken
- Solutions may be implemented even without a problem being properly defined or analysed (Jönsson and Lundin, 1976)
- There might not always be a logical connection between decisions and actions
- Influential conditions, including organisational culture, institutional norms, politics, hidden interests and commitment may also influence action in ways that cannot be analyzed from a decision-making perspective (Meyer and Scott, 1992).

The first, and especially the last, points above supports the previous quoted view by Flyvbjerg *et al.* (2003) that some projects are initiated intentionally without proper justification.

Miles (1964) and Goodman (1981:2-4) concluded through logical reasoning that action is a primary concept in the theoretical base of temporary organisations and that temporary organisations are, almost without exception, motivated by a need to perform specific actions to achieve specific goals. Thus, if temporary organisations are viewed as systems for implementation, action will be a dominant feature. This approach is aligned with the view from traditional project management literature that projects and project management emphasizes relevant action as being fundamental to the success of a project (Lundin & Söderholm, 1995).

In the further development of the theory of a temporary organisation, Ekstedt, Lundin, Söderholm and Wirdenius (1999:54) refer directly to the PMI's approach to action orientation in the definition of the concept of project management. This approach resulted in the identification of differentiating factors between a temporary organisation and a permanent organisation. These factors include:

- Time

- Task
- Team
- Transition, and
- A phased approach, whereby the life-cycle of a temporary organisation is defined in terms of a concept phase, development phase, implementation phase and, lastly, a termination phase (Lundin and Söderholm, 1995).

The above listed factors are well aligned with the characteristics of the traditional definitions of a project and provide a solid departure platform to investigate the application of corporate or permanent organisations' controlling concepts (e.g. corporate governance) to projects.

This dissertation will therefore investigate, develop and conclude on the applicability of corporate governance in the project management environment with an emphasis on large infrastructure and industrial projects. The dissertation will differentiate between project control and project governance, the former being internally focused and associated with the day-to-day management of activities on an operational and support level, and the latter incorporating external factors around strategic and tactical levels as well as outside stakeholders. Thus, governance focuses on those aspects and individuals 'steering' the overall project.

Project governance is viewed as the framework within which project control can take place.

Given the above attempt to establish the commonalities and similarities between poor project performance, project control, corporate governance and projects being viewed as temporary organisations, it can be concluded that project management, as a management discipline, has not yet reached the level of management maturity of the traditional organisational management sciences and practices. In order to improve on its performance, especially with large capital projects, the project management fraternity needs to learn from the more established and researched corporate management concepts in

order to customise good practices to the specific characteristics of the project. Eventually this research aims to contribute to the science of project management by attempting to address one corporate management concept in the form of corporate governance applied to the project environment, with the aim of eventually improving project performance.

1.9 Summary

The preceding paragraphs provide a short overview of various topics centred around the management of projects. Starting with a review of defining project success, the actual success (or lack thereof) achieved in (especially) large capital projects was discussed. The research done on the potential reason why projects fail highlighted the 'lack of project control' as a common theme. With the abundance of project control tools and systems available the question remains: "Why do projects still fail?" - especially large capital projects? Convincing arguments were reviewed postulating that the search for project cost overruns (cost underestimation) and benefit underestimation may exist upon project initiation in the macro political and business environment.

For projects of a large capital nature conducted across borders by multi-national companies no form of regulatory guidelines exist except for adherence to the local and foreign countries' laws and codes of conduct. This 'unregulated' environment, within which billions of dollars change hands quite often, leaves the project manager in a twilight zone, torn between managing and controlling the day-to-day project activities in an environment directly exposed to external influences.

Toward the end of the 20th century, the corporate world was trapped in a similar situation wherein shareholders were exposed to the 'unregulated' behaviour of executives, with devastating consequences. To counter the potential misconduct, the formalisation of corporate governance was developed, forcing executives to act more transparently and responsibly. This dissertation argues that the same, or a similar, environment should be established for LCP, especially where tax payers' and shareholders' money is

used, and that the project manager is assisted with an environment in which he / she has a reasonable chance to manage the project to success.

Learning from the corporate world, the primary aim of this research is to define a framework for project governance that will assist in the establishment of an environment within which a project has a better chance of being managed to success.

The following sections provide more detail on the definition and goals of the research.

1.10 Research problem

The research problem is:
No generally accepted project governance framework exists that provides a formal framework within which large capital projects are initiated, planned, executed, controlled and closed to ensure the optimum benefit for all stakeholders.

1.11 Research objectives

The study aims to develop a project governance framework based on corporate governance principles. The model will form the basis for steering large capital projects.

The specific objectives of this research are to:

- Develop a project governance framework for LCPs.
- Improve the potential of project success through an inclusive process of developing, negotiating and confirming the governance framework of an LCP.
- Extend the use of corporate governance policies beyond internal company control to project control.

All the objectives extrude to the improvement of project performance within a specific environment.

1.12 Research goal

The goal of the research is to:
Develop a theory-based and empirically verified project governance framework that will assist in steering large capital projects towards the overall improvement of project performance.

This goal aims to provide a better understanding of the characteristics and dynamics of a project, thereby improving controllability throughout the project life-cycle.

1.13 The research questions

The first research question to be addressed is:
What should a project governance framework for LCPs comprise?

And secondly:
To what extent have project governance principles been applied on LCPs, formally or informally, and to what extent can the outcomes be attributed to the presence or absence of governance principles.

The first question will be investigated through the Delphi technique**,** while the second research question will be addressed by means of case studies.

The problem will focus on large infrastructure and industrial projects. This sector includes:

- Mining
- Petrochemical
- Mineral processing
- Infrastructure development
- Public Services

- Transportation
- Energy, and
- Spatial Development Initiatives (SDIs)

1.14 Limitations and assumptions

This study will primarily focus on capital investments exceeding US$1 billion. However, to test the eventual framework, projects of lesser value but higher complexity are also considered. This is due to insufficient project information available on large projects in generally literature.

The study will not develop a new methodology for project management, even though control elements of current methodologies may be used.

The following is assumed:
The principles of *corporate* governance are sound, defined well enough and accepted internationally.

Given the above boundaries, the approach and strategy of the research can be defined as provided below.

1.15 Outline of the thesis

With Chapter 1 providing an overview of the research, Chapters 2 and 3 expand on the dynamics of LCP and the evolution of corporate governance respectively. The research design and methodology is discussed in Chapter 4 with the analysis of the results and proposal for a project governance framework outlined in Chapter 5. The rationale behind case study research is given in Chapter 6. The actual case study research comprises two sections. The first section is discussed in Chapter 7 and comprises the investigation into the application of project governance principles on two large projects. In Chapter 8, the outcomes of several case studies found in literature (secondary case studies) are reviewed and commented on against applicable project governance principles. The conclusions and recommendations are contained

in Chapter 9. The overall structure is depicted graphically in Figure 1.4 (Thesis structure).

Chapter 2: Literature study Phase I – The Management of Large Capital Projects

The question of good governance is a global challenge and much effort has gone into the development and implementation of various frameworks and models by different countries. To date the management and governance of large capital projects (LCPs) has very much resided under the concepts of corporate governance, good management practices in its broadest terms and adherence to legal and statutory regulations. However, the question remains what to do when multiple countries and multiple companies participate in the same project, with each respective role player adhering to its in-country governance requirements? Also, who will act as 'watchdog' for the interests of other direct and non-direct stakeholders, and what framework should be used to develop the overall terms, conditions and mutual cooperative agreements that will guide the overall governance of the LCP? In order to develop such a commonly understood and generally agreed project governance framework, the fundamental components, characteristics and functioning of LCPs and their progress over the years must first be investigated, clarified and thoroughly understood.

The following paragraphs provide some insight into the characteristics of LCPs, their complexity and challenges as well as evolutionary developments in their management. Most of the material is derived from the work done by Esty (2004), Miller & Lessard (2000), Hughes (1988), Flyvbjerg *et al.* (2003), Ekstedt, Lundin, Söderholm and Wirdenius (1999) and Morris & Hough (1987).

2.1 Defining an LCP and the need to study its characteristics

Within the broader context of capital projects, this dissertation views an LCP as any large commercial, infrastructural private or public project with a capital value of US$ 1 billion or more. Despite the fact that very little research has

been done on LCPs (Esty, 2004: 56), they are attractive because their nature, in terms of magnitude and societal impact, has a profound effect on the conscious and deliberate decision-making of managers.

Some of the most demanding and challenging managerial decisions centre around attempts to mitigate costly capital market imperfections. These imperfections, which include agency conflicts, asymmetric information and distress, impose a severe burden on the financing costs of organisations. According to Esty (2004:57) small costs relative to the total project budget become large absolute costs, thereby increasing the probability of detecting their existence and observing the relevant positive or, mostly, negative reaction to the imperfections. For example, an agency conflict that causes a negative cost of 5% on an asset value of US$ 20 million is 'only' US$ 1 million. But, for a US$ 2 billion investment, which is not uncommon in modern societal developments, the negative cost amounts to US$ 100 million that translates into immediate over expenditure.

Apart from this potential financial impact on an organisation, alternative drivers also influence managerial decision-making. The decisions can have no immediate effect on the value of the committed amount, or they can eventually manifest into incentive conflicts between managers and funders. For LCPs, where powerful political agendas and numerous influential parties inevitably enter the decision-making process, the structural decisions may not eventually result in the maximisation of value. Esty (2004:58) amplifies the awareness that LCPs not only affect key decision makers and the companies in which they work, but also the communities and nations where they are located. The Mozal project in Mozambique is an excellent example of how an LCP can change a country for the better (Easterly, 2001). The project comprised the building of an aluminium smelter to the value of US$ 1.4 billion, a sum that was approximately equal to the country's gross domestic product (GDP) at the time. The success of the project and the investment led to a follow-up investment of another US$ 1 billion for Mozal II, as well as several other infrastructure and industrial investments. In the developing world, as in the case of Mozambique, where the per capita GDP of the country is less than

US$ 100 per year, large-scale investments, developed and executed responsibly, can dramatically change the business climate and have a positive impact on the economic development of the country. To emphasise this observation, the Mozal I project was selected as a case study for this dissertation and is discussed in Chapter 7 of this document.

Unfortunately, as explained in Chapter 1, the limited quantitative evidence that exists on the performance of LCPs is not favourable. Industrial projects such as the Euro Tunnel, Euro Disney, Enron's Dabhol power plant, Iridium, ICO Communications, Global Crossing (the Atlantic Crossing and Pacific Crossing Cables), Globalstart, Murrin Murrin (an Australian nickel mine), as well as real estate projects such as the Millennium Dome and Canary Wharf have all encountered financial or social distress.

But the overall picture on project performance of LCPs does not only portray negativity. LCPs can be viewed from various points of interest. One of the most important aspects, especially in a capitalistic society, is the actual return on investment of a large commercial project. According to Esty (2004) an organisation called S&P Risk Solutions, a division of the Standard & Poor Corporation, in collaboration with four leading project finance banks, completed a comprehensive study on the performance of project loans provided up to 2004. Their analysis shows that project loans have lower default rates and higher recovery rates than corporate loans. While more research and data are needed, there seems to be sufficient evidence to suggest that large projects may be a unique sub-group of projects or major investment initiatives with different performance characteristics.

Finally, there are important educational reasons for studying large projects. To optimise investing, financing and operating decisions, senior executives must possess functional expertise across a broad range of disciplines. As stipulated by Esty (2004:59), managers of LCPs should understand a broad range of issues including, financing, competitive strategy, marketing and sales, negotiation, human resource management as well as business governance and ethics. This mention of the competencies required by managers of LCPs

is significant and should be addressed when the composition of a project steering committee is decided on (similar to the composition of a board of directors in the corporate environment). The study and analysis of LCPs therefore has the potential not only to generate new academic insight, but also to improve current practice.

2.2 The importance of LCPs

The importance of LCPs cannot be overemphasized. Projects such as airports, urban-transport systems, oil fields and power systems engulf some of the most prominent sectors in the business world. These projects can be massive in size and complexity and can have long term direct and indirect effects, while the investment profile could be cyclical over extended periods. Their effects are felt over many years, especially as auxiliary and complementary additions are made or where the impact on a country could be significant. As an indication of demand for capital investment in infrastructure, the Conway Data Report (Miller & Lessard, 2000:1-2) revealed that by 1999 more than 1,500 LCPs, each worth more than US$ 1 billion were in different stages of development and construction. These projects covered industries such as oil, power, transportation and manufacturing. Projects like these transform big, seemingly elaborate ideas, into reality. Such projects comprise initiatives to produce 8,000 megawatts of hydroelectricity from a dam in the Brazilian Amazon, an oil platform in the stormy North Sea, as well as networks of roads and tunnels connecting, not only countries, but also continents. It is quite evident that the number, complexity and overall scope of this type of mega project have been growing rapidly over the last few decades.

LCPs are important, not only because they transform the physical landscape and change the quality of human life, but also because they are most often the stimulant for new forms of collaboration, venturing and contractual agreements being developed. It is these types of relationships that have evolved over the years in order to find a win-win situation and / or allocate and manage the inherent technical and commercial risks. Eventually, one party needs to be held accountable for overall project performance and obviously

the participating parties would attempt to protect themselves in the process as well as maximise their benefit.

The ability of a country or nation to develop and implement LCPs, as well as the concomitant investment in research facilities, education and communications, contributes greatly to the progress of a country's economic development and the quality of life of its citizens. Figures gathered by Mintz and Preston (1994) show that in developed countries, investments in infrastructure represent, on average, one-tenth of total capital investments. Net public investment in infrastructure as a proportion of GDP ranges from two percent in the United States to four percent in France and six percent in Japan. Needless to say, for developing countries, this type of investment is even more important. In the Middle East and North Africa, US$ 350 billion will be invested in infrastructure development by 2010. The largest developments will most likely happen in China as economic growth accelerates to 10% per annum. The need for power in Asia is such that capacity has to grow by at least 10 percent per year simply to prevent blackouts and the construction of the Three Gorges Dam and its enormous hydroelectricity capacity is leading the way.

The increase in available capital after World War II grew exponentially and by the 1990s figures of US$ 500 billion in annual investment worldwide became the norm. In an ever growing capitalist society, this type of capital flow will draw attention for various reasons, but mainly because of the search for new business that could benefit the entrepreneur. Although economists still debate the links between infrastructure investment and productivity, private investments in infrastructure are growing because many projects are expected to bring good returns. Given the complexity of LCPs and the sometimes limited capacity of the state to manage these types of projects, various countries have embarked on economic and institutional reforms to allow private investors to become project sponsors.

The increasing demand for infrastructure and related investment directs posing the question of effective and efficient ways of delivering LCPs. In

general, public investments and international agencies can now only finance a small fraction of needed investments, creating major opportunities for private investors. According to figures presented by N. Roger at the joint OECD and World Bank workshop entitled "Meeting Infrastructure Needs in the 21st Century", held in Paris in 1998, private share in infrastructure investments ranges from 9 percent and 13 percent in Germany and France to 47 percent and 71 percent in the United States and the United Kingdom (Roger, 1998 in Miller & Lessard, 2000:3).

The growing demand for large LCPs is also partly the result of population growth and partly economic take-off in the more successful developing countries. According to the Major Project Association (MPA, 1994) nearly half the world's population will live in mega-cities by the end of the 20th century while most of the mega-cities will be in the Third World. Although mega-cities do not necessarily mean mega-projects, as people flock to the cities and end up in slums and squatter camps, development will not keep pace. Housing may need funding through aid while the provision of utilities may result in LCPs, which will attract some foreign investment. Apart from the construction industry, three other sectors will require massive investment in LCPs (MPA, 1994). The three sectors are surface transport, aerospace and energy.

Due to their magnitude and substantial footprint, LCPs often meet opposition from international pressure groups such as Greenpeace, International Rivers and the World Wildlife Fund. More often than not LCPs will have an impact on the environment and / or socio-economic activities of the region. Since the 1990s the formal evaluation of a project's overall impact has had to be thoroughly studied, communicated and assessed before commencement of any implementation activities. Selecting only technologically simple and environmentally friendly projects seems to be the obvious choice. However, retreating from complicated projects to look for simple winners has obvious limitations in the sense that the supply of simple projects is finite, and many projects such as bridges, oil platforms, dams, tunnels and subways do not fall into the category of small and uncomplicated investments.

As risks and uncertainties increase, project ventures and contracting arrangements have progressed more toward elaborate contract strategies and agreements. Public-private partnerships (PPPs), coalitions, joint ventures and formal partnerships have emerged in various formats to solve societal and business complexities more efficiently. All of these new models of participation and partnership face the challenge of proper governance across a spectrum of cultures, business practices, ethical beliefs and behaviours in a move towards the establishment of a commonly understood and agreed system and process of better management of risks, whereby each participant assumes the part of the project risk that it is particularly well qualified to handle.

2.3 The complexity of LCPs

With the ever increasing involvement of private firms at the strategic level of public sponsored projects as well as LCPs becoming more often cross-country and across organisational boundaries in nature, the relevance of traditional planning and project management becomes increasingly questionable (Miller & Lessard, 2000:3). Given the relative poor performance of LCPs, it is clear that the gap between the realities of projects and the guidelines for managing them are widening. Since the inclusion of 'external' factors such as environmental impact and socio-economic considerations, the conventional approach to rational planning, beginning with a clearly defined technical scope, seems to be becoming largely inadequate for managing LCPs. In the following paragraphs some of the studies related to the uncertainty and complexity around the management environment within which project management needs to operate are reviewed and discussed.

2.3.1 Complexity in contracting relationships

It is becoming clear that managers are asking whether established beliefs and standard prescriptions still hold true. There appears to be a considerable gap between accepted views of how to manage large projects and the practices

being observed and studied. It could be that the approach to LCPs is being modified to deal with an increasing array of stakeholders, yet uneasiness remains pervasive. This phenomenon is illustrated in Millar *et al.* (2000:4), quoting an executive from an engineering contracting firm during their research into LCPs:

"Many decades of established contracting practices are coming to an end. Instead of responding to bids from creditworthy sponsors, we have initiated projects, become investors and learnt to become concessionaires.

Things used to be clear. As engineering consultants, we met ABB as equipment suppliers; we specified on behalf of our clients and ABB supplied competitively. Now we meet them sometimes as partners, sometimes as investors and sometimes as contractors. We each have to wear many hats and play different roles in many projects to get business.

Politics used to be at the fringe of project management; now, it seems as if the fringe has become the core. Politics is at the centre of discussions and engineering has moved to the periphery. We seem, as an engineering firm, to have lost control over the factors that influence our future.

As equipment suppliers, it is challenging for us to work with innovative sponsors, as opposed to responding to detailed bidding documents. Innovative buyers value our competence and stretch our creativity. What a change from the times when we had to deal with traditional clients who preferred detailed specifications and required us to design old-fashioned solutions.

Public agencies used to get involved as independent regulators protecting the public, the environment, the fisheries and so on. Increasingly, we have to participate in the design and prior approval of sponsors' plans and agree not to interfere as long as sponsors respect their commitments. We have to navigate between the state, the public and the developer. We have to become partners while remaining regulators accountable to elected officials."

In this climate, the limitations of established bodies of knowledge are surfacing. The assumption that LCPs can be scoped, planned and managed with existing planning techniques does not seem valid anymore. Prior empirical studies of large-scale projects have generally focused on technical and economic factors, but with a changing managerial and external environment our approach to LCPs, especially during the initial phases, needs to be re-assessed.

2.3.2 Complexity in management approaches

Since the involvement of private capital and the addition of statutory requirements for LCPs, the definition of a management approach for a project has gained various dimensions. In 1994, Gregory Ingram conducted a study under the auspices of the World Bank into project management challenges and project performance of infrastructure projects (Ingram, 1994). Ingram concluded that the cause of poor performance does not necessarily lie with planning errors but is more inclined towards incentives facing sponsors and users. He also noted that new methods and institutional frameworks should be developed in collaboration with international agencies. These observations support the view of Flyvbjerg *et al.* (2003).

In one of the most influential studies conducted on the topic of LCPs, Peter Morris and George Hough (Morris & Hough, 1987) concluded that the poor performance of LCPs could not be attributed to incompetence *per se*. In fact, of more significance are areas not traditionally associated with project management activities. These include factors such as inflation, escalation, government induced changes, increased safety and health requirements and land acquisition charges, to name but a few. In a second study Morris concluded that traditional procedural approaches could not deal with externalities, institutions and strategic issues (Morris, 1994).

Johan Bryson and Philip Bromiley (1990) attempted to understand the value of strategic planning by conducting a quantitative study of publicly available

project case studies. Their findings supported Frame's (1999) view that projects fail due to inadequate estimating rather than poor implementation. They also concluded that the numerical adequacy of the planning staff strongly influences project outcome.

From the various studies it becomes clear that projects fail not because they are technically complicated, but because they face dynamic managerial, political and institutional complexity. Rising to the challenge of large projects calls for shaping them during a lengthy front-end period and creating an environment within which accurate project decision-making can be accelerated. The seeds of success or failure are planted early and, as believed in this study, create an environment conducive to the management of large projects. Relationships among stakeholders can generate innovative solutions but may also lead to trajectories that become degenerative. In general, competent sponsors refuse to engage in trajectories and management approaches that are likely to lead to failure.

Complexity and dynamic instabilities mean that the future performance of LCPs, in the current, traditional managerial environment, will remain difficult to predict. Inherent risks are not always identified upfront and most often evolve as projects are being shaped and built. According to Millar *et al.* (2000), in a study of 60 LCPs by the IMEC research group, turbulence can originate from two sources: exogenous events, occurring outside of the control of management, and endogenous events, arising within project organizations. In their study, project turbulence was measured by the frequency of unforeseen exogenous and endogenous events. Few projects were completed without meeting turbulence: in their study projects met, on average, close to five unexpected events during initiation, construction and start-up whilst some encountered up to 12 turbulent events.

According to Millar *et al.*'s definition, exogenous turbulence stems from political, macroeconomic and social events. The behaviour of sovereign authorities and nature are frequent sources of unforeseen events. It may be argued that these turbulent events should be foreseen. In reality, however,

managers do not always have full control over the behaviour of autonomous actors who sometimes act opportunistically.

Endogenous turbulence arises from a breakdown of a partnership or alliance, or from contractual disagreement. Although it may sound pessimistic, it is commonly believed in practice that parties know that opportunistic actions pay off: agreements, community interests and reputation are then pushed aside.

In summary, both the exogenous and indigenous events described in the previous paragraphs form part of the overall governance sphere within which projects should be managed according to traditional measures of within time, budget and quality parameters. LCPs represent both a major economic activity and a poorly understood area of management. Although these projects are high stake undertakings, they are important and can be managed. Their technical difficulties do not condemn them to failure: far more troublesome are the difficulties arising from governance, complexity, irreversibility and dynamic instability.

2.4 Evolutionary developments in governance in LCPs

As with the evolution and eventual formalisation of corporate governance (see Chapter 3), the management of LCPs and the quest for governability is evolving, but not yet formalised.

Challenges facing the performance of LCPs have been addressed in different ways over the past few decades. The solutions have been multidimensional configurations of mutually supporting elements such as laws, regulations, practices, and roles, which can be termed institutional arrangements.

In developing different types of institutional arrangements that manage and operate LCPs, Miller and Floricel (2000) borrowed from grounded theorising of 60 IMEC field studies to deduct three distinct institutional arrangements found in managing LCPs. Complimenting the work of Hughes (1988), these

institutional arrangements (entrepreneurial, rational system and governance) are given over a time period in Figure 2.1.

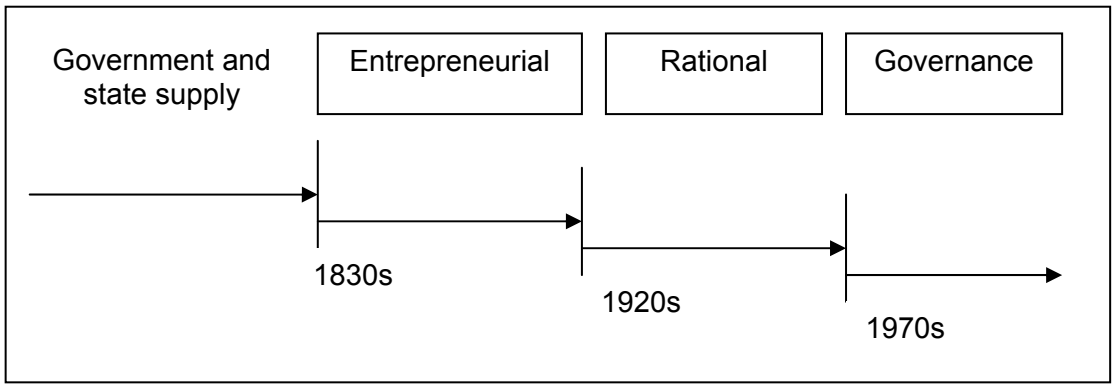


Figure 2.1: The evolution of institutional arrangements for LCPs

Each arrangement arose as innovations were made to face difficulties and problems caused by the failure of existing methods of sponsoring and building projects. A detailed explanation of the different arrangements is provided in Table 2.1.

2.4.1 Entrepreneurial arrangements

Although initially developed by the state, private railroad development was done in the UK since the early 1800's. Building on the initial success the idea crossed the Atlantic Ocean with prominent railroads such as the Boston and Worchester, Boston and Lowell and Boston and Providence being sponsored and funded by engineering firms and banks. The notion spread to other parts of Europe and, in the United Kingdom, railroads were established by private institutions in order to reduce transportation costs. The major source of financing for projects during this era was public subscriptions of corporate stock (Salisbury, 1967).

Table 2.1: Characteristics of the three main types of institutional arrangements

	Entrepreneurial	Rational systems	Governance
Institutions	Minimal regulation	Regulated monopoly (price or rate)	BOT / concession
Economic context and trends	Exclusive rights or concession framework Space for expansion Cost-reducing and performance-enhancing innovations	Environmental regulation Predictable cost reduction for output Room for system expansion	Rules to foster competition and private ownership, environmental regulation Urgent need for infrastructure and room for new projects
Technology	Emergent Local	Established dominant design Large-scale projects	Stasis of core technology Information and environmental technologies
Main actors	Entrepreneurs Individual investors Investment banks	Network operators Regulators	Developers, entrepreneurs, EPC firms, banks, network operators, regulators
Risk allocation	Risks assumed by entrepreneurs	Risks internalized by large system	Risks allocated to participants
Project practices	Internal design Public stock issues Multiple construction contracts	Internal financing, planning and design Multiple fixed-price contracts, bidding Detailed specifications	Partnerships, alliances Project financing Turnkey contracts
Ways to attain effectiveness and efficiency	Effectiveness: owner-performed design, control over construction Efficiency: competitive bidding	Effectiveness: rational centralized Efficiency: scale and network economies and competitive bidding	Effectiveness: diversity of competencies and risk allocation Efficiency: owner-contractor partnership
Organisation forms	Small, dynamic	Hierarchical	Networks
Dominant ideology	Pragmatic	Modernism (rational planning, bureaucracy)	Deregulation, privatization, ecology

Source: Miller & Floricel, 2000

The competitiveness of the entrepreneurial area became apparent with generation and especially distribution of power in the 1880s. Due to limited

initial regulation several rival companies laid distribution lines on the same street. The duplication and development of alternating current technology prompted authorities to pay closer attention to regulation and prevention of wastage (Hughes, 1988).

Nevertheless, entrepreneurs continue to find innovative ways to conduct their business and develop both extensive partnerships and detailed contracts. A good example of such arrangements is Shawinigan Water and Power, which comprised a group of industrial firms that established Shawinigan Engineering to use the power it produced to serve all of them (Millar & Floricel, 2000). Similarly Montreal Trust assembled Trans-Alberta Power, Montreal Engineering and Co., and several suppliers to build power plants (Innis, 1970).

Despite their initial success and ability to respond quickly to infrastructure needs, entrepreneurial arrangements had their limitations. The eventual demise of this arrangement was caused by various internal and external factors such as:

- repeated market failures
- uncontrolled competitive forces
- duplication of investments in the same area, marginalising potential returns
- monopolistic abuses
- corruption in the handling of subsidies, and
- probably most importantly since entrepreneurs are profit and optimisation driven, the entrepreneurial projects often did not cover all infrastructural needs and only focused on the profitable items. This approach left some of the rural, non-profitable developments behind. Maintenance of the facilities was also neglected.

The shortcomings and emergent flaws of the entrepreneurial arrangements gave rise to a more controlled approach by governments and regulatory framework started emerging in the form of rational systems.

2.4.2 Rational systems

With the entrepreneurial era serving its purpose, and subsequently establishing some of the most prominent infrastructure, rational systems emerged with the development of regulated monopolies. Due to its interconnectivity, mutual dependencies and careful control required to avoid duplication and waiting time, railroad projects speared the formation of rational systems. Combined with technological development that prompted significant scale and network economies, rational management regulated and facilitated the construction of large railroad, power, transport and telecommunications systems (Millar & Floricel, 2000).

Although it might seem as if control over LCPs migrated back to the state, the parallel development and isolation in operation of systems with a common backbone had to be rationalised at some stage to improve the economies of scale. A prominent area where rationalisation became quite evident was the provision and distribution of electricity. In 1935 the Public Utility Holding Company Act (PUHCA) introduced regulation of holding companies by the Securities and Exchange Commission. This development provided regulation of the sector by the Federal Power Commission.

Rationalisation of utilities spread fast across Europe and resulted in more or less regulated regional monopolies controlled by government owned firms. By 1926 the British ‘national unity’ government passed legislation that imposed coordination of all private electricity suppliers by the Central Electricity Board's national grid. This approach of consolidation progressed and by 1947 the Labour Government decided to nationalise the entire power sector. The same approach was taken by the French government and by 1946 all private firms that had been instrumental in the consolidation of distribution companies were nationalised to form the state controlled Electricité de France (Millar & Florecil, 2000).

The rational systems approach became predominantly state controlled, whereby government initiated projects and assumed the risk. Some public

departments did not only take responsibility for designing the infrastructure facilities but also handed over to an internal construction department who built and implemented the systems. Funding of these projects came from issuing stocks or bonds.

Due to the public position of the infrastructure and utility providers, most governments tried to keep their operations transparent in the form of open bidding procedures and contractor appointments. However, the access to project performance information by the media resulted in the publishing of the numerous cost overruns, especially on nuclear plants (Millar & Florecil, 2000). Further questions were raised by public protection groups regarding the consideration of conservation measures, price increases and environmental considerations. The belief that public enterprises were over protected and not up to date with modern technologies and techniques started to prevail. By the 1970s the effectiveness of the rational system arrangement was seriously questioned.

Entrepreneurial and rational arrangements provided institutional designs of the opposite extremes. Where the entrepreneurial approach strongly supported private enterprise, input and even control of public services, rational systems achieved the opposite. It would probably be unfair to describe the two systems as failures since both indeed had a role to play in their organisational format during their time. The entrepreneurial era brought about fast development in the field of infrastructure and utility development, while the rational arrangement consolidated the current assets and worked towards optimisation and economies of scale. However, societal development remains dynamic and, with the addition of immense technological developments during the 20th century, the inherent inefficiencies of institutional arrangements became evident. As with many other systems and institutional arrangements that become obsolete over time, new arrangements had to be developed.

Although above the paragraphs address mostly infrastructure and utility LCPs, large projects in the private industry also became more exposed to external factors such as socio-economic and environmental considerations. Thus,

even though many private companies carried the full risk of their investments, they had to comply with various and increasing numbers of statutory requirements for project approval.

2.4 3 Governance arrangements

Complete governmental control of LCPs, especially infrastructure and utility projects, came under serious threat when governments could not fund or borrow capital for the LCPs. By the late 1970s governments, especially in the UK, had to start looking at alternatives to secure proper funding and harvest the optimum methods for project management. These constraints, together with a general public desire to involve smaller companies in larger projects, prompted the quest for different institutional arrangements. The reversal of the rational trend was further accelerated during the Thatcher era of privatisation (Micklethwait & Wooldridge, 2003). Previously contractual arrangements and risk allocation were separated by governmental and non-governmental expenditure. This was done via contractual strategies such as lump-sum or lump-sum turnkey contracts. Monitoring of work was often replaced with contractual incentives, such as bonuses for early delivery and high performance. In some cases turnkey contractors became equity investors in the project, which gave them additional incentive to ensure sustainability of the project long after implementation. Under these governance arrangements, the concerns of project sponsors, financiers and developers shifted from mere delivery to contractual terms and conditions. With the initiation of the privatisation concept, the development and implementation of LCPs followed the merging and collaborative atmosphere associated with privatisation, creating new questions regarding the validity of project viability (Millar & Florecil, 2000).

A new era of partnerships, joint ventures, collaboration and mergers dawned. New institutions and contractual arrangements emerged such as the Private Finance Initiative (PFI) in the United Kingdom, the Build-Own-Operate-Transfer (BOOT) laws in the Philippines, Pakistan and Turkey, and the concession framework in France (Millar & Floricel, 2000). The BOOT funding

scheme involves a single organisation, or consortium designing, building, funding, owning and operating the scheme for a defined period and then transferring ownership to an agreed party (MAF, 2007). With this type of arrangement, multilateral agencies such as the International Monetary Fund (IMF), the World Bank, and the International Finance Corporation (IFC) started to play a major role in project development and implementation.

In the private sector, investment banks, venture capitalists, owners and then contractors and consultants started the process of vertically integrating into the development and implementation of projects. Companies in the United States soon realised that new opportunities existed upstream with their immediate clients and firms such as Bechtel Power Corporation, General Electric and Pacific Gas and Electric formed project development entities. In South Africa, Fluor established a group to study natural gas field capacities in Mozambique and even smaller mining houses such as TWP formed project financing divisions to help raise capital for prospective private projects. It was such practices that prompted widespread concern about the involvement of engineering houses in the feasibility stages of the project, especially when the engineering house becomes one of the potential implementation bodies. The incentive to 'make' the project viable is huge, especially if the engineering house does not participate in the operational performance of the project or the handover. In the South African mining industry this phenomenon has became a source of great concern, especially under conditions of in-house resource scarcity (Raju, 2007). Adding to the requirements for local involvement, criteria for approval (i.e. mining rights, socio-economic contribution, etc.) and the influence of key roles players, the interaction of stakeholders becomes complex.

A very good example of how of multiple influences and interrelationships interact with one another within an LCP is graphically explained below in Figure 2.2 (Relationships with potential to build).

Eventually LCPs are moulded into alliances that link sponsors / owners / developers / clients with EPC contractors, bankers and institutional investors,

and operating firms.

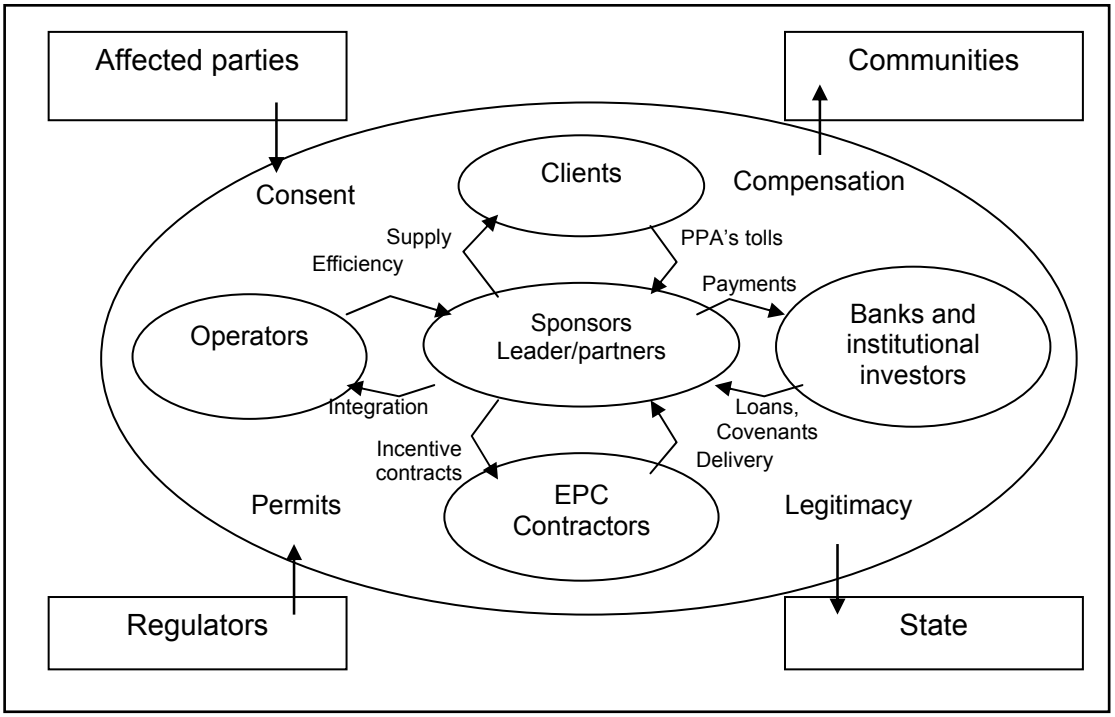


Figure 2.2: Relationships with potential to build **Source: Millar & Floricel, 2000**

Given this picture of multiple stakeholder interaction, the somewhat cynical reference of Flyvbjerg to the Machiavellian formula is apposite: "Princes who have achieved great things have been those … who have known how to trick men with their cunning, and who, in the end, have overcome those abiding by honest principles" (Flyvbjerg, 2005).

2.4.3 The evolution and current state of LCP management – a summary

Since the 1700s, many approaches to initiating, developing and building LCPs emerged. However, as a function of civil society, each approach has generated failure of some kind. Table 2.2 below provides a summarised overview of the key inefficiencies and failures of the three main institutional arrangements as described by Millar & Floricel (2000).

The entrepreneurial approach built projects to solve real regional or local needs but tended to generate market failure and neglect real macro value and

/ or economies of scale. At the beginning of the twentieth century, as technology made scale possible, the rational approach to project sponsorship emerged. The swing in the pendulum saw the state taking ownership of LCPs but soon finding themselves over-regulated and caught up in a bureaucratic jungle. The drop in overall productivity, increased rigidity and scarcity of capital eventually led to the obsolescence of this arrangement.

Table 2.2: Institutional Arrangements – Failures

Entrepreneurial	Rational systems	Governance
Duplicated investment and destructive competition	Network operators are symbols of national pride, tools of vested interests	Vulnerability to government opportunism
Small projects fail to capture economies of scale	Bureaucratization: specialization and formalism led to slow decisions and high overhead costs	Complexity of front-end negotiation processes, which increased transaction costs
Fragmented systems and markets not capturing network economies	Arrogance, inability to deal with ecological groups and local opposition	Rigidity of contractual structures
Tendency to form monopolies to increase prices	***Tendency to build expensive and unneeded projects***	Incapacity of contractual structures alone to protect from failure and opportunism
Under-investment in under-populated areas	Over-reliance on internal planning and definition of projects precludes joint problem-solving and cost reduction with contractors and equipment suppliers	Predilection for simple and conservative solutions that reduces technical risks but produces technically sub-optimal projects
Rate discrimination between places where there is competition and places where firms enjoy monopoly, as well as between large and small clients	Incapacity to focus on small or marginal projects	Under-investment in projects due to increased selection hurdles
Financial speculation	The 'capture' of regulators who are unable to impose efficient investment	High cost of capital for private projects using project financing
Issues of probity, corruption, accountability and conflict of interest		

Source: Millar & Floricel, 2000

By the turn of the twentieth century, governance arrangements came into being in the form of special contractual arrangements. However, many criticisms are directed at this approach for failing to take real public needs into consideration and for heightening, rather than reducing, risks. With the private and public sectors collaborating more closely than ever before, opportunities

for corrupt practices arose. Even though it is believed that current governance arrangements combine private sponsorship with institutional frameworks that take competition, social consent and public-private partnerships into consideration, no statutory framework exists that could guide, test and evaluate decision-maker conduct.

Currently no optimal solution exists. Each type of institutional arrangement induces some form of failure that has to be corrected. Governance arrangements aim to remedy the failures of rational systems, but they currently generate failure due to opportunistic behaviour, state withdrawal and, possibly, under- investment.

Millar & Floricel's view is apposite (2000): "The search for a balance of responsibilities and risks among governments and private participants will thus need to continue through realignment of governance arrangements."

The main challenges then for institutional arrangements are:

- To balance entrepreneurial drive (and greed) with what is good for the macro economic, social and environmental environment
- To establish the optimum balance between regulatory controls and commercial initiatives
- To be pro-active, rather than reactive, in creating an environment wherein LCPs can be developed and implemented.

Eventually all stakeholders, including regulators, funding agencies, interest groups and the public will have to seek a hybrid framework that will govern the development and implementation of LCPs.

2.5 Governance principles in LCPs – the point of departure

The evolutionary process from entrepreneurial to rational-system to governance arrangements was driven by inefficiencies that became 'unbearable' for society, unaffordable for the state and questionable ethics in business

conduct. From an economic perspective, the evolution can be seen as contingent adaptations to changing statutory circumstances. Various models of industrial organisations have been researched in the past, with the majority seeking the all-elusive perfect balance between industry structure, regulation and entrepreneurial / shareholder incentives (Laffont & Tirole, 1993).

With governance being the latest form of institutional arrangement, it could well be that not all of its components, mechanisms and processes have been identified and developed. Based on debate, research and testing, it is believed that the conditions required to produce and reinforce competitive structures are sets of rules and regulations that produce effective constraints, reduce uncertainty and solve collective-action problems (North, 1990). To achieve this, a well-defined, stable project governance framework is required, as opposed to contractual arrangements from which mutual relationships are derived.

According to Millar *et al.* (2000) the development and implementation of coherent and well-developed institutional arrangements is one of the most important determinants of project performance. Scott (1994, 1) refers to institutional arrangements as the *visible structures and routines that make up organisations are direct reflections and effects of rules and structures built into (or institutionalised within) wider environment*. This observation fully supports, and underlines, the motivation of this study. In entrenches the quest for sponsors and their project managers to be beware of the dangers of institutional arrangements within their organisations. If fixed and not structured around the project but rather the organisation, the project team can easily succumb to operating in a vacuum and fail to find a structure of practices, guidelines, roles and obligations that help to anchor the unique requirements of the project. Although it is accepted that institutional arrangements will eventually manifest in sets of laws, regulations and agreed practices, these have to form symbiotic relationships that lead to the provision of effective ways to develop projects. Scott (1994) defines this phenomenon as regulative, normative and cognitive structures that form social frameworks within which projects operate. These frameworks not only provide a sanctuary for

business conduct but also help to make risk management and the infusion of governability possible by providing the structure for contracts, binding agreements and legal action. The development of such a macro supportive environment for projects in effect 'anchors' the project, ensuring a solid point of reference and stable framework for control (Millar *et al.,* 2000).

Responding to the LCP dilemma, and to poor project performance in general, Ekstedt *et al.* (1999) investigated the institutional dilemma of a more project-orientated versus an operational society. Their research supported the 'anchoring' conditions described in the previous section with specific reference to the combination of stability and reliability with the concurrent demands of flexibility and focus in functional orientated, stable organisations. Their research concentrated on a project-orientated environment, where teams form temporary organisations with the specific intention to bring about change and renewal. Once the project objective is met, the temporary organisation dissolves. This approach prompts researchers to look beyond the immediate LCP environment to the business environment in general. The link to corporate governance emanates from this thinking and, with the acceptance that the development of general management philosophies are well ahead of project management philosophies, perhaps a few lessons could be learned from the corporate governance field.

2.6 Towards a project governance framework – current thinking

Since the start of the third millennium, articles and literature on the governance of LCPs has steadily increased. Although it is difficult to give recognition to an individual or institution that may have prompted the process, some of the leading institutions and academics have added their voices to the definition of project governance.

Thus far, only two industries have made an attempt to define and contextualise the concepts of project governance, namely the LCP environment, specifically PPPs, and the information technology (IT) industry. There is a substantial difference in the approaches taken by the two industries

towards defining project governance. Although it is not the purpose of this study to compare the two approaches, it is necessary to mention that the IT industry focuses more on protection and access control to information (Turbin, 2003; Liu & Yetton, 1995; OGC, 2005), while the LCP related industries concentrate on creating a macro environment within which projects can function. For both industries, no mutually agreed upon project governance framework exist.

The focus of this study is LCPs and one of the most practical attempts to address compliance to specific management actions and responsibilities thus far can be found in the document compiled by the United Nations Economic Commission for Europe (UNECE) (United Nations, 2005). Focusing specifically on PPPs, the document highlights the importance and complexity of managing large infrastructure projects and proposes a benchmarking module to measure the extent to which organisations achieve governance in PPP projects. Key areas for benchmarking are transparency, public accountability and sustainable development. Although assessed in fair detail, the narrow definition of governance towards mostly public interaction could limit its application to private enterprise and LCP in the broader context of macro and global applications.

In a study done on PPPs of tollway projects in Indonesia, Abednego & Ogunlana (2006:622-634) identified risk allocation as a major source of dispute among the involved parties. They also observed the dual role of the project manager where, on the one hand, day-to-day project management activities require much attention and, on the other hand, nurturing the partnership and interaction with the public can potentially consume valuable time.

The allocation of risk in PPPs is further elaborated on by Shen, Platten and Deng (2006). Tending towards the rational system, the construction of the Hong Kong Disneyland is used as an example of risks that should be identified and classified. This classification of risk could assist in allocating risk responsibilities and is given below in Table 2.3.

Fisher, Jungbecker and Alfen (2006) investigated the formation of special Task Forces on PPPs in Germany. Their research found that task forces improved potential project delivery and focused on: providing a project support function, managing inherent project knowledge, establishing the project policies, and developing the overall framework within which the project should function.

Table 2.3: Risk Categories

Risk Category	Example
Project-related risks	Cost and time overruns, poor contract management, contractual disputes, delays in tendering and selection procedures, poor communication between project parties
Government-related risks	Inadequate approved budgets, delays in obtaining permissions, changes in Government regulations and laws, lack of overall project controls, administrative interference
Client-related risks	Poor project brief, variations in project specifications, delays in the settlement of contractor's claims, lack of project control
Design-related risks	Poor soil investigations, delays in design, ambiguities and inconsistencies in design and design changes
Contractor-related risks	Inadequate estimates, financial difficulties, lack of experience, poor management, difficulty in controlling subcontractors
Consultant-related risks	Lack of experience, performance delays, poor communication with other parties
Market-related risks	Increase in wages, shortages of technical personnel, material shortages, equipment shortages

Source: Shen, Platten and Deng (2006)

Jaafari (2001) elaborated on the complexity of risk assessment and strategic alignment on projects and calls for a more strategy-based approach to project management. With this approach risk assessment is not confined to an individual assessment but includes a broader spectrum that covers promotion, market, political, technical, financing, environmental, cost, schedule, operating, organisational, integration and *force majeure* risks.

In Denmark, where the functioning of PPPs was abolished in 2002, due to various controversies, the emergence of this type of project institutional arrangement is again emerging. Under the directorship of government, new forms of arrangements have been established under the umbrella of meta-governance (Koch & Buser, 2006). This framework, still in its initial stages, addresses four key areas, namely: comparator, guidelines, feasibility study criteria and (very significantly) a central competence unit. The competence and skill level of project initiators and developers, as well as the ability of project decision makers have become critical issues globally - a problem experienced by both the developed and the developing world.

The observation of competence, specifically the lack thereof, and the impact on project decision-making regarding PPPs, is further elaborated on by Devapriya (2006). In this research it was found that tying performance of management to the financial structure of regulated PPP organisations is undermined, especially in developing and emerging economies.

Realising the importance of visualising the project outcome Yeo (1995) proposed a systems approach to defining LCPs, with specific reference to the development of the Singapore airport. Due to the complexity of LCPs Yeo (1995) introduced three systems perspectives namely a large-scale living systems perspective, hard systematic perspective and soft systemic perspective. Through integration of the three systems perspective Yeo (1995) believes mental frames of reference are formed that will assist in planning and executing projects.

To further strengthen the mandate of the project manager Jolivet and Navarre (1996) introduced the approach of self-organisation and meta-rules. Their approach focused on the following:

- Maximum individualisation
- Setting up autonomous teams built on principles of self-organisation
- Performance of audits for the purpose of verifying that all the common rules and meta-rules are properly applied

- Project manager autonomy
- Dynamic segmentation
- Cellular division by segmentation into operational units on a human scale
- Resource control under the authority of the project manager
- Every project has its explicit set of objectives, policies and rules
- Every project has its dedicated set of written procedures
- All projects are conducted along a specific and limited set of 12 management principles correlated with success

Even though the approach by Jolivet and Navarre (1996) aimed towards strengthening the project manager's position, it still lacked clear directives for the project sponsor to create an environment within which the project manager could function.

Through the IMEC study, institutional, corporate and available project governance literature, and various interviews centred around the British Private Finance Initiative, as well as the Norwegian project approval process, Miller and Hobbs (2005) initiated a research program to investigate governance regimes for large complex projects. The basis of their research is founded on eight themes, namely:

- Long, complex and critical front end of LCPs
- The embeddedness of LCPs into institutional frameworks
- The construction of coalitions of operating networks
- High risk and uncertainty
- The project life-cycle, especially the shaping of the development process
- The impact of the strategic definition
- The strength, ability and capability of sponsors
- The level of intense scrutiny

Given the background and comprehensiveness of the research that eventually produced the eight themes, there is no doubt that the listed themes should be part of the core of any governance framework. Accepting the complexity of the

earlier phases of an LCP, the difficulty in identifying risks (let alone allocating the risks), as well as the importance of establishing the network of relationships, an eventual framework for project governance should be instrumental in either establishing an institutional framework or supporting an existing institutional framework.

The last observation, that of establishing or supporting an institutional framework, is a key differentiating factor for the continuation of this study.

2.7 Towards a project governance framework – a different approach

Until recently, the inefficiencies of the entrepreneurial, rational and governance arrangements prompted the quest for better ways of managing LCPs. In essence, this approach has been reactive, evolutionary and internally focused. The development of these institutional frameworks was done with limited benchmarking and very established new institutional arrangements.

In 2004 the Association for Project Management (APM) published a standard titled “Directing Change: A Guide to Governance of Project Management” (APM, 2004). The standard was the first major advancement toward establishing a framework for project governance. However, it contained the following points of departure:

- The focus is on the *governance of project management*, and not on project governance - quite a difference in emphasis. Whereas the standard looks at practising the function of project management (micro), project governance looks at the environment within which project management will be practised (macro).
- Upon completion of the standard, a compliance comparison was done against the Sarbanes Oxley Act of 2002 as well as the UK Listing Authority’s Combined Code of 2003. The standard was therefore not developed with the two statutory codes as points of departure but was rather aimed at establishing an autonomous institutional framework.

After reviewing the performance of LCPs, the evolution of institutional arrangements to manage them and the development of a standard to govern project management, the question arises whether the approach to establishing a project governance framework should not be altered. To date the approach has been to establish something 'new' in the form of agreements and controls that can stand-alone. This approach could be countered with alternatives, variables and cross-questions, such as:

- Should project governance be a stand-alone framework or should it be linked to / supported by other governance frameworks, especially corporate governance?
- What are the real differences between project and corporate governance?
- Is there anything we could learn from corporate governance as an institutional arrangement?
- With limited available theory on project governance, perhaps a fundamental investigation into the principles of governance could add value. As with the study on the evolution of institutional arrangements for LCPs, this will necessitate a similar study on the evolution of corporate governance.

Given the contents of the APM standard and institutional arrangement evolution, it is clear that two schools of thought exist, namely:

- The *project control school,* whereby the proper management of the total project life-cycle should allow for eventual success of the project outcome, and
- The *governance school,* where the forms of contract should prevent misconduct.

The two schools have different shortcomings. The main shortcoming of the project control school is its reactiveness and its direct exposure to external variables and forces. The governance school focuses more on institutional aspects to set up appropriate contractual arrangements. However, as is well known in the project management fraternity, contract management is a sub-component of procurement management, which is but one of nine project

knowledge areas (PMBoK, 2004).

No empirical research or data exists that discusses the concept of project governance in the sense that is described above. To investigate and derive conclusions on the concept of project governance, further literature study on the context of corporate governance and its application to LCPs is required, followed by selective discussions with seasoned project professionals and academics. The panel of subject matter experts (SMEs) should comprise people with a minimum number of years' experience in project management and preferably, if possible, exposure to entrepreneurial, rational-system and governance arrangements.

2.8 Summary

In this chapter, an attempt was made to illustrate the complexity of initiating, forming and implementing LCPs. The difficulties in establishing the most effective environment for project performance were illustrated by the evolutionary process of institutional design that could be traced back to the early 1800s. Well captured by Miller and Lessard (2000), the evolution from entrepreneurial to rational to governance arrangements each brought about inefficiencies that had to be addressed by the successor.

The current LCP environment finds itself very much in a state of flux, where a hybrid of entrepreneurial and rational approaches manifests in some form of governance arrangement which is *per se* not well defined. Adding other constraints such as lack of capital for LCPs in most countries, globalisation, stringent statutory requirements and external pressure to perform ahead of any form of competition, the environment within which the project manager operate becomes, to a large extent, unbearable.

In order to provide some assistance to project managers, as well as to protect general stakeholders against potential malpractice, some initiatives have been launched on various fronts to establish some form of governance framework for projects. The two most significant attempts have been the research

initiated by Miller and Hobbs (2005) and the APM's "Directing Change: A Guide to Governance of Project Management" (APM, 2004). The latter is probably the closest attempt to forming a framework for LCP governance, with the most significant aspect of the APM document being its focus on governing the function of project management, as apposed to the project being seen as an entity, or a temporary organisation, for that matter.

Instead of developing a project governance framework from first principles and from the perspective of the project manager, this research seeks to gain insight and knowledge from other management disciplines and practices that are more mature in the field of governance. In the field of governance the corporate world has come a long way with much more work done on establishing the measurement criteria, the contents and the level of prescriptive practices. As this chapter centred around an attempt to better understand the management of LCPs, the discussion in the following chapter will aim towards a better understanding of the evolution of corporate governance. It must be noted that the history and evolution of corporate governance as an institutional directive spans a much longer period, with the lessons learned being very well documented. It is believed that these lessons learned, and the eventual frameworks arrived at in corporate governance, could be invaluable in the eventual establishment of a specific framework for project governance for LCPs.