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Quality Assurance of Major Public Infrastructure Projects in Cyprus

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Abstract:

The purpose of this thesis is to present the Quality Assurance scheme of Cyprus and discuss issues with the implementation of the scheme, regarding structural and working culture matters. The function of a QA scheme is to ensure public investment efficiency and relevance towards strategic goals by applying formal requirements and procedures to project proposals from as early as the conceptualisation phase.

An initial scoping literature review was based on international literature on quality assurance schemes. This was followed by a study of official manuals and guidelines regarding the application of the new Project Selection and Appraisal framework of Cyprus. In-depth semi structured interviews resulted in the identification of implementation complications, such as difficulties in cost estimation, definition of alternatives and projects not adhering with the general strategies of the government.

The QA scheme of Cyprus is a simple two step evaluation of a project's viability and affordability, performed as early as the conceptualisation phase. Key issues identified were that proposals are presented as one main project which is compared with other secondary alternatives, the economocentric nature of the criteria for evaluation and the low threshold might make the process too bureaucratic. The comparison of the QA scheme of Cyprus with similar schemes from Norway, United Kingdom and Netherlands, together with the analysis of implementation issues, provides the ground for recommendations of improvement of the Cypriot scheme.

Keywords:

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|---------------------------------|
| 1. Quality assurance scheme |
| 2. Public project governance |
| 3. Public investment management |
| 4. Project evaluation |

Signature:



Preface

This thesis was conducted at the Norwegian University of Science and Technology, Department of Civil and Environmental Engineering and was written as a part of my studies in Msc. Project Management during the spring semester 2017. The topic of this thesis revolves around the presentation of the Quality Assurance scheme of Cyprus and the issues observed with its implementation in the planning of projects. Through the report, the QA scheme is discussed and compared with other European countries, which makes it possible to highlight some of the issues with it and propose some recommendations for improvement. The idea for this study resulted after discussions with my fellow classmate Esteban Alberto Castro Estrada and my supervisor Tore Haavaldsen and was developed into a research study based on previous work done by the Concept research program.

The research ground on public project governance in Cyprus was a relatively new concept during my investigations, contributing to some challenges in the research. The research started without knowing the specifics of the quality assurance procedures for public investment projects in Cyprus, which guided the research into uncharted territory. But the discovery of the *Manual*, which is a set of guidelines for assessing state initiated investments, combined with the helpful advice by my supervisor, helped me land my research questions.

Firstly, I would like to thank all the public officials in Cyprus that I had a discussion with during my interview session in January 2017 and especially the people at the Directorate General for European Programmes, Coordination and Development for their invaluable help. A thanks is also in order to my friend and classmate Esteban, with whom we had several discussions on our research. Finally, I would like to express my appreciation to my supervisor Tore Haavaldsen, for all his inspirational talks and invaluable advice he has given me through all the efforts of completing this study. His enthusiasm on the topic was highly motivational, which is hopefully reflected throughout this report.

I hope you enjoy your reading.

Stavros Adamou
June 2017, Trondheim

Summary

Quality assurance schemes are established by governments to ensure that their public investments are according to the strategic goals, are fulfilling the needs of the end users and are sustainable in the long-term. In recent years, many developed countries have introduced such schemes to ensure appropriate public spending. Quality assurance schemes apply formal requirements and procedures to project proposals from as early as the conceptualisation phase, in order to establish that a project's concept is applicable and relevant with the strategic goals of the government. Additionally, the aspect of long term sustainability may be evaluated, securing a balanced perspective between the social, economic and environmental sustainability factors.

The purpose of this thesis is to provide a description of the Quality Assurance scheme of Cyprus and the procedures that are applied in order to ensure that public investment projects are viable and affordable. Furthermore, the quality assurance scheme of Cyprus was compared with the schemes of Norway, United Kingdom and Netherlands, in order to extract a valuable discussion on the strengths and weaknesses of the scheme of Cyprus, basing it on good international practise. Additionally, several issues with the implementation of the scheme were identified and discussed, mainly regarding structural and working culture matters. Finally, these points are used in order to suggest improvements to the Quality Assurance scheme, which are based on both good international practise and prior research on what constitutes efficient quality assurance procedures. Deriving from the purpose of this study, the research questions are:

1. What procedures does the government of Cyprus apply to quality assure major infrastructure projects?
2. What are the important differences between the frameworks of Cyprus, United Kingdom, Norway and Netherlands?
3. What are the most prevalent issues with implementing a new QA scheme?

This thesis is considered a pre-study for the topic of Quality Assurance of Major Infrastructure Projects in Cyprus. It began with a scoping literature review in international journals, in which the topics of public project governance, project efficiency and performance, front-end assessment of projects and quality assurance procedures in the public

sector were researched. In addition, common topics regarding the implementation of new governance frameworks were studied. More specifically, aspects of the implications with managing change in an organisation were studied, in respect to changes in regulations, structure and procedures. Research regarding organisational change is important for this study due to the fact that the introduction of the new Quality Assurance scheme represents a major change in the public sector of Cyprus. In addition to the literature review, a set of in-depth, semi-structured interviews were conducted in Cyprus, in order to establish a realistic picture of the introduction of the new scheme. The interviews revealed several of the challenges associated with the implementation of the scheme. This, combined with a review done of official manuals and documentation, constitute the results of this thesis, regarding the issues of implementation.

The Quality Assurance scheme of Cyprus is a simple two step evaluation of a project's viability and affordability, which is performed two times. The first evaluation takes part in the conceptualisation phase and the second after the project proposal is studied and further analysed. The aim with the scheme is to eliminate white elephant projects as early as possible, in order to avoid extra costs on studying and designing non-viable and non-affordable projects. The scheme is administrated by an independent agency in the government of Cyprus, while formal decisions on the viability and affordability of proposals are taken either by the Council of Ministers or the Ministry of Finance. Final decision to finance resides with the Parliament, through the approval of the National Budget.

Through the interviews, eighteen issues were identified, with each of them having a different amplitude or impact on quality assurance process. These were categorised in two general categories; structural issues and issues with the change in working culture. In the analysis of the structural issues, it was found that these could be either procedural, organisational or regulatory. Also, the issues with the change in working culture include matters with uncertainty about procedures, habitual issues or external pressures.

Key findings identified through the thesis include: proposals are presented as one main project which is compared with other secondary alternatives, that there are loopholes that could be used for external pressures by politicians to pass their own agendas, the economic-centric nature of the criteria for evaluation, the low threshold might make the process too bureaucratic and working culture needs time and effort by the scheme's administrator to take full effect. The thesis finishes with a recommendation on improvements of the Quality Assurance scheme of Cyprus and a recommendation for further research on aspects identified through the research that need further understanding.

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List of Abbreviations

CoM	Council of Ministers
DG EPCD	Directorate General for European Programmes, Coordination and Development of Cyprus
EIA	Environmental Impact Assessment
ERDF	European Regional Development Funds
EU	European Union
FRBSL	Fiscal Responsibility and Budget System Law
GDP	Gross domestic product
GMPP	Government Major Projects Portfolio of United Kingdom
ICRE	Inter-ministerial Commission for Improvement of the Economy of Netherlands
IMF	International Monetary Fund
IPA	Infrastructure and Projects Authority of United Kingdom
MIRT	Multi-year Plan for Infrastructure, Spatial Planning and Transport
MoF	Minister of Finance
MoF BD	Ministry of Finance Budget Directorate of Cyprus
NPV	Net Present Value
PAR	Project Appraisal Report
PCN	Project Concept Note
PIM	Project Investment Management
PMU	Programme Management Unit
PPP	Public-Private Partnerships
QA scheme	Quality Assurance scheme
TBL	Triple Bottom Line
UK	United Kingdom

Chapter 1

Introduction

Quality assurance schemes are established by governments to ensure long-term sustainability and relevance of public investments (Haavaldsen, Lohne, and Lædre 2012). Public investment management has been put in the spotlight the recent years after several reports highlighting the importance of an evaluation regime for the assessment of the conceptual merits of projects (Pena, Guasch, and Escibano 2000; Cato 2009; Joumard et al. 2004; Koen et al. 2002; McLaughlin, Osborne, and Ferlie 2002). Governments in developed countries have begun in recent years establishing formal requirements and frameworks to ensure appropriate public expenditure (K. Samset, Gro Holst Volden, Olsson, et al. 2016). Such procedures are defined as Quality Assurance schemes and its purpose is to assess the relevance of the concept of a proposed project in respect to the strategic goals of the government and the entity that propose a project. In addition, an assessment is undertaken to evaluate whether the project is sustainable regarding economic, societal and environmental factors during the whole life-cycle (OECD 2010; Laedre et al. 2015; Rajaram, Le, et al. 2010; Cato 2009).

An example of such an established framework is the Quality Assurance scheme of Norway, which is in the forefront for research in the field of public project governance and project concept evaluation (Christensen 2009). Frameworks as such, improve the efficiency of public fiscal policies by reducing wasteful public spending and reallocating expenditure from lower value to higher value projects (Development Committee 2006). A framework for converting the strategic goals of the base organisation for long term project success, should be imbued in the project management procedures when designing and implementing projects (Hjelmbrekke, Lædre, and Lohne 2014).

1.1 The need for comprehensive project governance

Traditional project management literature evaluates project success by considering mainly the implementation and operational phase of a project, while the front-end phase is not

regarded as an important contributor to the success of projects (Munns and Bjeirmi 1996; de Wit 1988; K. Samset and Gro Holst Volden 2016). Project failure is attributed primarily to a number of project pitfalls such as failures due to poor project management, lack of resources and poor planning, which all are related with the implementation phase (Moyce 2014; Fretty 2006; Acord 1999). Other researchers though, begin to identify that one of the principal pitfalls is the lack of alignment of the projects' goals with the strategic objectives of the base organisation (Ward 1995; Kaleba 2006). But most of this research fail to recognise that if a project is not aligned with the base organisation's strategic goals, then the chances of it to be successful and sustainable during the operation phase are less (Hjelmbrekke, Lædre, and Lohne 2014; Koen et al. 2002).

To be able to align a project's outputs with the strategic goals of the base organisation, the gap between top management, who are the policy makers, and the project management, who are the people responsible for translating the policies to outputs, should be reduced (Cooke-Davies 2002). A framework for converting the strategic goals of the base organisation for long term project success, should be imbued in the project management procedures when designing and implementing projects (Hjelmbrekke, Lædre, and Lohne 2014). Such a framework has to be structured with procedures that will guarantee project success, both strategic and tactical, by screening project proposals and rejecting those that are not deemed as relevant and sustainable in the long term (Rajaram, Le, et al. 2010).

The first step to improve the efficiency and effectiveness of public investment projects is to understand and acquire sufficient knowledge on the methodology that is currently used by the governmental institutions to evaluate the affordability and viability of projects (Rajaram, Le, et al. 2010). By investigating the Quality Assurance scheme (QA scheme) of the government, one can highlight the inefficiencies and restrictions of the current quality assurance procedures, but also identify the methodologies that are functioning. This process can provide a basis for further research and eventually contribute in developing and improving the current scheme.

Public sector efficiency, regarding investment projects relies on several factors, which are too wide for a single study to research in-depth. It includes factors such as strategic planning of the government, investment management procedures, effective project management and procedures for the choice of the right investments (Antonio Afonso, Schuknecht, and Tanzi 2010; Hjelmbrekke, Lædre, and Lohne 2014; Haavaldsen, Lohne, and Lædre 2012). Another factor that impacts public sector efficiency is the relationship between fiscal size and economic growth, which depends on the size-efficiency mix of the public sector (Oto-Peralias and Romero-Avila 2013). This means that the size of a governments investment portfolio should correspond to its fiscal size, in order to be able to maintain a healthy economic growth (Angelopoulos, Philippopoulos, and Tsionas 2008).

1.2 Profile of Cyprus

Situated in the eastern Mediterranean, the island of Cyprus became independent from the British empire in 1960, and thus shares many similarities in the public administration sector with the United Kingdom. Furthermore, from 1st of May 2004, it became a member of the EU and from 2008 it entered the Eurozone. With an estimated 1,2 million inhabitants and a GDP per capita of \$34,400, Cyprus is considered a developed country, and the main economic sectors are tourism, financial services, shipping and real estate (CIA 2017). Corruption levels in Cyprus are considered moderate, and according to Transparency International, ranks in a 47th position amongst 176 countries with a score of 55 out of 100 (Transparency international 2017). From the report, it is evident that corruption levels are increasing in the last years, and from this arises the need for a more structured control of the finances of the public administration.

During 2012, the government of Cyprus requested from the International Monetary Fund and the European Bank a loan in order to avoid bankruptcy and automatic default on several of its international loans. As a prerequisite by the IMF and the European Bank for handing out a loan to the government of Cyprus was the reform of its public administration, which included reforms of its fiscal policies (IMF 2013). The financial crisis was created by a rapid expansion of the banking sector which was based mainly on foreign investments and deposits. This in turn, fuelled a real estate bubble, focusing on domestic investment and international demand. By an increased domestic investment, private loans started to soar, contributing to further vulnerabilities to the financial sector (Commission 2013; Commission 2016). The exposure to the failing Greek bonds, together with a regulatory requirement for investing excess liquidity in government debt, was another factor of vulnerability of the financial sector (Rapanos and Kaplanoglou 2014).

During 2011, as the crisis in Greece was deepening, it was clear that the banks had to restructure their capital base. They searched for private investors for that, and when it was clear that there was not enough interest from the private sector, the government of Cyprus stepped in to cover the capital base by providing 1,8 billion Euros (Commission 2013). Measures like these kept increasing the GDP of Cyprus and together with the rising unemployment and the exposure to the Greek bonds, deteriorated the economy even further. The government of Cyprus, then requested on the 25th of June 2012, financial assistance by the IMF and the EU. After negotiations and agreements with all the parts, the EU and the IMF would loan 10 billion Euros in several instalments, but set a number of preconditions to that (IMF 2013). These aimed at restoring the soundness of the banking sector, continue the on-going process of fiscal consolidation and implement structural reforms to encourage competitiveness and sustainable growth (Commission 2013). The reforms the IMF and the EU proposed were mainly structural in nature

and did not require significant reductions in workforce in the public sector (Rapanos and Kaplanoglou 2014). In a report by the Economic and Financial Affairs committee of Europe in 2012, it is clear that Cyprus was one of a few countries in the European Union that did not enforce neither a fiscal set of rules nor a binding medium-term budgetary framework at the period before the introduction of the QA scheme (Commission 2012).

Measures undertaken by the Cypriot government

Part of the last requirement the IMF and the EU set, is the implementation of structural reforms with the Fiscal Responsibility and Budget System Law (N.20(I)/ 2014). According to this law, several structural reforms were implemented, such as the new responsibilities of the different stakeholders, introduction of a new strategic planning procedure for fiscal policies, new National Budget proposal methodology and the selection and implementation of public investment projects. The latter was then expanded in a set of guidelines by the World Bank on the behalf of the Directorate General of European Programmes, Coordination and Development (DG EPCD), former Planning Office of Cyprus, which are referred to in this documents as the *Manual*: The Manual for Pre-Selection and Project Appraisal of Public Investment Projects (World Bank 2016).

According to the Manual, the government of Cyprus, the introduction of the new framework has the purpose of assessing the viability and affordability of projects, as early as the conceptualisation phase (DG EPCD 2014-2016). The framework sets evaluation criteria to public investment projects in terms of financial, social and environmental sustainability, and also requires an assessment of affordability. These new procedures are referred to in this document as the Quality Assurance (QA) scheme of Cyprus, in accordance to the definition of the respective framework applied in Norway, which is usually referred to as the Norwegian QA scheme (Christensen 2009; NTNU 2001-2016). During the implementation of this new framework though, several issues arose. These issues highlight the need for improvement of the structural procedures of the process, but also the need for a change in working culture by the public administration.

The implementation of a quality review system for the public administration has as a main aim to improve efficiency in the public administration by introducing quality assurance procedures and it is one of the tools employed by the EU to improve the public administration in EU members (Staes, Thijs, and Claessens 2016). As a newly implemented quality assurance scheme, the Pre-Selection and Project Appraisals framework needs new procedures and methodologies to be applied in the public administration, which are needed to be developed and applied properly through appropriate management of the scheme and by using international good practise as a basis (Rajaram, Le, et al. 2010; World Bank 2016).

1.3 Problem formulation

In line with the modernisation policies the EU is proposing to its member states, the 2013-elected government in Cyprus has set a path for reforming the public administration sector. One of the main focus areas of this reform is to make the public administration more effective and efficient, particularly cost efficiency, and a law was passed in 2014 called "Fiscal Responsibility and Budget System Law", which will be referred to as FRBSL in this document (N.20(I)/ 2014). The main purpose of the law is to create a more structured process for financial management in the Government of Cyprus, which takes into consideration cost efficiency and effectiveness of the public sector. A specific segment of the law, Part XI, article 82-89, describes the newly implemented framework for Pre-selection and Appraisal of public investment projects. In addition, the original Planning Agency of the Government of Cyprus has been restructured and modernised to the new independent government agency Directorate General for European Programmes, Coordination and Development (DG EPCD).

The DG EPCD has published, with the help of the World Bank, a set of guidelines and a Manual that describes the procedures for quality assuring project proposals in the government of Cyprus. The purpose of this report is to describe the newly established quality assurance framework, analyse it and make comparisons with other countries that have already established and functioning quality assurance schemes. The countries of Norway, United Kingdom and Netherlands are used as good international practise examples in order to make an evaluation of the newly implemented QA scheme of Cyprus. The comparison of the Cypriot QA scheme can be used for making recommendations to both the government of Cyprus and governments of other countries that want to establish quality assurance schemes in their countries, for improvement of the scheme, based on good international practise.

The importance of overcoming issues related with the implementation of a new framework is fundamental for the efficiency and effectiveness of it (Todnem 2005). The government of Cyprus has imposed a wide transformation of its fiscal policies and has introduced several procedures in the hope of increasing public spending efficiency and reaching the standards set by the European Union. But the introduction of fundamentally different procedures and methodologies, create the ground for issues to arise (Pathak 2010; Todnem 2005). These issues need to be resolved in order for the organisational change to have an effect on the efficiency of the public spending mechanism. The first step in resolving the implementation issues is to identify them and define the underlying issues that causes them. By properly identifying them, a basis can be established for providing recommendations for improvement of the Pre-Selection and Project Appraisal scheme.

The intentions of this study is not to dwell in the political aspects of the decision

making in the choosing of the projects, but rather study the measures taken to assure that these public projects are chosen in the logic of relevance towards the strategic goals and long term sustainability.

The research for this report is based on providing answers to the problems presented, regarding public governance and quality assurance. The research questions this report attempts to answer are:

1. What procedures does the government of Cyprus apply to quality assure major infrastructure projects?
2. What are the important differences between the frameworks of Cyprus, United Kingdom, Norway and Netherlands?
3. What are the most prevalent issues with implementing a new QA scheme?

Submission of conference paper proposals

During the writing of the thesis, there were two submissions proposal for a conference paper. The ProjMan conference (ProjMan 2017) was chosen with the co-authors of the paper on the basis of the topics offered by the conference. The first paper has the title of "Implementing a Quality Assurance Scheme for Major Public Infrastructure Projects: The Case of Cyprus" and the scope of it is to introduce to the world the new Pre-Selection and Project Appraisal framework implemented by the government of Cyprus. Furthermore, a comparison of the new scheme with countries with good international practise provides the basis for further analysis of the aspects of the scheme. Finally, several issues were presented in order to highlight implementation issues that could result by the implementation of a new scheme. These are not only addressed to the public administration of Cyprus, but also to other countries that will be implementing new quality assurance schemes.

The second paper has the title "Quality assurance scheme for public investment projects in Costa Rica". This paper was submitted as a co-author and the cooperation between the authors of the conference papers were based on mutual topics. In this conference paper proposal, the Costa Rican QA scheme is presented and compared with those of Norway and United Kingdom, points out the criteria considered for the choice of concept and describes the different forms of financing used in the scheme. Noticeable differences between the Costa Rican model and those of Norway and UK is the way projects are financed and that all not projects are required to go through the quality assurance procedure, which mainly depends on the form of financing of the investment. Furthermore, depending on the financing form, different decision makers apply, similarly to who entity that finances it.

The scope of the conference paper proposal follows the same lines as this thesis report and the thesis can be considered a more in-depth analysis of the matters presented in the paper. The conference paper proposals can be seen in Appendix A.

1.4 Structure of the report

The thesis starts with an introduction to the problem attempted to be resolved and is followed by the Methodology chapter. In this chapter a description of the methods applied to the design, study and analysis of the research and the problem, which offers an insight on why these methods were chosen.

The theoretical background was split in four distinct chapters. Chapter 3 delves into project governance in the public sector. Chapter 4 looks into project evaluation and success criteria. Chapter 5 researches the merits of quality assurance schemes in public projects and ends with a specific reference on the procedures used in Cyprus. The last chapter of the theoretical background, chapter 6, provides a summary of the QA assurance schemes of Norway, United Kingdom and the Netherlands, which is used for the purpose of comparing.

Obtained results from the research are again divided into two chapters. Chapter 7 is a presentation of the Pre-Selection and Project Appraisal framework, the new QA scheme implemented in Cyprus. Chapter 8 lists certain issues observed with the implementation of the new scheme and provide a description of differences found between theory and practise.

Analysis and discussion is combined and is presented in three chapters. In chapter 9 an analysis and a discussion is performed on the aspects of the newly implemented QA scheme in Cyprus. Chapter 10 provides a comparison of the QA schemes of Cyprus, Norway, United Kingdom and the Netherlands and includes a suggestion on positive and negative aspects from each. The last chapter of the discussion, chapter 11, is based on the result chapter 8 and provides a discussion on the issues observed with the implementation. For each issue it concludes with recommendations for improvements to the scheme.

At the end of the report are the appendices referred to through the main text. In Appendix A are the submitted proposals for conference papers with the subject "Implementing a Quality Assurance Scheme for Major Public Investment Projects: The Case of Cyprus" and "Quality assurance scheme for public investment projects in Costa Rica". It is followed by Appendix B with the list of criteria used for quality assuring public investment projects by the DG EPCD. Also, Appendix C is a set of criteria for evaluation of the alternatives of the main project proposal in the PCN and the PAR. Appendix D is a description of the QA schemes of Norway, United Kingdom and Netherlands, which are

used for a comparison with that of Cyprus. Finally, Appendix E is the interview guide used during the interviews for gathering the results for this thesis.

The following figure is a schematic of the structure of this thesis, which provides information about the nature of each chapter. As the theoretical background, results and discussion chapters were divided in several chapters each, it was deemed important to visualise this separation, in order for the reader to understand the structure of the report.

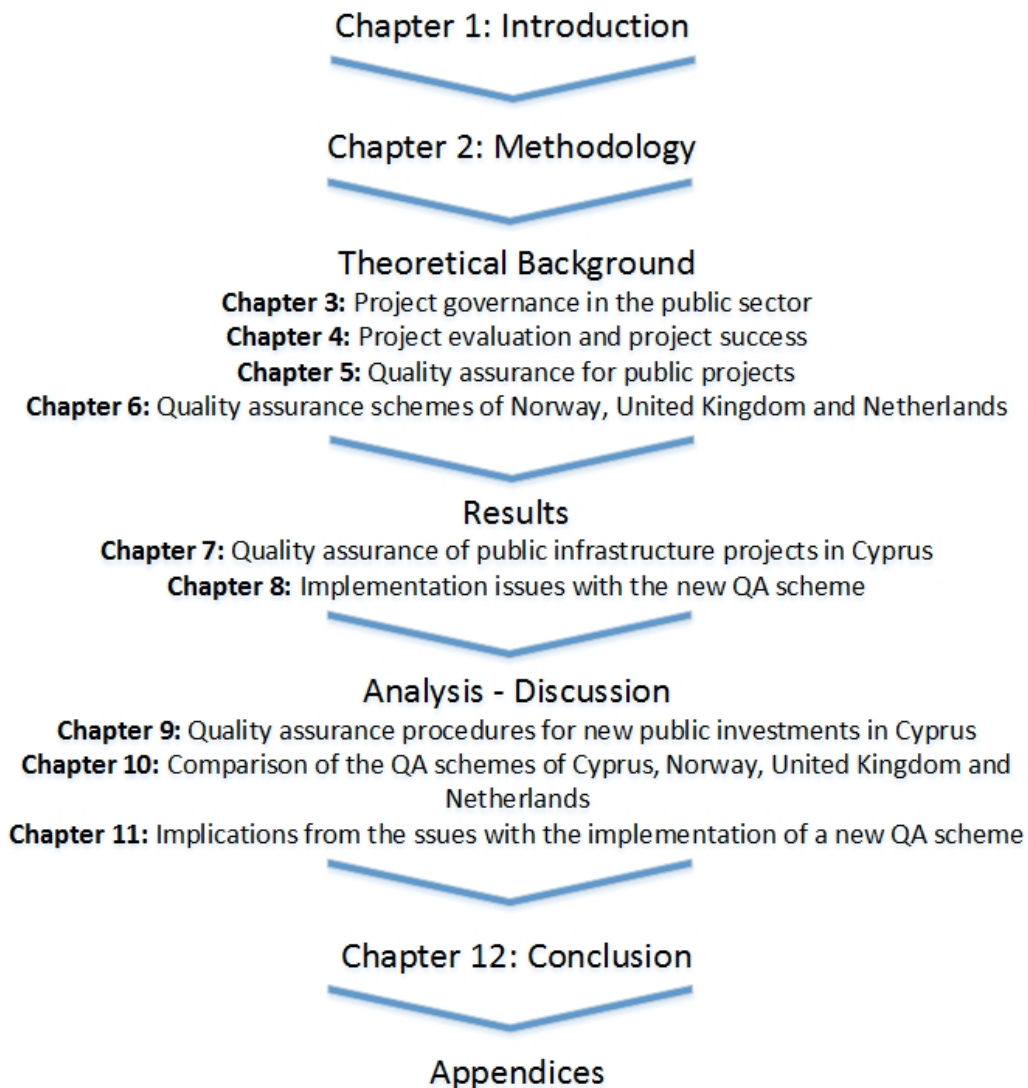


Figure 1.1: Schematic representation of the reports structure

Chapter 2

Methodology

2.1 Research design

The research design is the plan which will lead to the solving of the research objective and answering the research questions (Wee and Banister 2016). It also provides a framework for data collection and their analysis (Bryman 2015). The study of the design was formed in a way to make it able to investigate the problem formulation and be able to describe the quality assurance scheme that is implemented in Cyprus by the government of Cyprus. In order to be able to describe the QA scheme and define the issues with the implementation of a new QA scheme, an initial literature review was performed, to create the basis for the description of the QA scheme of Cyprus. In addition to the literature review, a study of official documents and guidelines was performed in order to describe the QA scheme. To strengthen the findings from the literature review and the official document study, seven interviews were conducted. These uncovered several issues with the implementation of a new framework in a public administration setting, which were further analysed in the report.

A qualitative research strategy was chosen for conducting the research for this study. A qualitative research is based on an inductive approach that uses theory to come to conclusions and relies on interpreting the theory and the results in order to generate theories (Bryman 2015). Interpretation of the theoretical frameworks and results are based on how the researchers interpret their world, which embodies a view of social reality that shifts constantly according to the individual's creation. The reason for the selection of a qualitative research strategy, rather than a quantitative, is the nature of the study, which has the aim to form an understanding of how the QA scheme is structured and how the issues observed with its implementation affects the efficiency and effectiveness of the operation of the scheme.

The research design for this study was based on the quality criteria in social research described by Bryman (2015). The first criterion is reliability, which means that the

research process is repeatable and that the concepts used are consistent. The second criterion is the replication of the research. By replicating the results, the same procedures should be used and the replication should result to the same outcomes and conclusions. The most important factor to be able to achieve replicability, is the proper and detailed description of the research methodologies used to gather and analyse the data. The third criterion is validity. It is concerned with the integrity of the conclusions that result from the analysis and discussion of the results. Validity can be categorised in measurement validity, internal validity, external validity and ecological validity. These categories seek to ensure that the conclusions can be applicable in a social setting, they can be generalised in other contexts and that a conclusion can incorporate two or more causal relationships and still be applicable.

The research design takes the form of a case study (Bryman 2015). A case study helps in the easy definition of aspects of the research that are context-dependent (Flyvbjerg 2006). As Flyvbjerg (2006) states, the kind of case selected for this study is an information oriented selection of a case and the reason is that the selection of the case needs to maximise the utility of the information. The case in this particular research is the implementation of the Pre-Selection and Project Appraisal framework for major public investment projects, by the government of Cyprus. The main focus of this research was to collect and analyse qualitative data on the QA scheme and examine them against the theoretical background, which is presented in chapters 3 to 5. This examination lead to the conclusions on how issues with the implementation affect the efficiency of the QA scheme and finishes with a set of recommendations for improving the QA scheme.

The aspects of public project governance and quality assurance of the long-term sustainability of major public investment projects is a wide field to be researched in a single study. This is why a special attention was taken to focus on the aspects relating to the implementation of a quality assurance framework by narrowing down the research questions presented in the introduction. A scoping literature review was conducted for this reason in order to obtain the most relevant information when constructing the theoretical background this study is based on.

2.2 Literature review

A literature review report requires the application of a structured methodology of finding and collecting relevant literature. The methodology used is based on the report of Wee and Banister (2016) on how to select relevant papers. According to Bryman (2015), the research process includes a literature review, which is an important element of every research. In the literature review it can be identified what is already known on the researched topic, what research methods and theories have been applied before on the

topic and what clashes of evidence exist on the research. It is important to identify already researched topics, in order to avoid criticism on lack of research when writing a report.

The extent a scoping study can provide an in-depth coverage of the available literature depends on its purpose. Arksey and O'Malley (2005) provide four possible reason for the purpose of performing a scoping study; (1)to examine the extent, range and nature of research activity, (2)to determine the value of undertaking a full systematic review, (3)to summarise and disseminate research findings and (4)to identify research gaps in the existing literature. In the case of this thesis, the reasons for performing a scoping study, according to Arksey and O'Malley (2005) are to summarise and disseminate research findings and to identify research gaps in the existing literature. These are presented in chapters 3 to 5.

One of the main concerns during the literature review was to use quality sources to back the theories mentioned further in the text. For this reason, it was taken special attention that the identified literature follow the quality criteria for research, as stated by Bryman (2015). As mentioned before, these are reliability, validity and replication of literature results.

A literature review was performed in order to gather the necessary literature to provide a sound theoretical background for the analysis and discussion of the results of the research. The main aim of this type of study is to rapidly map the key concepts that are providing the base for a research area and the main sources and types of evidence available (Arksey and O'Malley 2005). Arksey and O'Malley (2005) add that a scoping study can be undertaken as a standalone project in areas of study that are complex or that have not been reviewed comprehensively before. So as the research field behind this thesis is not heavily researched, especially when it comes to aspects related to quality assurance of public investments in Cyprus, and as the problem is complex and multifaceted, a scoping literature review was deemed appropriate to establish the necessary theoretical background.

The research was initiated with a focus on international literature on project governance, the implementation of quality assurance schemes and aspects related to managing change in organisations. For the literature review several known search engines were utilised, such as Google Scholar, Scopus, Elsevier and Oria.no. The search procedures started with the use of general keywords and then it was delimited to specific articles with the use of more specific keywords. Examples of these keyword sequences can be seen in table 2.1. The referenced articles in this research are in their majority from the last five to ten years, since the field is still being researched and evolving.

General keyword	Final keyword sequence
Quality assurance	quality AND assurance AND project AND public AND investment
Project governance	project AND governance AND public AND investment
Concept evaluation	concept AND evaluation AND public investment AND project
Project model	state AND project AND model AND assessment

Table 2.1: Examples of keyword sequences used for the scoping literature review

Furthermore, specific literature was searched in literature databases in Cyprus using the same keywords presented in table 2.1. The databases researched are the University of Cyprus library, European Union publications, Technical Chamber of Cyprus and Proceedings by the Parliament of Cyprus. The results from these were not so successful as the literature in Cyprus does not focus on this subject, so only a few articles were found and used for the establishment of the theoretical background. Research was also done on several government ministries, department and agencies in Cyprus, in order to gather the necessary theoretical background that is presented in chapter 7. The agencies and ministries researched are displayed in table 2.2.

Governmental Agency
Audit Office of the Republic of Cyprus
Internal Audit Service of Departments of the government
Ministry of Transport, Communication and Works of Cyprus
Ministry of Agriculture, Natural Resources and Environment of Cyprus
Directorate General for European Programmes, Coordination and Development of Cyprus
Ministry of Finance Budget Directorate of Cyprus

Table 2.2: Examples of governmental agencies researched

2.3 Collection of data

According to Yin (2013), there are six sources of collecting data, or as defined by the author, sources of evidence. None of the sources has a direct advantage over the other and in fact these are complimentary to each other. The use of multiple sources of evidence is paramount in order to get reliable data for the analysis. Data collection should be based on four principle ideas (Yin 2013); (1)using multiple sources of evidence, (2)create

a database, (3) maintain the chain of evidence and (4) exercise care when retrieving data from electronic sources. These are extremely important to be followed in a quality study in order to ensure validity and reliability (Bryman 2015). The sources of evidence the Yin (2013) discusses are:

1. Documentation
2. Archival records
3. Interviews
4. Direct observations
5. Participant observation
6. Physical artifacts

Documentation is highly relevant for almost all research conducted as these corroborate and augment other sources of evidence. It can come in many forms, with the most common being administrative documents, written reports of events, communication letters, formal studies and evaluations and news articles. A systematic research of documentation should be applied as a first phase of research, in order to collect information before doing any other data collection (Yin 2013). This helps with establishing facts that need further research and with determining the methodologies that should be applied.

Archival records are data available from formal databases. These could include statistical data, service records, organisational records, survey data or maps and charts (Yin 2013). These kind of data are usually used together with other types, as these are collected under certain circumstances, which have to be determined by either documentation or interviews. When collecting archival records, special consideration should be given in the accuracy and relevance of them towards the problem the research tries to solve.

Interviews are one of the most important element of collecting data (Yin 2013). They resemble more like a guided conversation, rather than a structured query and the line of questions should be fluid. It is usually called "in-depth interview" or an "unstructured interview". An interviewer has two responsibilities throughout an interview session; (1) to follow a line of interview which is adapted to the situation and (2) to ask the interviewee unbiased questions regarding the line of inquiry. As stated by Yin, (2013), it is important to ask a "why" question, rather than a "how". This avoids defensiveness by the interviewee and gives better results. The main aim of an unstructured interview is to satisfy the line of inquiry by putting forward friendly and nonthreatening questions (Bryman 2015).

Direct observations can be either formal or casual and the main aim is to assess the occurrence of certain types of behaviours in the activities studied (Yin 2013). These could

be observations of meetings, sidewalk activities and workshops. Observations could also be non-verbal, in the likes of the surroundings an interviewee is in or the work spaces they are in. These types of observation are more casual though and do not provide the whole picture but can provide additional information to other sources of evidence. Direct observations increase in reliability if the number of observants increases (Bryman 2015).

Participant observation is an observation performed by not only being a passive observant, but also when participating in the roles that are studied (Yin 2013). These could be being present during operations, taking functional roles in the operations, being part of the staff or being a decision maker in the study subject. The challenge with participant observation though, is that it is easy to get biased, as the observant is part of the environment.

Lastly, physical artifacts are a source of evidence that entails the collection and observation of artifacts, such as technological devices, tools or any type of physical evidence (Yin 2013). The importance of these, relate to the type of research and if found relevant, these can help with better observing and understanding certain concepts of the research.

Methods of data collection applied

The nature of this research favours the following types of sources of evidence; the study of documents and archival records together with a conducting of interviews. The reasoning behind this is that the implementation of the QA scheme requires a set of guidelines and regulations for it to be established as a formal procedure in a public administration setting, so that is why a review of guidelines, manuals and official documents were chosen to be conducted. Also, by interviewing public servants that are responsible for the administration, enforcement and operation of the new QA scheme, sheds light to certain aspects that are not properly explained in the official documents or aspects that are performed differently than what is reported. Furthermore, by interviewing planners that have used the new process, by submitting a PCN for evaluation, reveals certain issues relating to the implementation of the scheme, but also with the organisational structure of it. Since the QA scheme was just recently implemented, a study of archival records was not considered possible and was not conducted as there is a limited amount of feedback on the operation of the scheme.

Review of manuals and official documentation

A special attention was given in literature, manuals and guidelines regarding public infrastructure projects in Cyprus, their appraisal and their financing by the public administration. The manual for Pre-Selection and Project Appraisal of Public Investment Projects, is the main document that was used to describe the procedures for quality assuring public investments in Cyprus. Additional documents used for the description of the QA scheme

were the FRBSL (N.20(I)/ 2014), which is the law that dictates responsibilities and procedures for the QA scheme and the Project Concept Notes of two project proposals that were submitted to the DG EPCD for evaluation during the pilot phase of the scheme, in 2016. These two PCN's have successfully passed the first phase of evaluation, which is the Pre-Selection phase and put forward for the Project Appraisal phase. The QA phases can be seen in figure 7.8.

The document reliability was considered, by evaluating their authors. The author of the Manual for Pre-Selection and Project Appraisal framework was the World Bank, (World Bank 2016). As this is an international organisation with a wide experience in quality assurance issues in the public sector, the validity and the reliability of it is considered satisfactory for this research. But even if the manual was written by an accredited organisation, mistakes in it can be found, and all the aspects of it were investigated through other sources, mainly through the interviews and the international literature on the subject, as described previously in this chapter.

The research on official manuals, documentation and guidelines was performed on documents from agencies in different institutions in Cyprus. These can be seen in table 2.3.

Laws, regulations or guidelines
N. 144(I)/2003
N. 20(I)/2014 (FRBSL)
N140(I)/2005
Constitution of the Republic of Cyprus
Public Investment Management Guidelines
Manual for Pre-selection and Appraisal of public investment projects (World Bank 2016)

Table 2.3: Examples of governmental documents, guidelines and laws researched

Interviews

In addition to the literature study and the review of official documentation, seven interviews were conducted in a qualitative approach with the main aim of gathering information that was not available through the available literature, manuals and guidelines. The interviews were carried out in Cyprus during January 2017 and includes the directors of the two administrating offices of the QA scheme, project engineers and the intermediates between those two in the line ministries. These in-depth interviews were conducted in

a semi-structured way and followed a basic interview guide formulated as a guide to a discussion. The interview guide and the questions asked can be seen in Appendix E.

An interview could take several forms, such as formal interviews like surveys, through the internet, over the phone or face-to-face interaction or could be informal conversations conducted for a research (Brinkmann 2014). Interviews can also vary according to their structure. For example, in surveys, the interviews are standardised and is commonly used in quantitative procedures (Bryman 2015). The majority of qualitative interviews are semi-structured, where an interviewer has an interview guide with questions structured in a manner that can solve the research questions in the interview process, where flexibility is shown with the guide that allows for the respondent to give more spontaneous descriptions to the answers (Brinkmann 2014; Polonsky and Waller 2005). The reasons for choosing a semi-structured interview for the purposes of the research for this study were because the author and interviewer wanted a freedom of expression from the interviewees in order to extract as much information as possible. Also, the most important reason for choosing a semi-structured interview was that the results from it could not be predicted by the literature research conducted before the interview sessions, because the Pre-Selection and Project Appraisal framework is newly implemented and the field of the study lacked prior research (Rowley 2012; Bryman 2015).

Date	Position
12/01/2017	Director of the Directorate for Public Investment at DG EPCD
12/01/2017	Planning Officer A' at the Directorate for Public Investment at DG EPCD
18/01/2017	Senior Officer at the Water Development Department
20/01/2017	Senior Officer at the Public Works Department
23/01/2017	Officer of Agriculture, Natural Resources and Environment Ministry
13/03/2017	Director of Budget Directorate of Ministry of Finance
13/03/2017	Officer A' of Budget Directorate of Ministry of Finance

Table 2.4: Interview overview

Interview guide

Four interview guides were constructed for the purposes of the research, based on the position of the interviewees and their role in the QA scheme. An overview of the interview guides can be seen in table 2.5 and the actual interviews can be seen in a translated form in Appendix E. The interviews were conducted in Greek and for the purposes of this study, the guides and the results were translated in English. One of the limitations of

this procedure is that the context of some of the questions or the answers might be lost or altered.

The structure of the interview guide is important to be in a certain order according to topic areas, so that the conversation flows naturally (Bryman 2015). Also, the formulation of the questions should be in such a way that helps in answering the research questions and should be in a language easily comprehensible (Rowley 2012). Additionally, general information on the interviewee should be asked in order to establish their background. This provide the context behind the interview and can give useful insight when analysing the results (Bryman 2015). It is important to note that the questions in the interview guides were grounded in the theoretical background that was studied and established prior to the interviews and the research questions this study aims to answer. According to Bryman (2015), this is really important in the interview process but the researcher should be careful not to have too many preconceptions about the matters discussed and to be flexible to changes in the initial research questions.

Interview guide for the viability assessment
Interview guide for the affordability assessment
Interview guide for the project planners
Interview guide for the project reviewers in the Ministries

Table 2.5: Overview of the interview guides

Selection of interviewees

Selection of interviewees was based on their role in the Pre-Selection and Project Appraisal framework, but also on their availability. As the field of study is new and the QA scheme had only gone through the pilot phase and been in full operation in a few months, the selection of possible interviewees was difficult. For that reason, the interviews started with the DG EPCD, by interviewing the Director and an officer of the agency. After that, it was asked by the author to get in contact with planners that have already submitted project proposals to the agency for assessment and from that two more interviews were conducted, which represent the two Project Concept Notes (PCN) studied for this research. Furthermore, an officer at the Ministry of Agriculture, Natural Resources and Environment was interviewed for their role in the assessment of the PCN, prior to submission to the DG EPCD. The last two interviews were conducted at the Budget Directorate of the Ministry of Finance (MoF BD) on their role on assessing the affordability of the project proposals.

2.4 Analysis of findings

The first step in analysing the interviews were transcribing the audio-recordings of the interviews. Bryman (2015) states, that for a researcher it is important to know both what was said through the interviews and the context it was said in. This gives valuable information during the analysis of the results, that cannot be extracted by simple notes. During the interviews with the Director of the MoF BD, it was not allowed to record the conversations as this was against the rules of the Ministry of Finance of Cyprus. For that particular interview, notes were taken and were expanded and finished right after the interview, in order to write down the information gathered as correctly as possible.

Coding of results

For the analysis of the interview results, a coding method was used. Coding of interview results is a highly used method in qualitative data analysis and is a common starting point for this kind of research (Bryman 2015). According to Bryman (2015), there are several steps and considerations when coding interview transcriptions.

1. Code as soon as possible
2. Read through the initial set of transcripts and documents without taking notes
3. Read through the transcripts and documents again, while taking notes about significant observations
4. Review the codes in relation to the transcripts
5. Consider more general theoretical ideas in relation to code and data
6. Items and data could be coded in more than one way
7. Invent as many codes as possible in the first stages of the coding
8. Keep coding in perspective and do not analyse the results

For the purpose of this research, the interview transcripts and the notes from the interviews in the MoF BD were read through several times and all the results were written in a table for further scrutiny. Important issues were then generalised, listed and described and the results from the coding process can be seen in chapter 8. Coding started as early as the first interview was transcribed, and together with the transcription, it represents the work of this study between February and March 2017, right after the interviews.

Content classification and interpretation

During the analysis of the interview results, a content classification and interpretation was performed. The analysis should avoid potential issues, which can be reliability of the final

results that stem from the ambiguity of the word meanings, category definitions or other coding rules (Lewis-Beck et al. 1994). A classification from multiple individuals increases the reliability of the results and a computer based coding increases the reliability of the results even more. Another problem with the classification of the interview results could be the validity of the variables used in the content classification (Lewis-Beck et al. 1994). A variable is valid to the extent that it can measure the factor the researcher intends to and tend to stem from the ambiguity of word meanings and category or variable definitions.

Validity

Validity of results can refer to two concepts; (1)the correspondence between two aspects such as concepts, variables, methods and data and the ability to generalise the results and theory and (2)the correspondence between the validity of the classification scheme and the validity of the interpretation of the content variables to their causes and consequences (Lewis-Beck et al. 1994). A valid category or variable is based on the correspondence between the category and the abstract concept that it represents. Also, a valid analysis is based on that the findings are not based on generalised data, methods or measurements of a particular study, but should be based on established standards and methods.

Reliability

Reliability can be divided in stability, reproductability and accuracy (Krippendorff 2004). Stability is defined as the extent the results do not vary over time. It can be the weakest point of reliability as stability relies on the person that is coding and is affected by inconsistencies in the coding rules (Lewis-Beck et al. 1994). Reproductability is defined as the extent the classification produces the same results when another person codes the same results. Differences in results can result from cognitive differences between coders, unclear coding rules or errors. Accuracy is defined as the extent to which the classification corresponds to a standard.

Choice of countries for comparison

The selection of countries for a constructive comparison was based on factors such as good international practise, where the study is conducted, being part of the European Union and the history of Cyprus. All three countries chosen for comparison are examples for good international practise in the field of quality assurance of public investments. Norway was chosen for the reason that the research is conducted in a Norwegian university, but also because as Norway is at the forefront of the research in this topic, much of the literature used to create the theoretical background for this research is based on the Norwegian QA scheme and the experiences with it. The United Kingdom was chosen because until 1960, Cyprus was part of the British empire and the majority of the public administration procedures in Cyprus are based on the British model. The Netherlands was chosen because

it is part of the European Union, as Cyprus, and thus the two countries share many rules and regulations that are dictated by the EU.

The characteristics of Cyprus though, are not similar to any of the three countries. All three countries have larger population levels and larger GDP than Cyprus and the economies of the three countries are based on different sectors than the Cypriot economy. But even if the comparison is performed with countries with dissimilar characteristics, the conclusions can still be considered valid, as the countries share the aforementioned similarities that make the comparison relevant.

2.5 Limitations

As this study is considered preliminary, there are several limitations to many aspects of the research, gathering of data, analysis and conclusions. The research is performed for the writing of the master thesis in Msc. in Project Management, so there are limits to the time available to conduct a proper investigation into a topic as large as the quality assurance of public investments in Cyprus. The time frame available for this study was between 15th of January and 11th of June 2016, in which the interviews were conducted, transcribed, analysed and discussed. Furthermore, a literature review was conducted based on a similar literature study on quality assurance during the Specialisation project required for completing the degree in Msc. in Project Management. The literature study was analysed and expanded to suit the needs for this study, was applied in the analysis of the results and was based on when discussing the results. In order to ensure that the research was feasible, the scope of the study was delimited with the use of research questions and includes the description of the QA scheme of major public infrastructure projects in Cyprus and a presentation of the issues observed with the implementation of the new QA scheme, focusing on the structural and working culture issues.

The presentation of the QA scheme of Cyprus, but also the implementation issues observed, represent the procedures investigated during the period of writing this thesis. As the new quality assurance scheme has only been put in full operation in January 2017, changes in the procedures of it are expected, which can result in making some of the study's conclusions obsolete after some time. Many of the conclusions though could be valid for governments of other countries that are planning to introduce a similar framework in their public administration procedures. It can also be used as a reference to the DG EPCD in order to improve aspects of the QA scheme that were identified in the conclusions of this study.

Another factor affecting the results of the research is that the process is intertwined with political procedures. These are not described in this thesis and were not pursued to be investigated, because they are outside the scope of the study. But it has to be

acknowledged that the quality assurance presented and some of the implementation issues identified, are affected to varying degrees by political pressures and aspirations.

A comparison of the QA scheme of Cyprus was performed with the schemes of Norway, United Kingdom and the Netherlands, which was based on factors such as good international practise, that Cyprus is part of the European Union and the British history of Cyprus. The countries used for the comparison are a lot bigger than Cyprus, both in regard of population and GDP levels. A more pragmatic comparison would be with other countries of similar size and GDP, but the choice of countries are based on the influences of the procedures in Cyprus.

A general acknowledgement by the author is that the views presented in this thesis are from the external perspective of a student that has researched the topics for a limited period of time and there might be misinterpretations in how the public sector procedures function, which creates the possibility that the results are affected by this. The research is a preliminary study on the QA scheme of Cyprus and for that reason, the author suggests that the investigations should be followed up by further research in order to validate them and expand the understanding behind it.

Limitations of literature review

The research for a quality assurance scheme has a wide scope of aspects and the factors that can affect it can vary from country to country. For that reason, an investigation into what constitutes a good quality assurance scheme for public investments requires several topics to be described and presented. This presents with the difficulty in applying a structured literature review and it is the reason why a scoping literature study was preferred (Arksey and O'Malley 2005). The field of quality assurance in the public sector is a newly researched topic with several aspects of it still being under research. Furthermore, as the introduction of the QA scheme in Cyprus was rather recent, under the time of writing the thesis, specific literature for Cyprus on quality assurance and public investment evaluation was scarcely available.

Limitations of manuals and official documentation analysis

For the analysis of the results and the presentation of the implementation issues in chapter 8, two Project Concept Notes were used. But because these were in their submission phase for evaluation and approval for project Pre-selection, these were branded confidential by the planners and it was not allowed to publish any specific data about these. Furthermore, as mentioned before, only the Project Concept Note (PCN) phase was studied in depth, as this is the only phase in the Cypriot QA scheme that has had finished and evaluated submissions. The submission and evaluation of Project Appraisal Reports (PAR) had not produced any results at the time of writing. Besides that, the fundamentally different

aspect of the new QA scheme is the submission and evaluation of the PCN, as there was a similar process for evaluating a completed project design before the introduction of the QA scheme, but with different assessment requirements.

Limitations with the interviews

More interviews should be conducted on the PCN's and their planners, regarding the implementation issues in order to verify the observations made during the interview sessions. The use of a semi-structured interview process (Brinkmann 2014), was optimal for this research, but for a follow up research on the implementation issues, more structure and clarification to the questions would be advised, to follow a line of inquiry that is more specific towards implementation issues. An issue identified after the completion of the research was that the components of the alternative study in the PCN was not sufficient, but further investigation should be applied in order to investigate this in-depth.

Chapter 3

Project governance in the public sector

Quality assurance of public infrastructure projects entails that a proper project governance regime is incorporated in the public administration procedures. For that reason, it is important to establish what are good public governance procedures, what factors affect the creation of public value and how public efficiency and performance is measured and improved. Finally, in order to answer the third research question, "What are the most prevalent issues with implementing a new QA scheme?", a foundation has to be created on the elements that makes a good QA scheme.

3.1 Project governance and strategic planning

Governance is a general term that refers to the steering of governments, institutions and corporations and their subsequent operations, transactions and projects (Morris, Pinto, and Soderlund 2012). According to Merriam-Webster, the definition of governance is the way that a city, company, etc., is controlled by the people who run it (*Merriam-Webster Dictionary* 2016). Linking these two definitions together in the perspective of projects, Hjelmbrække, Lædre and Lohne discuss that governance is the procedures with which the responsible entity that links the strategic goals of the operating organisation and the project output value (Hjelmbrække, Lædre, and Lohne 2014), while Cooke-Davies refers to it as the processes and decisions taken by the decision-makers that translate the overall strategies of an organisation into programmes and projects (Cooke-Davies 2002). A more comprehensive definition on governance is given by Müller in his book on project governance (Müller 2012).

"Governance provides a framework for decision making and managerial action within an organisation that is based on transparency, accountability and defined roles. It also provides a clear distinction between ownership and control of tasks." (Müller 2012)

Governance is generally categorised into three separate levels of planning, the strategic, the tactical and the operational level (Steiner 1969). At the strategic level, all the policies

and strategies of the government are formed. At this level the entirety of the society and the government is considered (Mintzberg 1994). Strategic planning is defined as the process of determining the major objectives of the organisation and the policies and strategies that will govern the acquisition, use and disposition of resources to achieve these objectives (Artto et al. 2008; Steiner 1969). At the tactical level, the strategic plans are supported and transformed into tactical plans, where the general strategies and policies are broken down to the institutional level (Pinto and Prescott 1990). According to the literature, tactical planning is the detailed deployment of resources to achieve strategic plans (Steiner 1969; Pinto and Prescott 1990). At the operational level, the planning of a project is performed and the main focus is on forming specific procedures and processes to be able to implement the project (King and Zmud 1981). The three levels of strategy planning and the dependencies in between them are illustrated in figure 3.1.



Figure 3.1: Strategy Levels of Planning

The differentiation in the levels of planning in an organisation is illustrated by the search theory, by Loch and Kavadias in *Implementing strategy through projects* (Loch and Kavadias 2012). The authors argue that there are two main strategies top-management resort to when problem-solving. The first is the delegation of the necessary work towards lower levels in the organisation. The second is the establishment of iterative processes that can provide solutions faster and easier. A project, according to search theory, is defined as a sequence of successive iterations of sub-problem trial solutions that converge to a system solution. Thus, specifically for complex projects, the senior management does not dwell into detail problem solving but rather take decisions and delegate the problem to an entity that has the ability to solve the problem (Morris, Pinto, and Soderlund 2012; Cicmil et al. 2006). Furthermore, top-management channels and checks the solutions produced by the entities lower in the chain of command and sets necessary structures that ensure proper communication channels and control of alignment of the solutions with the top-level priorities at the strategic level (Loch and Kavadias 2012; Hjelmbrække, Lædre, and Lohne 2014; Whitty and Maylor 2009).

From this, the question of what makes good governance, arises. According to Abednego

and Ogunlana, (2006) , the characteristics that makes good governance are (1)participation of all the involved parties, (2)rule of law, (3)transparency in the decision-making processes, (4)responsive decision-making, (5)consensus oriented, (6)equity of all parties involved, (7)inclusion of all parties in the decision-making, (8)effectiveness and efficiency of the process and (9)accountability.

3.2 Value in public projects

The creation of value in organisations is based on the development of new projects, in which the project outcomes and goals have to be aligned with the strategic goals of the base organisation (Hjelmbrekke, Lædre, and Lohne 2014; Ulaga and Chacour 2001; Morten Welde et al. 2014). A project is defined as a temporary organisation that has a common goal of delivering a specific outcome, in a specific time-frame and with certain resource restrictions, such as personnel, cash flow, etc (Müller 2012). Deriving from the definition of a project as a temporary organisation, is the need for a governance framework for projects. Project governance is the application of governance principles to project organisations, with the main aim to provide a consistent delivery of the project outputs, that are predefined by the base organisation’s governance framework (Morris, Pinto, and Soderlund 2012).

As any organisation, public institutions and departments invest in projects with the main aim of increasing the value of the initial investment. The difference between private and public organisations is in the measurement of the investment value (Laursen and Myers 2009; McLaughlin, Osborne, and Ferlie 2002). For private organisations, investment value is measured in terms of generally short-term financial profits due to the rapidly changing business environment (Yang 2016). In public organisations though, the value is measured by taking into consideration a long-term perspective (Brandenburger and Stuart Jr 1996; Ulaga and Chacour 2001). Also, value in public organisations take into consideration non-monetised benefits from the project to the society and environment (Directorate General for Regional and Urban Policy 2014). For example, if the government considers investing in a new commuter train line between two cities, the returned value from the project will not only include the revenues from tickets, but also the reduction in commute time. Public value can be defined as an amalgamation of similar to the corporate values, such as economic, political and social value (Yang 2016).

Trying to answer the question of creating public value through projects is a rather elusive concept, with researchers having several interpretations based rather on own experience than taking into consideration all the factors involved (Yang 2016; Pathak 2010). As Yang (2016) states, public value is created when elected officials vote to pass and then direct the bureaucracy for implementation. Public value though, constitutes to more

than just financial terms. Value could also be a reference to financial terms, quality of life, sustainability, expanding opportunities and other positive benefits for the public, but also knowledge and expertise of public administrators, ethical values and government efficiency, to name a few (Jacobs 2014). This vast array of perceptions on the notion of public value depends on the point of view and the depth of analysis (Yang 2016). Taking this into account, measuring public value is a rather difficult task, as the elements needed to be accounted and their interrelations are challenging to be computed. For example, comparing the value of an investment against an alternative to it, does not give a certain result, because there are many uncertainties to what the impacts could have been if the investment went into the alternative.

Measuring public value can be done in several forms. As Yang (2016) states, public value can be either of the following three; (1)end outcomes and measurable indicators, (2)institutional authority and accountability and (3)process resources and performance measurement (Yang 2016). These three categories constitute a loop that needs to be iterated in order to achieve re-identification of these values according to the new contingencies of a society and interrelated economies. For a government and its public administration to efficiently create value, an integration of participation, legitimisation and implementation should be expedited, which are the building blocks of achieving public value (Yang 2016; McLaughlin, Osborne, and Ferlie 2002).

Ensuring value creation through projects in private businesses is vital for their survival, thus all projects are measured and scrutinised during all of its phases. A project that is evaluated as not financially viable by the top management of a private corporation, will be terminated, in order to preserve resources (Abednego and Ogunlana 2006; Ulaga and Chacour 2001). In public institutions though, the control mechanisms and frameworks are not as clearly set for top officials to make these decisions (McLaughlin, Osborne, and Ferlie 2002). This arises from the fact that there is a considerable gap between the top management consideration of long-term success of a project and the project managers short-term success criteria of time, quality and scope (Hjelmbrekke, Lædre, and Lohne 2014; Shenhar et al. 2001).

The top management's consideration of success is based on the concept of creating a project in order to satisfy the strategic needs of the base organisation, that be a private organisation or a public institution (Shenhar et al. 2001; O'Flynn 2007; McLaughlin, Osborne, and Ferlie 2002). On the other hand, traditional project management is based on implementing and delivering a project according to its scope, delivery of the project in a certain time-frame and implementing a project under specific budget constraints (Loch and Kavadias 2012). However, the aforementioned gap between top management's strategic thinking and the project managements tactical and operational thinking creates com-

plications in the strategic alignment of the base organisation strategies and the project outputs.

Cost estimation development in a project

Initial cost estimations are usually lower than the actual cost of a project (Flyvbjerg, Skamris Holm, and Buhl 2003). The reasons behind this difference can vary based on lack of information on the circumstances and the environment, optimism bias or strategic underestimation (B. Andersen, K. Samset, and Morten Welde 2016; K. Samset and Gro Holst Volden 2016; James Odeck 2004). Many of the studies that are presenting cost overruns in projects take as a point of reference the cost estimation at the implementation phase and compare it to the actual cost. The results from these studies do show a significant amount of cost overruns (James Odeck 2004; James Odeck 2014; Magnussen and Olsson 2006), but the difference in cost estimation between the conceptualisation phase and the actual cost is only recently been attempted to be studied and seems to be significantly greater (B. Andersen, K. Samset, and Morten Welde 2016; K. Samset and Gro Holst Volden 2016). As Samset states, figure 3.2, underestimation of costs at the front-end phase is far greater than the cost overruns during implementation (K. Samset 2010).

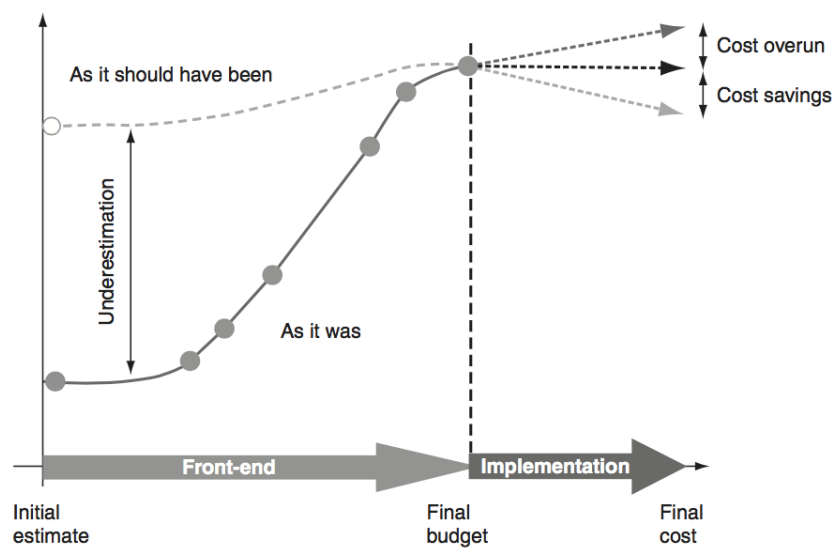


Figure 3.2: Underestimation at the front-end vs cost overruns during implementation (K. Samset 2010)

Andersen states that underestimation of costs is the rule, rather than the exception and has found that in the concept phase, deviations from final costs were up to 260 percent (B. Andersen, K. Samset, and Morten Welde 2016). Samset lists four causes of cost overestimation, deliberate underestimation by the planners and decision makers to increase the chances the project will be funded, the information and cost estimate methods are not adequate, unforeseen situations that may cause changes to the initial plan and cost

control during the implementation is lacking (K. Samset 2010). He also states that the usual cause from the four is the deliberate underestimation by planners and decision makers. This view is strengthened by Magnussen and Olsson with stating that one of the causes of cost estimation is strategic misinterpretation of costs to allow the project proposers to promote their projects (Magnussen and Olsson 2006).

Based on a study by Welde et al. (2014) on twelve Norwegian public investment projects, it can be seen that an increase in cost estimation during the front-end phase ranges between 70% to 1300%, while the cost increase during the implementation phase, even if it is still significant, ranges between -19% to 186%. This reinforces the statement of Samset in figure 3.2 on the magnitude of cost underestimation in the overall cost overruns. By analysing more the cost development during the front-end phase, it can be seen that the initial estimations are lower and more inaccurate than the estimations available during the final decision for implementation (Flyvbjerg, Skamris Holm, and Buhl 2003).

The reasons for cost increase and uncertainty is usually the lack of information in the initial phases of a project, the long period taken from the initial decision until the final decision for implementation, strategic misinterpretation and inflation (Magnussen and Olsson 2006; K. Samset 2010; James Odeck 2004). To counter these, Welde et al. (2014) propose several conditional recommendations, such as increase in transparency of cost estimations, the cost estimations to be based on an uncertainty analysis, use of reference projects and use third parties to review the cost estimations. The last recommendation, the quality assurance of the cost estimation of a project proposal, is tested by Odeck (2015) on several infrastructure projects in Norway. Odeck concludes that the impact of external quality assurance on the initial estimations were not significant for the initial estimations but it has led to reduction in cost overruns, as the external estimations tend to be more accurate than those by the proposing entity.

3.3 Public sector efficiency and performance

An efficient public administration sector provides the foundations for the efficient use of public resources and enhances the welfare of the public by providing investments that contributes to the quality of life (Angelopoulos, Philippopoulos, and Tsionas 2008; António Afonso and Jalles 2016; Joumard et al. 2004). Public sector efficiency is defined as the ability of a government to transform public wealth into public goods and services that benefit the society and promote growth (Angelopoulos, Philippopoulos, and Tsionas 2008). A public sector that functions well provides a smooth operation of the economy, the well-being of the people and also helps the activities of the private businesses (Rapanos and Kaplanoglou 2014). Efficiency can be categorised in different policy areas, but for the purpose of this study, the most interesting are infrastructure and administration. Antonio

Afonso, Schuknecht, and Tanzi (2010), has researched the correlation between the size of the public administration sector with its efficiency and a study by Angelopoulos, Philippopoulos, and Tsionas (2008) builds on the findings. The study concludes that the fiscal size and economic growth of a country depends on the size and efficiency combination in the public sector.

The size of the public administration sector and the governance capabilities of it, can affect and delimit economic activities (António Afonso and Jalles 2016). Furthermore, government size has a negative effect on the real GDP, with a stronger effect in economies with lower levels of institutional quality. On the other hand, smaller levels of government sizes, can positively affect institutional quality and subsequently real GDP per capita. A report by the World Bank in 2006 (Development Committee 2006), states that during a period of crisis and public sector reforms, the policy areas mostly affected by reduction in investment is infrastructure. Infrastructure though, provides the ground for economic growth, but this is often overlooked by policy makers during times of crisis. Public infrastructure investments gives high returns and externalities, which in turn can stimulate the economy to growth (Joumard et al. 2004; Development Committee 2006).

An ineffective public sector is a crucial obstruction to economic growth and is more apparent during periods of crisis (Asatryan, Heinemann, and Pitlik 2016). Therefore, during fiscal crisis periods, political or social pressures paves the way for public sector reform (Development Committee 2006). Another reason for a government to pursue the reform of its public administration procedures, is by external pressures. An example of external pressures could be to have sufficient evidence from neighbouring or cooperating countries that reforms make the public sector efficient (Asatryan, Heinemann, and Pitlik 2016). This reduces the uncertainty that planned reforms might not be efficient and provides with the necessary background for avoidance of mistakes the other countries have experienced (Rajaram, Kaiser, et al. 2014).

Public efficiency is defined by how the public administration uses public wealth in order to improve the welfare of the public (Angelopoulos, Philippopoulos, and Tsionas 2008). To present the efficiency in a measurable way, indicators on the performance have to be used (L. B. Andersen, Boesen, and Pedersen 2016). Public sector performance is dependent on the perspective of the reviewer. Efficiency is defined differently between the stakeholders and for example, a politician sees performance in a different way than an end user does. In their study, L. B. Andersen, Boesen, and Pedersen (2016), identify six principal distinctions in evaluating public administration performance. These include (1)the identity of the stakeholder, (2)having formal criteria the public administration has to adhere to, (3)having subjectivity towards interior perception concerns, (4)the process applied, (5)the output of the investment and (6)the level of analysis. A proper definition and measurement of public efficiency entails the correct perception and application of

these principal distinctions. This can lead to more informed decisions by governments and public officials in order to improve public efficiency and public investments.

3.4 Governance framework implementation

An example of a structured evaluation framework, established on a governmental level, is the Quality Assurance scheme of Norway (K. Samset, Gro Holst Volden, Olsson, et al. 2016). It requires all significant project proposals to pass through two evaluations, in order to assure its relevance and sustainability. The first evaluation is conducted on the concept of the project, and aim to assure that the project is relevant with the strategies of the government and its social need. The second evaluation is performed on the economic sustainability of the project and aim at assuring that the project will have more benefits than costs, considering both monetary and non-monetary costs and benefits (Christensen 2009). A more descriptive explanation on the Norwegian QA scheme is presented in chapter 6.

Every evaluation should follow some basic principles that are important for the complete coverage of the aspects of a project proposal (HM Treasury 2003; Abbott and Snidal 2001). These principles include among others, objectivity, independence of evaluators, transparency, reliability of the evaluation process, clarity, fairness and proper reporting (Austrian Development Agency 2009). Also, Chianca (2008) and OECD (2014), list a set of guidelines the project proposers should follow. These include:

- The establishment of an evaluation policy in the agencies
- Evaluations should be impartial and independent
- Results should be disseminated
- Evaluations should be used as feedback to the decision-makers
- Agencies that propose projects should cooperate with the evaluators
- Evaluation should be included in the proposal of a new project from the beginning of the project conceptualisation process

Managing change in an organisation

Implementing a new QA assurance scheme in a public organisation requires many changes to be applied to procedures, regulations and organisational structure, but also to the individual behaviour of the people administrating and using the new QA scheme (Todnem 2005; Elving 2005; Cao, Clarke, and Lehaney 2000). According to Burnes (2004), approaches to map a successful framework for implementing change in an organisation have

not been highly successful and are based mainly on personal interpretations and superficial analyses.

Organisational change can be characterised by the rate of occurrence, how it is initiated and by its scale (Todnem 2005; Martins and Terblanche 2003). The rate of occurrence can be either discontinuous incremental, smooth incremental, continuous and punctuated equilibrium. In the case of the introduction of a new QA scheme for quality assuring all major public investments, the change can be categorised as discontinuous incremental, which is characterised by a rapid change in strategies, structure and culture (Pathak 2010). Adding to this, the rate of organisational change affects the efficiency of the changes applied to the public sector (Bordia et al. 2004).

Furthermore, a categorisation of an organisational change can be performed on how it was initiated. Todnem, (2005), defines these as planned, emergent, contingency and choice. In the case of implementing a new QA scheme, the change is planned, and as Todnem (2005) suggests, this kind of organisational change can be the most effective. As mentioned in the previous paragraph, to be able to successfully change an organisation, a change in behaviour, structure, processes and culture should be performed (Bovey and Hede 2001; Burnes 2004; Luecke 2003). Change is also characterised by the scale of it and can be divided in a fine tuning change, incremental adjustment change, modular transformation change and corporate transformation change (Todnem 2005; Cao, Clarke, and Lehaney 2000; Martins and Terblanche 2003).

Organisational changes that improve the adaptation of a new QA scheme can be represented from one or several types (Pathak 2010; Bordia et al. 2004):

1. Technological changes including new products and new processes
2. Structural changes including new policies or procedures
3. Human changes including new promotional techniques or new personnel.

None of these is necessarily the most important and the importance is their total mix.

Applying too many changes to an organisation though, may not give the expected results, and in fact it could produce further inefficiencies than actually improving procedures (Pathak 2010; Todnem 2005). Also, in some periods of relative stability, where in which technologies are efficiently employed by standard procedures, experts, developed markets and any change in an organisation will affect their efficiency. So a proper mix of organisational change and stability in operations contributes to organisational viability and efficiency (Pathak 2010; Bovey and Hede 2001).

Thinking about the human aspect of an organisational change, Bovey and Hede, (2001), argue that individuals who are confronted with an organisational change go through a reaction process. The phases of this process are initial denial, resistance, gradual exploration and finally, commitment. As argued by the authors, resistance is part of human nature and individuals will resist change when traversing from the know to the unknown. Furthermore, as Pathak (2010) states, individual resistance can result from several reasons. These could be (1)economic reasons, (2)obsolescence of skills, (3)fear of financial loss, (4)personal reasons and (5)human characteristics.

Humans resist change in different ways and for every individual, the amount of time for their reactions could vary (Bovey and Hede 2001; Elving 2005; Fernandez and Rainey 2006). Some of the personal reasons different individuals could have for resisting change could be ego-defensiveness, status-quo, fear of the unknown, social reasons and peer pressure. Also, reasons due to human characteristics could be reliance on habits, loss of sense of security, ambiguity and uncertainty for the unknown and because individuals have selective information processing, where individuals make their own perceptions of the changes and do not trust the organisation enforcing them (Parker and Bradley 2000; Pathak 2010). As mentioned, the effects of these factors impacts each individual differently and the time needed to recover and adapt to the new situation varies. For the public administration, there is a need to minimise the implications from these factors as soon as possible (Fernandez and Rainey 2006). This requires measures to be taken by the public administration.

Levels of change

There are different levels and types of changes an organisation could go through. Each change requires some time to come into effect and bears a certain amount of difficult to be able to achieve these in a satisfactory manner. The levels of change include (Pathak 2010; Todnem 2005; Bovey and Hede 2001):

- Knowledge changes
- Attitudinal changes
- Behavioural changes
- Group or organisational performance changes

A change in knowledge could be demanded in an environment of a change in procedures, as with new procedures comes the need for new methods used (Todnem 2005). Also, the organisational performance is due to change, as the purpose of introducing a new QA scheme is to improve public investment efficiency and performance.

Implementation of a new framework

A public governance framework should provide a systemic view of each step included in the public investment cycle and it should apply to both conventional projects and public-private partnerships (Rajaram, Kaiser, et al. 2014). It should also be able to ensure that the governance procedures cannot be affected by aspects that have the possibility of affecting the quality of the investment (Allen and Tommasi 2001). Therefore, a public investment management framework should ensure the following (Allen and Tommasi 2001; Rajaram, Kaiser, et al. 2014):

- The investment is justified as an improvement in welfare
- Project management is effective and finished on time
- The operation is efficient and sustainable
- Learning outcomes by the implementation can be used in future investments
- Potential risks ensure in a relatively likely way, that the outcomes will be efficient and effective

Ensuing public investment sustainability and relevance, preconditions apply. Such preconditions can be the inclusion of effective assessment mechanisms and gate-keeping procedures that ensure only sustainable and viable investments are financed (Rajaram, Kaiser, et al. 2014). Furthermore, their efficient implementation is also a significant factor, because if implementation takes several years, this can result in the project being obsolete, more costly or less beneficial according to the new situation. So priorities might change by time and for that reason project proposals should be reevaluated if they are proposed again after several years.

Understanding the needs of a public investment framework requires an awareness of the reason inefficiencies occurs in public investment mechanisms. These issues can be multifaceted and not easily comprehended, but a simple description is provided in the literature (Rajaram, Kaiser, et al. 2014; Elving 2005). These could include:

- Weak inter-agency coordination
- Politically driven projects can disrupt evaluation procedures
- Allocation of resources in public situations are time-consuming
- Issues such as site acquisition, environmental safeguards and complex procurement challenges can result to significant delays and cost overruns.
- Corruption in public investments

Corruption can flourish in complex projects and presents one of the biggest problems in public investments. Efficient and solid mechanisms should be in place in order to combat corruption and should be backed with strict rules and legislation (HM Treasury 2003). A strong audit scheme should be in place to control public investments and ensure the fair distribution of public funds (Rajaram, Kaiser, et al. 2014).

Issues with the implementation of project governance schemes are varied and cover a wide spectre of aspects. In addition, available assessment and audit procedures can result in as much as the people administrating them are willing to. For these reasons, it is impossible for a single research to analyse all of them and provide a public investment framework which can resolve all these. To sum up, this study focuses on the structural and working culture issues of organisational change.

Chapter 4

Project evaluation and project success

One of the aspects of a functioning QA scheme should be the structured and effective evaluation of project proposals. An evaluation should be based on a set of criteria that promote long-term economic, social and environmental sustainability, serves the needs of the stakeholders and that a project proposal adheres to the government goals and strategies (Haavaldsen, Lædre, et al. 2014). This chapter begins by defining the front-end phase of projects and states the impact it can have on later stages of a project, which is an important part of a well functioning QA scheme, as presented in chapter 5. It finishes with what makes a project successful, considering the different perspectives of the stakeholders.

4.1 Front-end assessment of projects

The front-end of a project is defined as the phase where the concept is developed and a decision whether to proceed with the project proposal is taken (K. Samset 2010). It should be a structured process that includes predefined criteria which should be fulfilled during the development of the implementation (Miller and Hobbs 2005; Zhang and Doll 2001). At this phase, it should be aimed to gather and develop enough information, in order to address potential risks and affordability issues (Oh et al. 2015). In most major investment projects, available information in the initial stages is quite limited and therefore makes the analysis and decision-making of this phase hard to accomplish with reliable results (Zhang and Doll 2001). For this reason, decision-making in an environment that lacks sufficient information is based on assumptions, experience of the planners, interpretation of the available information, personal opinions and at the worst case, guesswork (K. Samset and Christensen 2015).

As illustrated by Samset, figure 4.1, uncertainty in projects is high during the initial phases of a project, due to lack of reliable and sufficient information. As the project development progresses and the available information increases and gets more accurate, the uncertainty diminishes (K. Samset 2010). In most projects, uncertainty is usually low

when these enter the implementation phase, but during the front-end phase information is scarce and uncertainty is high. It is generally accepted that a project's outcome is highly influenced by the efforts during the early stages of its development, and that additional effort put into at these early stages will eventually cost significantly less than the effort that would have to be put into a project to amend possible mistakes (Oh et al. 2015; Koen et al. 2002).

Figure 4.1 exhibits the impact information has on lowering uncertainty in projects. This impact though is not directly related to the total amount of information gathered, but rather the quality of it. Large amounts of information can cause the decision-makers an overload by not being able to process all of it and lead to disregarding important information, that would otherwise be critical for making the correct decisions (Williams and K. Samset 2010; K. Samset 2009). Acquired information should facilitate the development of the perspective of the proposed project. So, if the acquired information causes the decision-makers to establish a false perspective for the project, the decisions could lead it to a wrong direction (K. Samset and Gro Holst Volden 2016). In many cases regarding public investment projects, many interest groups that aim to influence the decision makers with hidden agendas or by tactical underestimation of the project costs, affect the perception of the decision-makers on costs and benefits, in order to pass a project they favour (Haavaldsen, Lohne, and Lædre 2012).

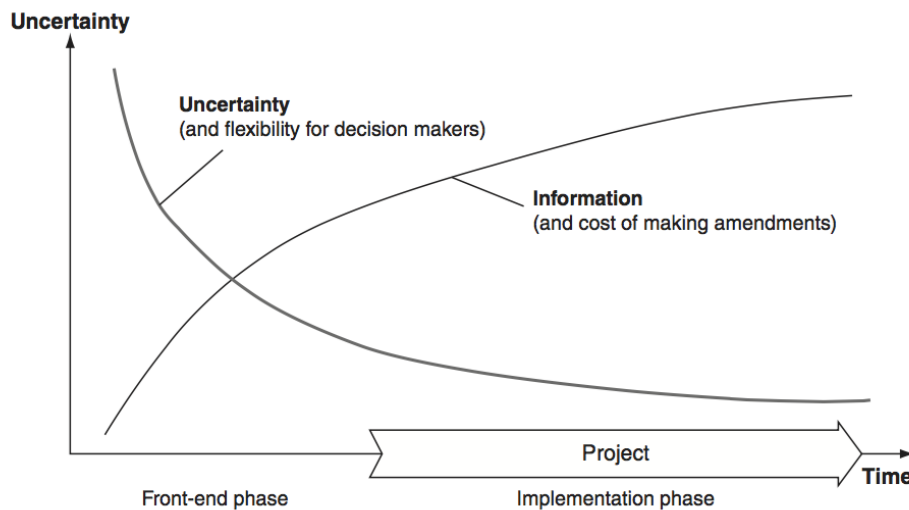


Figure 4.1: Uncertainty in the project life-cycle (K. Samset 2010)

A thorough and consistent assessment of a project concept and initial cost estimation requires from the responsible assessors to have a clear understanding of the methodologies and processes that are used during evaluation (Alexander and Faludi 1989). To facilitate this, a methodological framework should be implemented to provide the decision-makers with the necessary and reliable information to be able to perform assessments that will

lead to the main purpose of project governance, completing the right projects on the right budget (K. Samset, Berg, and Ole Jonny Klakegg 2006). Frameworks as these, standardise the requirements a project must fulfil and create mandatory decision gates for projects to go through. This creates a system that will ensure all project concepts are evaluated according to a set of criteria and that the affordability and long term sustainability of the projects are according the government's strategic plans. The definition of an evaluation is set by the OECD as follows:

“Evaluation is the systematic and objective assessment of an on-going or completed project, programme or policy, its design, implementation and results. The aim is to determine the relevance and fulfilment of objectives, development efficiency, effectiveness, impact and sustainability. An evaluation should provide information that is credible and useful, enabling the incorporation of lessons learnt into the decision-making process of both recipients and donors.” (OECD 2002)

To be able to assess the concept of a project, this systematic and objective assessment should be performed before the implementation of a project, and is referred to by the OECD as ex-ante evaluation (OECD 2002; Munda 2008). Ex-ante evaluation provides the decision makers with strategic information on the project alternatives at an early stage of the process and aims to identify the best conceptual solution between the alternatives of a project proposal (Morgenroth and Gerald 2006; Bourguignon and Ferreira 2003). Furthermore, the overall purpose of ex-ante evaluation is to offer a broad initial assessment into the alternative which will provide with the most benefits from an investment (K. Samset and Christensen 2015).

4.2 Project evaluation criteria

As mentioned, the evaluation of projects in a structured evaluation framework, requires the establishment of a clear set of criteria which the evaluation should be based on (Alexander and Faludi 1989; OECD 2014; Dias Jr and Ioannou 1996). Samset defines five criteria which are essential for the quality assurance of projects, as seen in table 4.1 (K. Samset 2009). The five criteria are based on the definitions given to them by OECD and are considered to be vital for project success (Chianca 2008). They were developed in 1991 for the management of development funds, but are now commonly used by development organisations and governments, internationally. The five evaluation criteria should be considered according to the issues of economic and financial aspects, institutional and management aspects, socioeconomic and cultural aspects, appropriate technology, environmental protection measures and policy support measures (OECD 2010).

The criteria of impact, effectiveness and efficiency are usually being considered during the detailed planning and implementation of a project and is part of the responsibility of

the planners and the developers/contractors (K. Samset 2010; Chianca 2008). In the case of the impact criterion, this responsibility falls on all the entities of a project equally, as it is affected by all the phases of a project. When assessing the impact of an investment, all negative and positive effects caused by it should be considered by taking the perspective of the whole society. All impacts are examined with reference to the state of nature prior to the implementation. As seen in figure 4.2, a project's impact is a product of the process. This means that the purpose of the project, the society needs and the outputs of it are impacting the environment the project is implemented into.

Quality Criterion	Definition
Relevance	Relevance is defined as the extent to which the objectives of a development intervention are consistent with beneficiaries' requirements, country needs, global priorities and partners' and donors' policies.
Sustainability	Sustainability is the continuation of benefits from a development intervention after major development assistance has been completed.
Impact	Positive and negative, primary and secondary long-term effects produced by a development intervention, directly or indirectly, intended or unintended.
Effectiveness	The extent to which the development intervention's objectives were achieved, or are expected to be achieved, taking into account their relative importance.
Efficiency	A measure of how economically resources/inputs (funds, expertise, time, etc.) are converted to results.

Table 4.1: The five OECD quality criteria for success (OECD 2002)

Effectiveness should be taken into consideration and be part of the responsibilities of the entity planning the project. The planning entity should design the project in such a way, that it achieves its initial goals and objectives, based on the needs of the end users (OECD 2002; Chianca 2008). During the implementation phase, the objectives should be clearly defined and realistic in nature. Chianca in his report, argues that effectiveness has many similarities to the impact criterion and many of the characteristics from both, overlap. According to OECD though, there is a need to differentiate between effectiveness and impacts as the perspective these two criteria are seen from is different and their point of reference differs, making both important criteria for evaluation of projects during their front-end phase (Austrian Development Agency 2009).

Efficiency is the measurement of the productivity of the project and is generally an eval-

uation of the implementation of a project, thus not concerning the front-end of projects. It is measured usually by comparing past experiences or the industry's best practise. Issues such as cost efficiency, optimal resource use and quality are examined when evaluating efficiency (OECD 2002; Chianca 2008). As seen in figure 4.2, efficiency regards mainly how the inputs are transformed into outputs, their quality and the cost of implementation. Specifically for public investments, the consideration of costs, benefits and resource use are not sufficient enough to cover the efficiency criterion, but non-monetised aspects should also be considered.

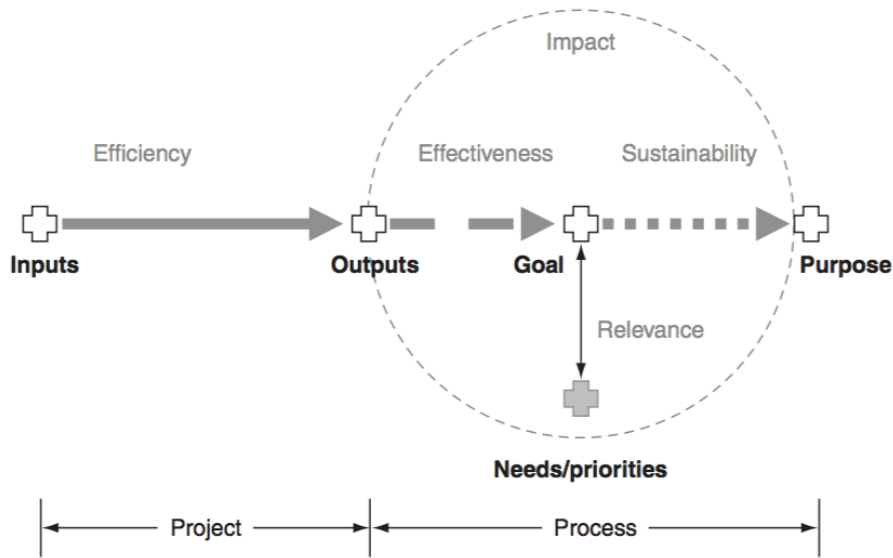


Figure 4.2: Project success criteria and their importance according to the project's need (K. Samset 2010)

Considering the front-end of a project, the most important aspect is the definition of the project's concept and more specifically, the procedure of choice of concept and the fundamental design of it (Ole J. Klakegg and Haavaldsen 2011; Zhang and Doll 2001). The aspects of improving project execution efficiency and effectiveness should not be the focus during the front-end planning of a project. It should be clear though that these aspects should be taken into consideration during detail planning of the project during the implementation phase. As this study focuses on the front-end evaluation of projects, the criteria that are scrutinised are *relevance* and *sustainability*. The reason that only these two success criteria are chosen to be investigated further is that if these are not fulfilled, however successful a project is regarding efficiency and effectiveness during implementation, the project will fail, when not relevant and sustainable (K. Samset and Gro Holst Volden 2016; Munda 2005). A non relevant project output means that it does not fulfil its initial purpose and goals and thus its operation does not add value to the operating organisation (Ole J. Klakegg and Haavaldsen 2011; Morten Welde et al.

2014). A non sustainable project output means that the costs are surpassing its benefits, that be financial, social or environmental, and again, value is not added to the operating organisation, and in fact it can cause it to loose value (Dias Jr and Ioannou 1996).

4.3 Relevance and sustainability in the front-end phase

Focusing on project relevance and sustainability during the front-end phase, will increase the chances of a project to be successful, both during the implementation phase and the operation phase. Both criteria are corresponding to the strategic level of planning, (figure 3.1) and are used as an evaluation of the actualisation of the general policies and strategies of the organisation developing a project, but also as an evaluation that these policies and strategies and the benefits from it are maintained during its life time. Failing to fulfil these makes a project nonviable and irrelevant towards its purpose and cannot be counterbalanced by better performance from the other three evaluation criteria (Ole J. Klakegg and Haavaldsen 2011).

Defining relevance for public projects

As defined in table 4.1, relevance is *"the extent to which the objectives of a development intervention are consistent with beneficiaries' requirements, country needs, global priorities and partners' and donors' policies."* (OECD 2002). Relevance refers to the application and attainment of the general strategies and policies that are set by the base organisation in the implementation of a project, which are mentioned in figure 3.1 as the strategic level of planning. Relevance of a project is evaluated from the perspective of the society and not from the perspective of the base organisation, in order to assure that the needs of the society are met (K. Samset 2010). A project with high relevance, ensures that the value of it towards the society and end users is increased, when it covers the needs and expectations of the end users.

A project that is deemed as relevant at one point could be rendered irrelevant after some years of operation (Kreiner 1995). Circumstances, such as economy change and development of new technology, can make it irrelevant for the society and the end users, diminishing its value. As mentioned before, relevance and effectiveness have a direct impact on each other, so when relevance is diminished, the effectiveness of the investment is lowered too (K. Samset 2010).

Evaluating and assuring relevance lies in the responsibilities of the base organisation. For public projects, the responsible departments for ensuring this are the agencies that are proposing and implementing projects, but also for the entity that is financing it, namely the Ministry of Finance and the Parliament, which are formally deciding on the implementation of it (Austrian Development Agency 2009).

Sustainability in projects

The second important criterion when evaluating public investments is sustainability. According to OECD, table 4.1, *"sustainability is the continuation of benefits from a development intervention after major development assistance has been completed. Also, it can be defined as the probability of continued long-term benefits or the resilience to risk of the net benefit flows over time"* (OECD 2002). Sustainability considers the attainment of strategies and policies the base organisation has established and is on the strategic level of planning (figure 3.1). The main concern when evaluating sustainability is if the realised goals of a project will serve the initial purpose of implementation, during the entire life time (K. Samset 2010; Munda 2008).

When evaluating sustainability, the three pillars of sustainability should be always considered, as seen in figure 4.3 (McKenzie 2004). The three pillars of sustainability derive from the Triple Bottom Line (TBL), described by Elkington in 1998 in the book *Cannibals With Forks: The Triple Bottom Line of 21st Century Business*. The TBL designates that the three most important factors that should always be regarded when discussing sustainability are the economic, social and environmental factors. The traditional view on sustainability regards the three factors of TBL as independent entities, which interact at some areas. The area that all three factors coincide are regarded as the optimal solution on the sustainability problem, where the societal, economical and environmental issues are dealt with in a way that they do not impact negatively the other issues (Cato 2009; Littig and Grießler 2005).

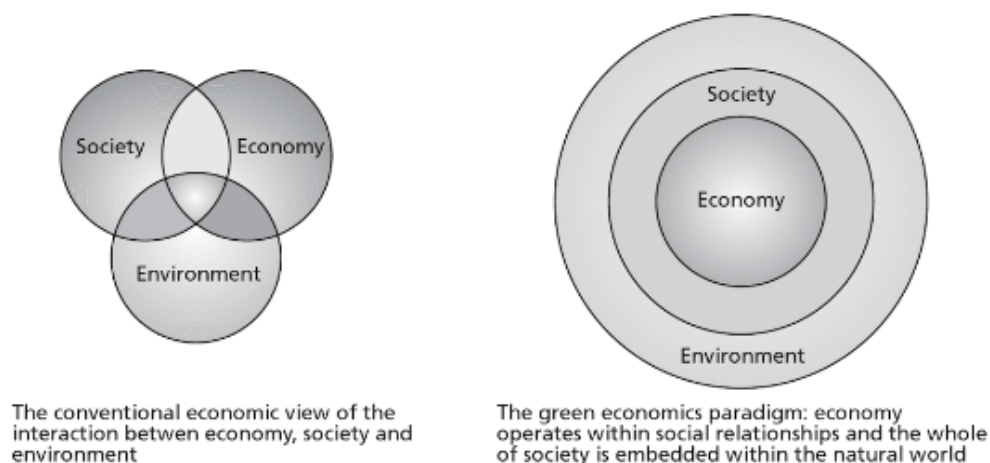


Figure 4.3: Evolution of sustainability application (Cato 2009)

On the right of figure 4.3, the new view on sustainability can be seen. The new view is more environmentally oriented and illustrates the interdependence between the three bottom lines. Economy is a sub-part of society and is dependent on interrelations in a society (Cato 2009). Furthermore, society and subsequently economy, are sub-parts of the

environment. The environment can have both positive and negative effects to society and thus economy, but also the economy and society can affect the environment (Munda 2005; McKenzie 2004; Littig and Grießler 2005). This holistic view of the triple bottom line gives a better understanding of the factors affecting sustainability, but also makes their distinction more complex to analyse when evaluating the impacts caused by an investment and its long term sustainability.

Evaluation of sustainability is regarded as broad and vague, especially when considering all three sustainability factor simultaneously (Munda 2008). Laedre et al. argue that to be able to assess sustainability of a project in a satisfactory degree, sustainability indicators should be used (Laedre et al. 2015). These indicators should be divided into economic, social and environmental (figure 3.1), alike the TBL factors and the analysis should include all three levels of planning, in order to cover all the perspectives of a project. As explained by Elkington, the TBL revolves around seven sustainability values which are the market, values, transparency, life-cycle technology, partnership, time and governance (Elkington 1998).

Summing up, sustainability evaluation is a multifaceted process that includes a long term assessment of economic, social and environmental factors, seen on strategic, tactical and operational level and has to include all the aspects that can impact a project's long term sustainability (Littig and Grießler 2005; Laedre et al. 2015; Munda 2008). For that reason, a structured methodology for identification of possible impacts and outcomes should be used when assessing sustainability.

4.4 Project success factors

Project success relies on a number of factors that resonate from proper management and implementation (Belassi and Tukel 1996; Shenhar et al. 2001). Much of the project management literature tries to identify the factors that leads a project to success. Project success though is relative to the perspective it is seen from (de Wit 1988). There are four main perspectives to project success, one being from the financing institution or the owner, the project management perspective, the third perspective is the one from the end users and also the society's perspective. Each project stakeholder views and measures success in different ways and at different phases of the project (K. Samset and Gro Holst Volden 2016; de Wit 1988; Munns and Bjeirmi 1996).

The populist notion of project success lies within project management success. Project management success belongs on the operational level of governance (figure 3.1), and measures success according to efficiency. Efficient implementation of a project entails that it is completed on time, on budget and with satisfactory quality (K. Samset and Gro Holst Volden 2016; Ahsan and Gunawan 2010). The populist notion of success or as referred to

before, the society's perspective, is influenced mainly by news articles and rumours and disregard other success factors than cost and time, that may make a project attractive.

The users perspective to project success considers to a certain degree the same elements as the society's perspective but the main focus for this group is the usability of the projects towards their needs and requirements (de Wit 1988; Pinto and Prescott 1988). It is related to project relevance and the degree their needs and expectations are fulfilled. The benefits of a project should exceed the costs during the whole life time of a project to satisfy the notion of success for the users, that is why long-term sustainability is also important for this group (K. Samset and Gro Holst Volden 2016).

Regarding the financing institutions' perspective, it revolves around project governance and the strategic performance of the investment. It dwells with the strategic level of planning (figure 3.1), and success is measured according to relevance, effectiveness and sustainability (K. Samset and Gro Holst Volden 2016; Shenhar et al. 2001). The expectations of the financing institution, amongst others are project goal alignment with the institution's strategic goals and vision, return of the investment and the outputs remain relevant and sustainable during the life cycle (Munns and Bjeirmi 1996).

From the project management perspective, the focus is mainly on delivering the project on time, on budget and with the expected quality required by the base organisation (de Wit 1988; Cooke-Davies 2002; Munns and Bjeirmi 1996). Other more obscure success factors are the correct application of project management during implementation, good planning and the utilisation of proper techniques and technologies to solve problems that arise during implementation (de Wit 1988).

To ensure success, a holistic view from all the different perspectives must be considered (Belassi and Tukel 1996). Klakegg and Haavaldsen mention, that achieving success starts with the processes of defining a project, namely the conceptualisation phase, and the procedures that the owner ensures that the output will be in line with the purpose of the investment (Ole J. Klakegg and Haavaldsen 2011; Shenhar et al. 2001). Success can be achieved by applying the project through quality assurance frameworks and adequate strategic flexibility to handle uncertainties (Miller and Hobbs 2005). Moreover, successful projects should always deliver outputs that are contributing to the initial objectives, according to society's needs and requirements and the negative effects should not overpower possible positive benefits (Atkinson 1999). Also, the long term sustainability of the benefits of the projects should be considered and assured to remain relevant throughout its life cycle (K. Samset and Gro Holst Volden 2016).

Chapter 5

Quality assurance scheme for public projects

A description on what defines quality assurance of projects is important to be able to answer the first research question of this study:

"What procedures does the government of Cyprus apply to quality assure major infrastructure projects?"

This chapter builds on the theories from chapter 3 and 4 to present what makes an efficient quality assurance scheme for public infrastructure projects. An infrastructure project evaluation should adhere to certain principles and standards in order to maximise efficiency of the process (Austrian Development Agency 2009). The chapter finishes with a short description of the measures the government of Cyprus have employed over the years to ensure efficiency in public project funding and long-term-sustainability of state initiated projects.

5.1 Quality assurance in a public sector setting

The importance of quality assurance of a projects' cost estimation is evident in the results of Odeck's study on the impact of external quality assurance on cost overruns (J. Odeck, M. Welde, and G. H. Volden 2015). But quality assuring the project's cost estimation does not provide a guarantee that the project will prove to be successful (Magnussen and Olsson 2006). An additional assessment on the proposal's concept, is necessary, to ensure that the strategic goals of the financing organisation are met with the implementation of the project (Rajaram, Le, et al. 2010). Ensuring project relevance and alignment with the strategies and policies of the financing organisation entails a systematic scrutiny of the initial concept and comparing it to other alternatives (K. Samset and Gro Holst Volden 2016; Ole J. Klakegg and Haavaldsen 2011). It derives from this that a formal quality assurance framework is needed for the systematic evaluation of project proposals, to be

able to choose the best proposals that will add the most value to the organisation. The presentation of what constitutes a formal framework starts with the proper definition of quality assurance (Rajaram, Le, et al. 2010). Quality assurance is defined by the OECD as:

"Quality assurance encompasses any activity that is concerned with assessing and improving the merit or the worth of a development intervention or its compliance with given standards" (OECD 2002).

Quality assurance is important to be independent from the proposing entity to assure the proper assessment procedure of a proposed project and avoid conflict of interests. Furthermore, it should be structured to assure that the evaluation is based on a standard set of criteria and not reside on the individual judgement of the evaluator, which removes to a certain degree optimism bias from the process (Menon, Karl, and Wignaraja 2009; Rajaram, Le, et al. 2010). Quality assurance allows the decision-makers to take informed decisions and also to plan strategically. Rajaram et al. (2010), propose that evaluations for public investment projects could be performed by the Ministry of Finance, the Planning Ministry or an other specialised department, that has the required expertise and accountability, and also has in place a formal framework that process them in an efficient manner.

Taking into consideration the shortcomings of the public investment management and the success criteria of a public quality assurance framework, makes the importance of the application of a structured, systematic and mandatory quality assurance framework evident (J. Odeck, M. Welde, and G. H. Volden 2015; Rajaram, Kaiser, et al. 2014; L. B. Andersen, Boesen, and Pedersen 2016). A framework as such should take into consideration both concept and cost estimation of a proposal and be based on a structured set of criteria (Austrian Development Agency 2009). These should aim to eliminate the political influence, corruption and optimism bias of the designers, but also aim to improve intercommunication between ministries and departments, limit inefficient investments and ensure long term sustainability and relevance of the investment (Haavaldsen, Lohne, and Lædre 2012; Rajaram, Kaiser, et al. 2014). This notion is supported by the definition of quality assurance presented previously.

Evaluation of investment proposals should adhere to certain principles and standards, recognised by the international community, as seen in table 5.1. The intend of these principles and standards is for a public administration to be transparent, improve communication, learn from experience and get a deeper knowledge of assumptions and evaluation procedures applied (Austrian Development Agency 2009).

Principle	Importance
Objectivity	An evaluation should be able to achieve a certain level of objectivity and impartiality.
Independence of evaluators	Credibility of the evaluation relies on the independence of the evaluators. Evaluation should not be prone to internal or external pressures.
Stakeholder participation	All parties involved should participate in the evaluation process.
Transparency	A clear definition of the evaluation criteria, methodologies and priorities have to be expressed.
Reliability	Results should be presented in a credible way and should be comprehensible.
Clarity	An evaluation should be structured according to a set of guidelines and all of the questions/sections required should be answered.
Protection of interests	Security and the rights of the stakeholders involved in the evaluation process should be protected.
Feedback	Feedback to politicians and decision makers should be required.

Table 5.1: Important evaluation principles and standards (Austrian Development Agency 2009)

A quality assurance framework should include aspects that ensure that the investment scopes are serving the strategic goals of the proposing entity. An evaluation should exploit existing data and knowledge to ensure long-term sustainability (Choueiki 2016). Furthermore, the independency of the assessors and the project proposers should be ensured and be safeguarded by political or institutional pressures. As a minimum, a concept assessment is advised to precede a formal feasibility study, in order to screen out in an early phase white-elephant projects and set the baseline on major design elements (Rajaram, Kaiser, et al. 2014). A working paper by the World Bank, gives a recommendation on the necessary features an efficient public investment framework should adhere to (Rajaram, Le, et al. 2010). These features are presented in table 5.2, which describes a comprehensive evaluation process of project proposals, but also, provides with features for the evaluation of finished projects. This helps to create a benchmark for planning projects in the future, and in addition to establish performance measures for the QA scheme.

Feature	Description
Investment guidance	Public investment should be guided by strategic guidance to be able to secure government decisions and guide decision makers in the ministerial level. Strategic guidance could take the form of a national plan, long-term strategic documents or a sector specific strategy guide.
Project development	Project development should be proceeded with the help of a formal process. Investment proposals should include basic project information, relevant strategic priority, problem formulation, objectives, expected results and an estimated budget.
Preliminary screening	Preliminary screening of all investment proposal will ensure that they meet the minimum criteria according to budget allocations and sustainability.
Formal project appraisal	A viability appraisal should be performed to ensure that projects are viable during the entire life-cycle. It includes a pre-feasibility study, a feasibility study, a preliminary design and an environmental and social impact assessment. Project appraisal entails that an economic evaluation is performed and investment alternatives are appraised against each other.
Independent review of appraisal	An independent review of the appraisal is recommended to avoid optimism bias. Cost under-estimation and benefit over-estimation is a norm that should be avoided. Qualified governmental agencies that could perform such a review are the Ministry of Finance, the Planning Ministry or a Specialised Agency.
Project selection and budgeting	Project selection should be performed in line with the budget cycle to achieve a sustainable investment program in a government. It entails good decisions in choice of investments and active management of the asset portfolio. Also, a sound budgetary system that ensures recurrent funding for operation and maintenance is important for long-term sustainability.

Project implementation	It should be ensured that investments are able to be implemented. Therefore, project design should include organisational arrangements, realistic time schedule, procurement plans, management and monitoring of the implementation and cost management.
Project adjustment	Some flexibility for changes in the disbursement profile should be formulated to account for changes in implementation circumstances. Funding mechanisms based on stepwise funding provides the ground for sound monitoring process and an effective financing mechanism.
Facility operation	A process that ensures operational efficiency should be developed to be able to operate effectively and the required services be delivered. An effective handover mechanism from the implementation phase to the operation phase can ensure that operation and maintenance is adequate and running. In addition, active monitoring of the new investments ensure that they deliver their intended services.
Completion review and evaluation	A completion review for the implementation of a new investment serves to create a benchmark for investment efficiency and effectiveness according to the initial objectives in the project design. This is essential for governments to create a feedback and learning environment from completed projects, which builds expertise for future evaluations.

Table 5.2: Necessary features for an efficient public investment framework (Rajaram, Le, et al. 2010)

5.2 Quality assurance of public investments in Cyprus

Issues such as quality assurance of public investment projects are not investigated heavily by research institutions in Cyprus. On the other hand, there is a considerable amount of research dedicated to the private banking sector, regarding the failing of the financial services during the crisis of 2012, which states the need for better control mechanisms and assessment of their businesses (Krambia-Kapardis and Psaros 2006; Zenios 2013; Blundell-Wignall and Slovik 2011; Stephanou 2011). A clear preference by all recent governments in Cyprus, is to implement most large public investments with a Public-Private Partnerships (PPP) agreements (Commission 2013). PPP share the responsibilities and

liabilities between public and private sector and this way of contracting large projects is related with potential efficiency gains due to better management skills of the private sector. All these show that the focus on public administration efficiency is not that high and there is a clear preference by researchers to investigate more in depth the inefficiencies in the private sector.

The government of Cyprus though, has documented results on the efficiency of some of their investment projects. In reports by the Audit Agency in 2002 and 2003 shows that the efficiency of road projects and the computerisation of the public sector, tend to be generally over budget and delayed. The general auditor suggests that changes should be made to improve the efficiency and effectiveness of the public administration without giving any specific recommendations (Audit Agency 2002; Audit Agency 2003). Some of the many factors for project delays and cost overruns identified are:

- The agencies lack the necessary knowledge to manage the whole life-cycle of their projects
- Contracting procedures makes the process slower
- Mistakes in the initial planning
- Changes in the initial planning due to hastily conducted planning
- Projects are initiated too early
- Urban plans and geological surveys are not sufficient to get a clear picture of the conditions
- Old project proposals are implemented without considering changes in the needs and requirements
- Plans are presented to local authorities and a decision is taken according to their needs and not the needs of the entire pool of stakeholders
- Lack of external assessment of a plan

The reports conclude that an independent and efficient assessment of a project plan should be in place and that the coordination between the stakeholders should be improved (Audit Agency 2002). Also, an ex-post evaluation on completed projects should be implemented in order to establish performance measures. These performance measures can be used to learn from past mistakes and improve the current procedures (Audit Agency 2003). Another important recommendation by the Audit Agency is the implementation of a Programme Management Unit (PMU). This creates agility and flexibility to manage the programme in an efficient manner, taking into consideration all the levels of the public administration, that would be strategic, tactical and operational levels of planning.

Adding to the previous, a report by the EU commission identifies the need for a regulatory framework and a sufficient ex-ante evaluation of investment projects in Cyprus (Commission 2013). The EU commission has identified several issues in relation with the budgetary framework. These include the lack of formal functioning fiscal rules and the absence of a medium-term budgetary framework, which results in low efficiency of state-initiated investments. The government of Cyprus introduced a law for implementing a Medium-Term Budgetary Framework and Fiscal Rules with the 2013 budget law in order to resolve the issues with the lack of a budgetary framework. This law is called Fiscal Responsibility and Budget System Law and in this document it is referred to as FRBSL (N.20(I)/ 2014). Amongst other measures, FRBSL establishes a formal framework for quality assuring new public investment proposals and requires all project proposals to undergo an independent assessment of the Concept and the comprehensive Project Appraisal Report (PAR). The aim of this framework is to eliminate as early as possible "white elephant" projects and avoid unnecessary expenses in project planning that would either not be implemented or will be implemented and result in non-relevant and non-sustainable projects.

Chapter 6

Quality assurance schemes of Norway, United Kingdom and the Netherlands

For the purpose of providing a basis for comparison and further discussion for the QA scheme of Cyprus, a brief presentation is provided on countries that already have a functioning and acknowledged QA scheme. This chapter provides only a short description of these QA schemes and is based on the Concept report number 47. (K. Samset, Gro Holst Volden, Olsson, et al. 2016). A more detailed presentation of the schemes presented in this chapter can be seen in Appendix D. The description provides an insight on the governance regime and the quality assurance procedures for public investment projects. In table 6.1, a summary of the QA schemes of Norway, United Kingdom and the Netherlands is done, in order to establish a base for further analysis and discussion. Table 6.2 is an overview of the simplified public project governance regimes of these countries and table 6.3 is a representation of their quality assurance stage-gate models.

The selection of countries for a constructive comparison was based on factors such as EU membership and the history of Cyprus. Firstly, Norway was chosen as it has an established and recognised QA scheme. With a population of 5,2 million it is not significantly larger than Cyprus, but with a population density of 15,5 per square kilometre, a double GDP than Cyprus at \$69,000, and a difficult terrain to develop infrastructure projects on, makes it more challenging for the Norwegian authorities to provide sustainable projects and also be able to be relevant with the needs of most of the stakeholders (CIA 2017). Another reason for selecting Norway as one of the countries for comparison is that the master thesis is written for a Norwegian university, thus makes it eligible for use in a comparison.

The second country selected is United Kingdom. United Kingdom was selected on the basis of the history of Cyprus. Before 1960, Cyprus was part of the British empire and as a consequence many of the current public institutions and procedures applied to the public administration sector were developed by the British during that time. Nevertheless,

many changes have occurred during the years and the procedures for each country have changed in a way that they do not resemble that much anymore. Furthermore, as stated in the Manual for Pre-selection and Project Appraisal, (World Bank 2016), one of the countries used as a basis for good international practice is United Kingdom and many aspects of the development of the Manual are based on it. United Kingdom has an estimated population of 65 million and a density of 255 inhabitants per square kilometre. The GDP though, is significantly higher and lies around \$42,500 (CIA 2017).

Netherlands was the third country selected for comparison. The reasoning behind the selection of Netherlands was that it is part of the EU, unlike Cyprus, where many procedures regarding fiscal policies are dictated by the European Commission. Netherlands has an estimated population of 17 million inhabitants, with a density of 413 inhabitants per square kilometre. Its GDP lies around \$50,000, which is significantly higher than Cyprus (CIA 2017).

A summary on key aspects on the governance regimes and the stage-gate models from the three countries can be seen in table 6.1. These aspects include the QA scheme's administrators, key assessors, which investments it applies to and decision points. The table provides a simple representation of the QA schemes and is based on Concept report number 47 (K. Samset, Gro Holst Volden, Olsson, et al. 2016).

Responsible entity	Norway	United Kingdom	Netherlands
Initiation of QA process	Ministry of Finance	A designated agency under the Cabinet Office	A designated government agency
Decision of choice of concept	Government	HM Treasury	A designated government agency
Applicable sectors	All, except health, oil/gas and state enterprises sectors	All sectors	Infrastructure projects
Threshold value	NOK 750 million	Large projects	No
Concept appraisal	Government	HM Treasury	Designated government agency
Socio-economic appraisal	Agency or ministry	Agency or ministry	Responsible government agency
Decision to finance	Parliament	HM Treasury	Government
Quality assurer	External consultant	Independent quality assurer	Designated government agency
Number of decision points	2	5	3
Advisory interventions	2	6	1

Table 6.1: Summary of QA schemes of Norway, United Kingdom and the Netherlands

As seen in table 6.2, technical quality assurance is performed by different entities for each country. In Norway it is performed by an external evaluator, in the United Kingdom by the IPA and in the Netherlands by a designated governmental agency. Political decision for proceeding with a project proposal lies generally with the government. In Norway the Parliament takes the formal decision for approval and financing, in United Kingdom the responsible entity is the Cabinet Office and in the Netherlands, the ICRE, which is a inter-ministerial body, makes a formal recommendation to the government, which takes the final decision to finance.

The stage-gate models of the three countries vary in both steps of appraisal and number of decision points, as it is evident in table 6.3. Norway's stage gate model has two formal quality assurance points, called QA1 and QA2, in which respectively the choice of concept and the management documentation are quality assured. Formal decisions about the choice of concept and the management documentation are taken by the government and the Parliament, respectively. Also, a threshold of 750 million NOK has been decided to avoid having smaller projects go through a process that is costly and time consuming.

For United Kingdom, there are several steps in quality assuring an investment proposal. The process starts with a review of project concepts during the policy formulation phase. Each project phase in the Business case or Project Initiation phase, requires a formal assurance review. This is performed by IPA and the HM Treasury in each of the three phases of the Business Case. There is no formal threshold set that dictates which projects should go through the QA process. In the official guidelines of the United Kingdom, it is stated that all large projects are obliged to follow the procedure and the categorisation of a large project is undergone by the HM Treasury.

In the Netherlands there is only one formal requirement for external quality review which is performed by technical experts after the planning/development phase. There are also four formal decision gates; (1)the initial decision, (2)the preference of alternative decision, (3)the planning decision and (4)a decision to prioritise against other investments. The responsible entity for these decision points is a designated governmental agency, while the final decision for implementation is taken by the ICRE and the government. As in the case of United Kingdom, there is no formal threshold for projects that have to go through the QA process, but as an informal rule, only large projects go through.

It is evident from this short summary of the QA schemes that there are a lot of similarities and differences between the three QA schemes. These are further analysed and compared with that of Cyprus in chapter 10 in order to investigate potential strengths and weaknesses of the QA scheme that was established in Cyprus in 2016.

Public investment governance in Norway, United Kingdom and Netherlands

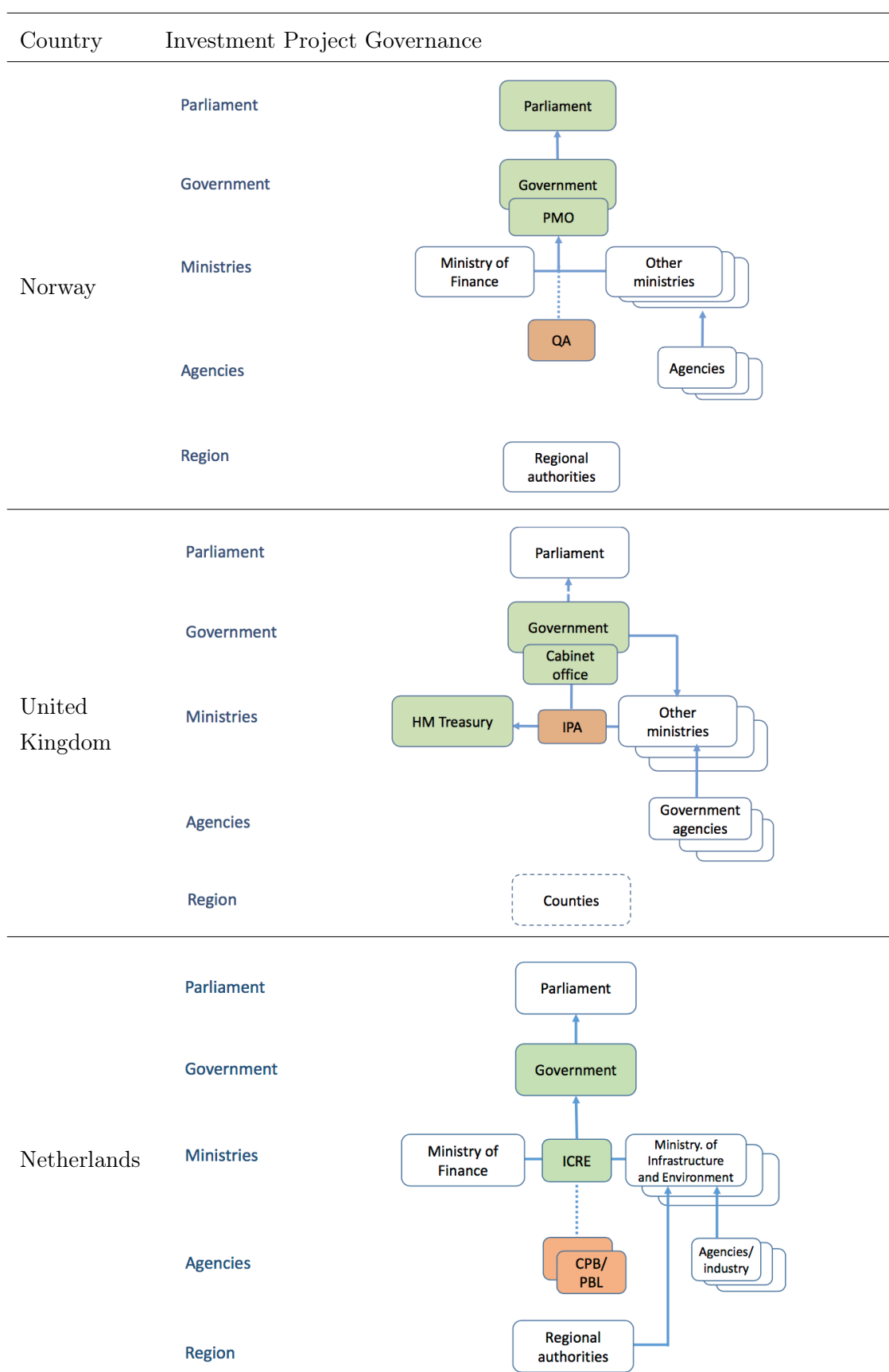


Table 6.2: Investment Project Governance in Norway, United Kingdom and the Netherlands

Stage-gate models in Norway, United Kingdom and the Netherlands

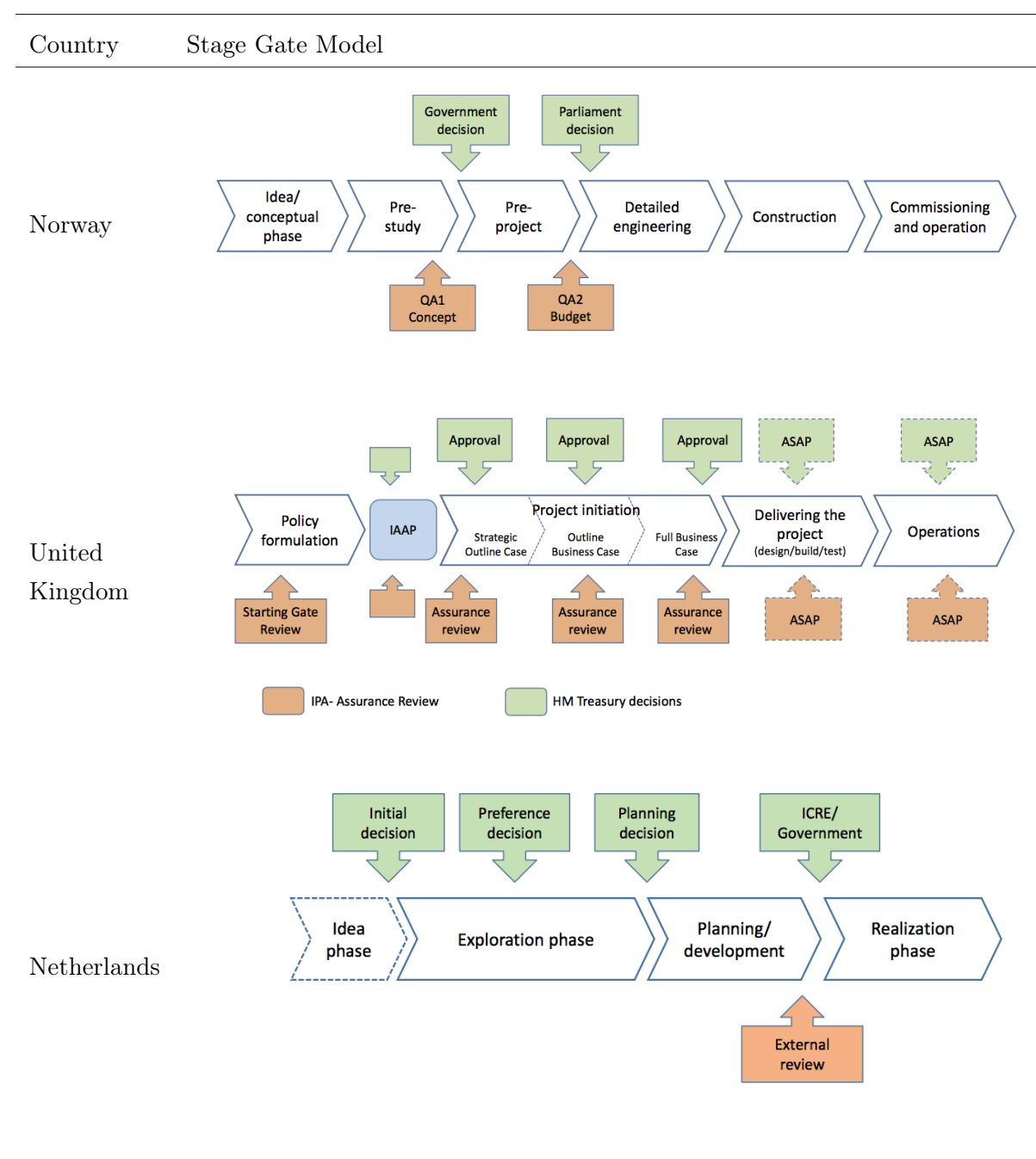


Table 6.3: Stage-gate models of Norway, United Kingdom and the Netherlands

Chapter 7

Quality assurance of public infrastructure projects in Cyprus

As part of the reform of the public administration institutions, the Parliament of Cyprus has voted the Fiscal Responsibility and Budget System Law (N.20(I)/ 2014). The law describes the measures that have to be applied in order to rationalise the structures and procedures for the management of public resources. For this reason, a Growth Framework has been established for the implementation of the law and is comprised by three main pillars:

1. Government Policy Statement: A description of the development strategy of the current government and identifies the sectors of the economy that should be prioritised. It is prepared by the DG EPCD.
2. Fiscal Policy Statement: It is prepared by the Ministry of Finance and determines the limit of spending for each economic entity.
3. Employment Policy Statement: Prepared by the Department of Public Administration and Personnel and determines the governmental policies regarding personnel and employment.

Based on the three main pillars of the Growth Framework strategy, all ministries are preparing Strategic plans on a three year basis, which will include Budget proposals that are activity based. The Budget proposal methodology includes the application of the Pre-selection and Appraisal model for public investment projects, which is further described in this chapter. This form of submitting the Budget proposal was first implemented during 2016 for the 2017-2019 Budget proposal.

Furthermore, a new Internal Audit Office was established for each ministry and the responsibilities of the General Audit Office were expanded, to offer a more comprehensive and effective evaluation and quality assurance of the processes that are being implemented

in the public sector. The main purpose of these measures are to promote efficiency and effectiveness in public institutions.

7.1 Pre-Selection and Project Appraisal of Public Investment Projects in Cyprus

According to the FRBSL (N.20(I)/ 2014), all public investment projects that are expected to have a significant cost, must be evaluated and selected in a structured way. The reason behind it is to secure that the most profitable projects are selected for implementation by the Parliament and that these projects are aligned with the strategic goals set by the current government.

As part of the reform of the public sector of Cyprus, several steps and measures are taken to improve the effectiveness of the public administration. For this reason, a manual was produced by the Directorate General for European Programmes, Cooperation and Development (DG EPCD), with cooperation with the World Bank Group (World Bank 2016), that explains all the required steps for public investment project pre-selection and appraisal that are required by the FRBSL. As stated by the *DG EPCD*, which is the responsible agency in the Government of Cyprus for the appraisal of investment projects, every public investment project that entails a significant amount of investment must be subjected to a Pre-Selection and Appraisal framework that focuses on an *ex-ante* evaluation of the efficiency of public investment projects (DG EPCD 2014-2016). The Manual was written by drawing examples from acknowledged public investment frameworks. The main countries the Manual draws examples for good international practice are the United Kingdom, New Zealand, Australia, Northern Ireland and Republic of Ireland. In addition, a guide issued by the European Commission on Cost Benefit Analysis of Investment Projects was used for the development of the Cost-Benefit analysis for this Manual. (Directorate General for Regional and Urban Policy 2014)

The N20(I)/2014 law states that the framework is to be subjected to *financially significant* projects. The guideline states that, as of 2016, all projects that are expected to have a value equal or exceeding €5 million, are considered financially significant. In addition to that, the guideline states that for all investment projects with an expected cost between €500 000 to €5 million, a Project Concept Note (PCN) should be prepared. The expectations for preparing a PCN for an investment project is explained in more detail further in this chapter. For all projects with an expected cost under €500 000, it is not required to be subjected to the Project Appraisal framework, but the MoF retains the right to request a more simplified procedure, when that is deemed necessary.

In the following chapters of this report, the Pre-Selection and Project Appraisal framework will be referred to as a quality assurance scheme (QA scheme), for the means of

simplifying the text.

Definitions

Economic viability

Economically viable means that a project is feasible to implement and that the benefits are exceeding the costs. Benefits can represent non-monetised benefits and costs, for example, time reductions in road projects. Economic viability is appraised by the DG EPCD.

Financial affordability

Financially affordable means that a projects implementation can be financed through government funding, funding through European Regional Development Funds (ERDF), loans, self financing or other sources. The financial affordability is appraised by the MoF BD.

Entities and responsibilities

Minister of Finance (MoF)

The MoF is the office that directly supports the MoF and is responsible for making the formal decisions and recommendations during the project selection and appraisal framework. The MoF has the authority to approve or terminate a proposed project and also, to request further documentation, in any form, when deemed necessary for clarifying unclear project aspects.

Ministry of Finance Budget Directorate (MoF BD)

The MoF BD is a Directorate under the direct governance of the Ministry of Finance and is responsible for the preparation of the National Budget proposal. Other responsibilities vested to them under the N.20(I)/ 2014 law, include the appraisal of the financial affordability of new project proposals that go through the Pre-selection and Appraisal process for public investment projects.

Directorate General for European Programmes, Coordination and Development (DG EPCD)

DG EPCD is a newly established independent agency that replaced the Agency of Planning. The agency's mission is to "promote economic growth through strategic planning, coordination and monitoring of the implementation of government policy and to safeguard the optimal use of available European and other funds" (DG EPCD 2014-2016). From the N.20(I)/ 2014 law or as called the FRBSL, the responsibilities that are vested to the DG EPCD include the planning and control of European funded projects and European

funding, evaluation of public investment projects and strategic planning. Additionally, the DG EPCD has the responsibility for development and horizontal issues, such as Research, Technological Development and Innovation, Lifelong Learning, Corporate Social Responsibility and the "Europe 2020" Strategy. The European Funds and Programmes the DG EPCD is responsible for, include amongst other funds and programmes such as the European Investment and Structural Funds, the EU Competitive Programmes and the grants provided by the countries of the European Economic Area and Switzerland.

In this study the main focus is given on the role of the agency in the evaluation of public investment projects and the techniques and methodologies that are applied to evaluate and give recommendations on economic viability of proposed investment projects.

Economic entities

For the purpose of this report, economic entities are all the line ministries, departments, constitutional entities and agencies that are financed by the National Budget of Cyprus.

The Head of an economic entity is the respective Minister from each ministry and their subordinate departments and the director for the independent government agencies. Their roles are to assess the projects of their departments and agencies and make the formal decision to proceed with a project proposal.

Introduction to the Pre-Selection and Appraisal of Public Investment Projects Model

The Public Investment Management process is divided in five main phases, project pre-selection, project evaluation, project selection, project implementation and project monitoring. A sixth step is added to the process which is an ex-post evaluation. The purpose of the sixth step is to create knowledge on inefficiencies in the process and provide a basis for learning and further improvement of the process.

The following section is based on the contents of the Manual for Pre-selection and Appraisal of Public Investment Projects (World Bank 2016), the N20(I)/2014 law on Fiscal Responsibility and Budget Systems Law (FRBSL) (N.20(I)/ 2014) and the Project Investment Management (PIM) Guidelines (DG EPCD 2016).

This study is focusing mainly on the two first phases of the process, the project pre-selection and project appraisal. In these two phases, the appraisal of the economic, social and environmental sustainability and economic affordability is performed. Also, it is ensured that the outputs of an investment project is in line with the Strategic Plan of the Government of Cyprus and the goals and strategies of the economic entity that implements the project. By ensuring the sustainability, the affordability and goal alignment of an

investment project, the efficiency of public investments can be improved. The remaining phases in the Project Selection model will be briefly explained but not analysed in depth.

The six (6) distinct phases of public investment project appraisal:

1. Project pre-selection phase
2. Project appraisal phase
3. Project selection phase
4. Project implementation phase
5. Project monitoring phase.
6. Ex-post evaluation

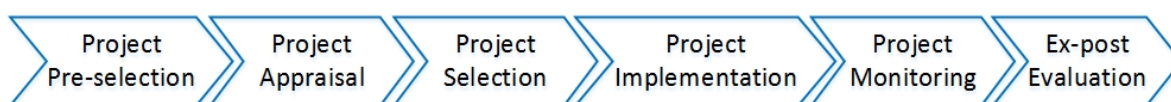


Figure 7.1: The six phases of the Public Investment Management Process (World Bank 2016)

Pre-selection phase

At the end of the Pre-selection phase there is a decision gate where a formal decision on whether a project proposal shall proceed for further in-depth planning and be set forward for appraisal. The purpose of this phase is to terminate non-viable and unaffordable projects before more costly analyses are performed. More specifically, the main objectives of this phase is to exclude projects that are:

- inconsistent with the governmental strategic plan and the responsible economic entity's goals
- evaluated as not economically viable
- not affordable for the government to implement during the current planning period

Furthermore, this tool provides the responsible economic entities the opportunity to assess the robustness of a concept in terms of logic, risk and sustainability and also, use the lessons learnt from previous ex-post evaluations of similar projects. At this stage though, the Project Appraisal framework is still in the beginning phases and the knowledge from previous ex-post evaluations is lacking, but the DG EPCD agency has already knowledge in the assessment of public investment projects from previous projects.

The process of identifying new projects starts with a project concept identification by the economic entities and these can be identified from several mechanisms. These mechanisms include asset management systems to identify new projects that will replace current infrastructure that its current condition is not acceptable or the life time is nearing expiration. Another source for new project identification could be the sectoral strategic plans and master plans which highlight specific sectors and priority areas where investment is needed or requested. Lastly, new projects can be identified by including relevant stakeholders in the process. This step is referred to as Decision Gate 0: Decision for proposal of a new project (DG0) in the Decision Gate Model (Figure 7.5).

The first step in the Pre-Selection phase is the preparation of a Project Concept Note (PCN) by the economic entity that proposes the new project. The head of the economic entity has the responsibility to enforce formal systems so that project concepts are developed properly and accurately in the PCN, the concept development process is robust and that the PCN is subjected to internal scrutiny by officials not involved in the new project. During the preparation of the PCN, the units that will be responsible for implementing and financing the project must be included in the process. The process for internal scrutiny for new project concepts must be performed by officials in the economic entity that are not directly involved in the preparation of the PCN and after internal scrutiny, the head of the economic entity has to approve the PCN in order to be submitted for appraisal. The responsibility to evaluate if the internal scrutiny processes in a economic entity are established in a structured and efficient way lies with the MoF.

The second step in the Pre-Selection phase is the appraisal of the PCN. The appraisal is performed by two entities, the DG EPCD and the MoF BD and include an assessment of strategic issues and economic viability by the DG EPCD and an assessment of affordability by the MoF BD. The PCN assessment by the DG EPCD requires in addition a Preliminary Environmental Impact Assessment, which is performed by the Department of Environment after a request by the DG EPCD (see chapter 5.2). If the results of the assessments of the PCN by the two entities is adequate, a recommendation is sent to the MoF for approval. The approval is done by the MoF, on the basis of the assessments of the PCN and the proposal will either be *accepted* for further evaluation in the Project Appraisal phase, *rejected* which requires the reasoning for the rejection and *resubmit with revisions* which requires the MoF to give guidance on additional information and analyses required. The final decision for the acceptance of a project concept for further analysis and evaluation is taken by the Council of Ministers (CoM) on the basis of the recommendations by the MoF.

Phase	Proposer	Evaluator	Reviewer	Decision Maker
Project pre-selection	Economic entities	Economic entities	DG EPCD (initial economic viability) Budget Directorate (initial affordability)	Council of Ministers (based on proposal by the MoF)

Table 7.1: Roles and responsibilities for the Pre-Selection phase (World Bank 2016)

The PCN proposal has to meet a set of criteria in order to be selected for the Project Appraisal phase. The set of criteria can be found in Appendix B and is assessed by both the DG EPCD and the MoF BD. At the least, the following information and documents must be included to the PCN proposal:

1. Administrative information
2. Project rationale and need assessment
 - Intervention logic
 - Needs assessment
 - Project scope
3. Strategic case for the project
4. Preliminary economic case and analysis of alternatives
 - Project costs
 - Project benefits
 - Economic viability
5. Budgetary impact and potential affordability
6. Implementation arrangements
 - Possible procurement arrangements, including potential for PPP
 - Implementation arrangements and potential constraints
7. Sustainability issues
 - Financial and institutional sustainability
 - Environmental and social sustainability
8. Approach to further studies and consultations

Note that in this phase, the MoF may require additional documentation, depending on each project proposal.

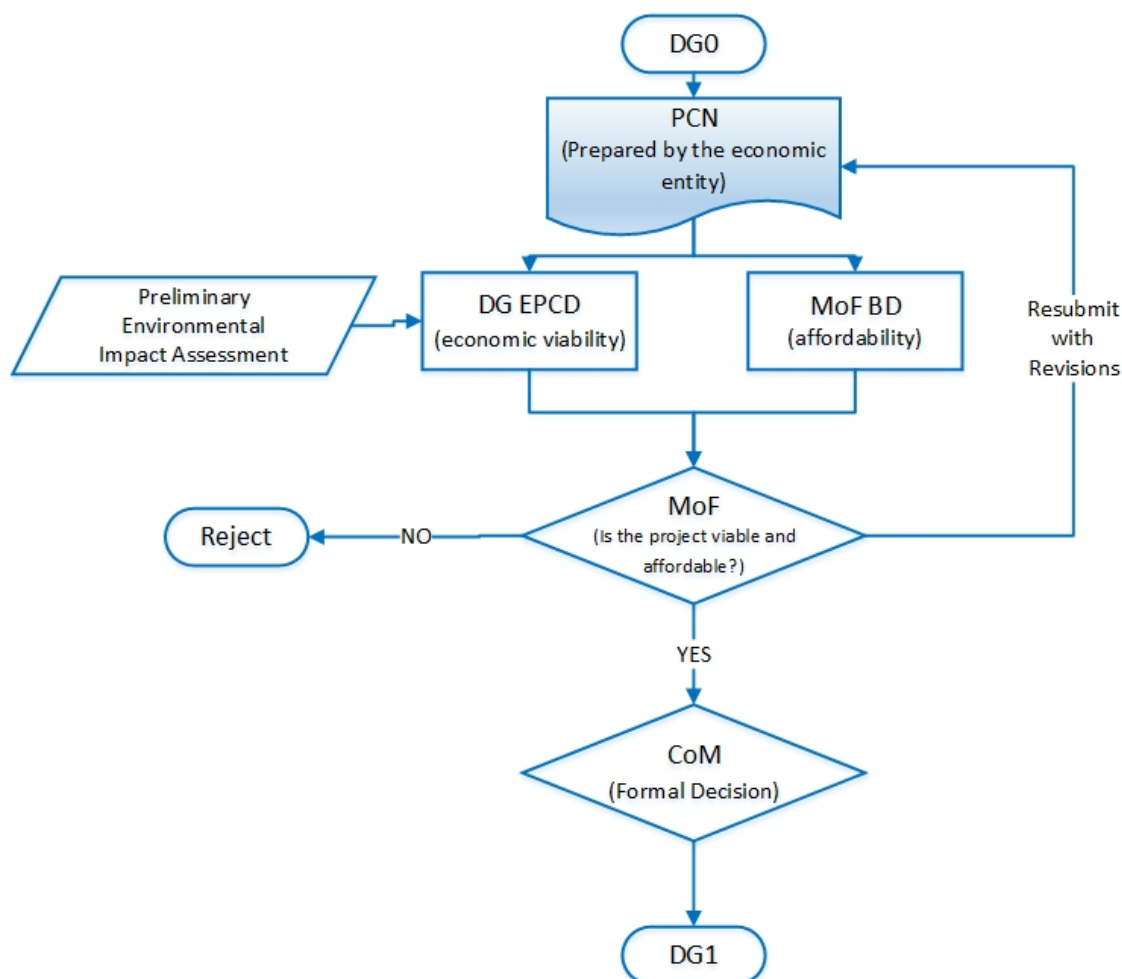


Figure 7.2: Decision tree for the Pre-Selection phase

To summarise the Pre-Selection phase, the responsible economic entity has to prepare a PCN for the project proposal and after internal scrutiny by an independent in-house official, submit it to the DG EPCD and MoF BD for appraisal on viability and affordability. If the appraisal is satisfactory, the PCN is submitted to the MoF for approval and finally, the CoM gives the formal approval for the project to enter the next phase, based on the recommendations of the MoF. The decision tree process of the Pre-Selection phase can be seen in figure 7.2.

Project Appraisal phase

The main purpose of the Project Appraisal phase is to clarify the objectives of the project proposal and exhaust the possibilities that there are better alternatives to it. Also, at the appraisal phase, it must be made sure that there is not a better use for the resources deployed into the proposed project. The appraisal process described in the Manual in-

cludes nine steps which are necessary to complete the proposal's appraisal. The correct application of the methodologies described in these nine steps will lead to an informed decision on economic and social sustainability and also, the long-term sustainability of the proposed investment project.

These nine steps can be put into three major categories, with the first one being the definition of the project proposal, the second one the socio-economic analysis of the proposed project and the third one the fulfilment of the project appraisal.

The nine (9) steps of Project Appraisal phase are:

1. Definition of Project Proposal

- (a) Define the project objectives and scope
- (b) Identify and choose project alternatives for appraisal
- (c) Demonstrate the demand for the services of the project and alternatives

2. Economic Analysis

- (d) Identify relevant benefits and costs
- (e) Value economic benefits and costs
- (f) Calculate net present values for project alternatives
- (g) Analyse risks and plan for their management

3. Comprehensive Project Appraisal

- (h) Assess affordability and sustainability
- (i) Identify the preferred project alternative and make recommendations to decision makers

The three first steps are included in the first major category and requires the in-depth definition of the proposed project. The first step in this phase requires the definition of the project objectives and scope. The objectives and scope have already been defined in the PCN, so during this step these should be verified and confirmed and reassure that the circumstances have not changed since the approval of the PCN. Also, a further investigation should be performed to assure that the proposed investment project is still in line with the national development strategy and the strategic plans of the responsible economic entity. The overall project objective, purpose and outputs should be clarified and the project's constraints should be clearly identified. The second step entails the identification and choice of alternatives for the appraisal. The identification of alternatives does not only encompass that these are of different nature. The alternatives could include measures that uses different technologies or improvement in the current situation. The

"Zero-alternative" must be defined, which is the current situation and this will provide the basis for the alternative comparison in latter stages. During step three, the demand estimations and target beneficiaries that are already defined in the PCN should be further analysed and developed in a way that makes them suitable for further analysis of cost estimation, benefit identification and expected growth in demand.

The second category entails performing the Economic Analysis. The first step for the economic analysis is to define relevant and material benefits and costs that are to be included in the analysis. Relevant benefits and costs should have already been identified from the pre-selection phase, thus in this phase these are scrutinised and further analysed with more detail and precision. The second step is to calculate an estimation of the value of the benefits and costs for the proposed project. The value of the benefits should be proportional to the extent of the project, use market prices, adjusted for taxes and subsidies and estimated based on the zero-alternative. The costs should be valued on the basis of the opportunity cost of public assets and the social opportunity cost of labour. For the third step in performing the economic analysis, a calculation of the Net Present Value (NPV) is performed. The calculation of the NPV should take into account the social discount rate, which was as of 2016 calculated for Cyprus to 4,0% for a life-cycle of 40 years. As the NPV is the main criterion for the appraisal and approval of a project, it is important that the benefits and costs are well defined and valued. Finally, the last step in performing the economic analysis is the identification of the main sources of risks and create a risk management plan.

Lastly, the content of the third category includes the completion of a comprehensive project appraisal. It begins with the assessment of affordability and sustainability of the proposed project. The main focus is on verifying the financial sustainability and affordability in both the implementation phase and operation phase of a project and the social and environmental sustainability during operation phase. Furthermore, the managerial sustainability during the operation phase, should be considered and assessed at this stage. At this stage, and if it is deemed necessary from the Preliminary Environmental Impact Assessment in the Pre-selection phase, a Formal Environmental Impact Assessment should have already been prepared for inclusion in the assessment process (see section 7.4). Concluding the pre-appraisal process, the preferred project alternative is chosen and recommendations are made to the decision-makers. The choice of alternative is based mainly on the quantitative economic analysis, namely the NPV, and justified with the use of the sensitivity analysis. Non-monetised benefits and costs, but also the affordability and sustainability of the proposed project is also part of the decision-making, but these factors are mainly considered for projects with significant benefits and costs that were not able to be monetised.

For performing a comprehensive appraisal of the proposal, a Project Appraisal Sum-

mary table is compiled and is used as a tool for making an informed and rational judgement. This Project Appraisal Summary table must meet the following criteria, which are the same as the criteria DG EPCD is using for the quality assurance of the proposed project, as seen in Appendix B:

- The project logic is convincing and has a strategic alignment with government goals
- The project is feasible both technically and financially
- Pragmatic cost estimations have been performed
- The economic viability and affordability is certain
- Social and environmental impacts are acceptable
- Project management organisation is satisfactory, so to deliver the project on schedule, budget and right specifications
- Operation management is satisfactory
- Risk management for both implementation and operation is performed
- Procurement strategy has been planned

A set of documents are expected to be part of the deliverables for the appraisal phase and include the feasibility study, which consists of the main document, technical studies for the proposed project and impact assessments from the project. Furthermore, as the feasibility study is too comprehensive, a separate high-level Project Appraisal Report (PAR) must be prepared for the decision-makers. This report must be clear and concise and provide a recommendation on whether to proceed with the project. The PAR must be submitted to DG EPCD and the MoF BD for the appraisal. Projects that are accepted for implementation can then be added for proposal in the Reconciliation Process.

Roles and responsibilities

Phase	Proposer	Evaluator	Reviewer	Decision Maker
Project appraisal	Economic entities	Economic entities (can be contracted out)	DG EPCD (viability) MoF BD (affordability)	MoF

Table 7.2: Roles and responsibilities for the project appraisal phase

The initiation of the project appraisal phase starts with the responsible economic entity with the proposal for appraisal of a new investment project. Proposed projects at this

stage, should have already passed through the pre-selection phase and must have been approved. After the decision is made to promote a new project, the economic entity has the responsibility to prepare a feasibility study, accompanied with a preliminary design work and other supporting studies, for example an environmental impact study. Preparation of these studies can either be performed in-house or contracted out. In the case of contracting out the preparation of studies, the economic entity has the responsibility to control the studies based on the standards required by the DG EPCD for this phase.

Before a PAR can be submitted for formal appraisal it is required that a draft of it pass through two levels of in-house appraisal. The first level requires an official that has no formal connections to the proposed project to evaluate the findings and conclusion of the appraisal report draft. The document, if necessary, is then reviewed and submitted to a senior management official within the economic entity, for a formal approval of the PAR. This represents the second level of the in-house appraisal.

Approved PAR's are submitted by the responsible economic entity to both the DG EPCD and the MoF BD, accompanied with all relevant documentation and studies that support the final decision. Based on the submitted studies and documentation, the DG EPCD assesses the project viability and the MoF BD assesses the affordability of the project proposal. The final decision on whether the proposed project is viable and affordable, lies with the MoF, based on the findings and recommendations by the DG EPCD and MoF BD. All proposed projects that are deemed viable and affordable are then compiled to a list by the MoF. This list is submitted to the CoM for information purposes and is further used during the Project selection phase.

Summarising, appraisal during the project appraisal phase goes through several levels. It starts internally, firstly by an independent official and then by senior management. The second level of appraisal is performed by the DG EPCD and MoF BD. These represent a formal and independent appraisal based on the project appraisal report. The last level of appraisal is performed by the MoF, based on the recommendations from the previous appraisal and a final evaluation and decision is carried out. The decision-making process can be seen in figure 7.3

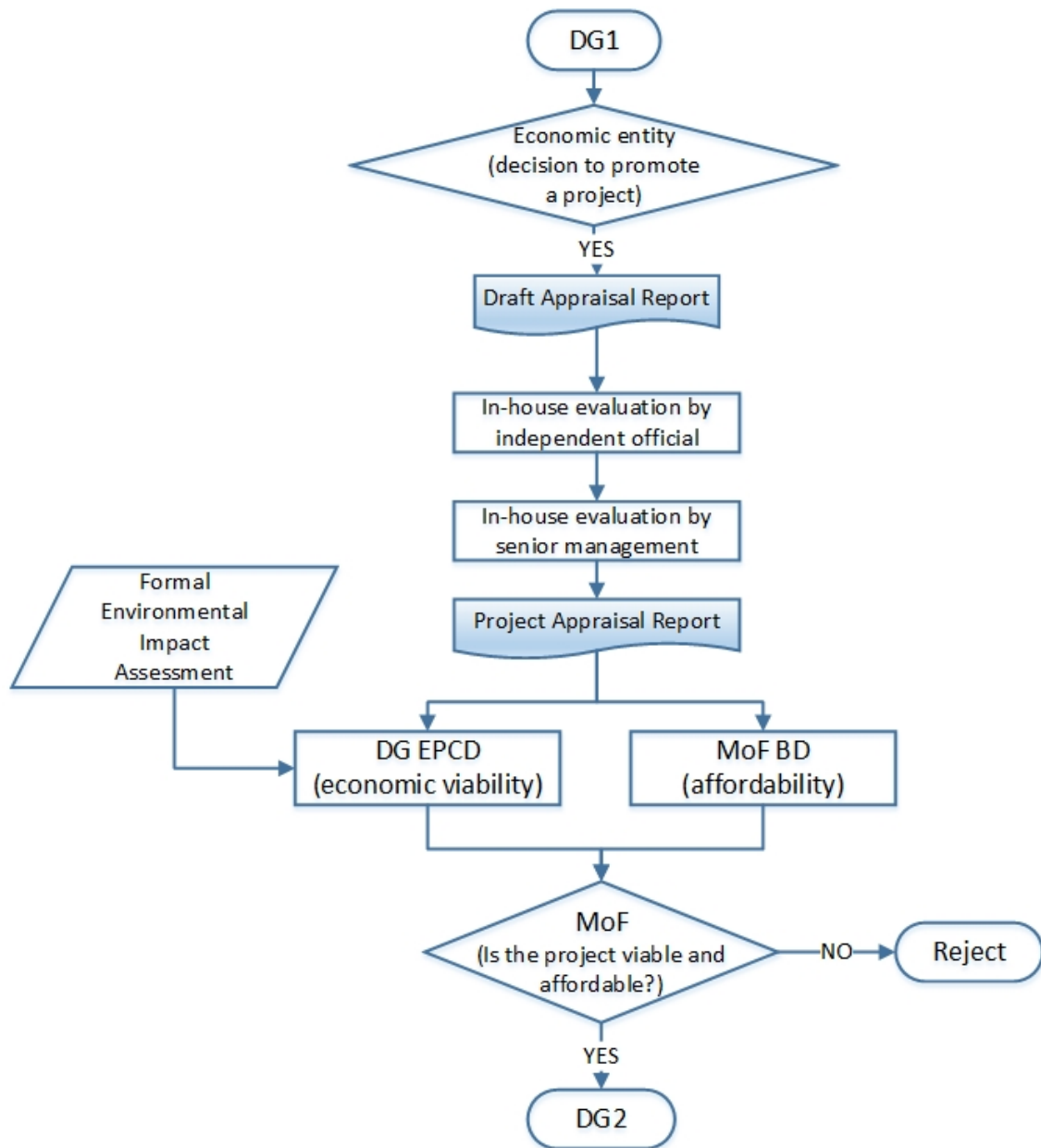


Figure 7.3: Decision tree for the Project Appraisal phase

Project Selection

Project selection phase begins with the head of the economic entity and with a proposal to implement a new project that has already been included in the predefined list during the appraisal phase. The proposal is done through the MoF in the form of recommendations to the CoM, which is the responsible body to decide which projects to be included to the yearly Budget proposal. The head of the economic entity can only propose projects that are under the jurisdiction of the ministry, department or agency which the entity is responsible for and only after the projects were approved for inclusion in the budget by the CoM. Lastly, the economic entities proposes project to be included in the next Budget

proposal in a form that is defined by the guidelines for each Budget proposal. The process for the project selection phase is illustrated in figure 7.4.

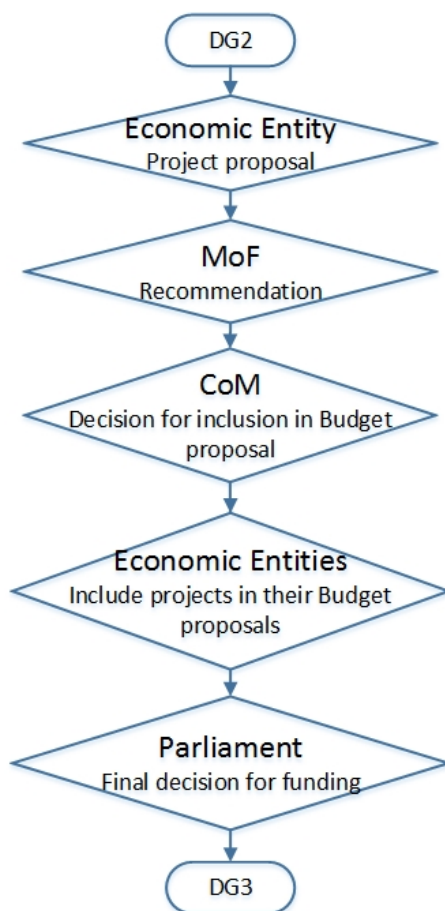


Figure 7.4: Decision tree for the Project Selection phase

For public-private partnership projects, the head of the economic entity submits to the MoF the results of the investment return assessment, which is conducted with guidelines by the MoF. The MoF determines the upper limit of allowed commitments for public-private partnerships. The criteria that allows the MoF to accept to list a public-private partnership project for proposal in the yearly Budget are:

- The project is considered to offer substantial return on investment considering economic, social and environmental criteria, as determined by the MoF.
- The approval of the project will not cause the upper limit of allowed commitments to be surpassed.

For all projects, the MoF creates a list of approved projects, which is included in the documents of the Budget proposal. The formal decision on which projects are going to be finance lies with the Parliament of Cyprus and the decision is taken during the voting of the yearly Budget proposal. The list for proposed projects includes:

- A list of projects that are proposed for inclusion in the yearly National Budget
- Estimations on yearly expenses and incomes for each proposal and for the total implementation period of the projects
- Update on the estimation of yearly expenses and incomes from projects that have been approved in previous Budget proposals
- In the case of significant divergence in estimations, an explanatory document that states the reasons behind the divergences is required
- Summary of yearly expense and income estimation for all ongoing and proposed projects
- Summary of the results of the Observation phase for all the ongoing projects.

Project Implementation

Each project will only enter the implementation phase after it is approved by the Parliament of Cyprus in the yearly National Budget proposal and the MoF has approved the contract strategy or agreement to proceed with the project. The preconditions for a decision by the MoF is that the proposal is according to the procedures and requirements of the guidelines by the MoF and that, according to the MoF, it is financially viable and affordable and satisfies all the criteria that are set by the MoF. The process and decision-making for this phase is not part of this study, thus it is not further explained.

Project Monitoring phase

The head of the responsible economic entity must observe the implementation of all projects under their jurisdiction and the performance of all public-private partnerships. The results of these observations are submitted to the MoF in a yearly report. Any changes in contracts or agreements that have an impact on the viability and accessibility of the projects must be approved by the MoF according to criteria defined by the MoF.

The General Audit Agency has the power to assess all reports that are submitted to the MoF, to assess the liabilities and delivered services, in any way deemed appropriate by the General Audit Agency.

Ex-Post Evaluation

The ex-post evaluation phase was added to the process as the final part of project selection and evaluation. The purpose of this phase is to evaluate completed projects and acquire information on the efficiency of the project selection and appraisal process. Information on its efficiency is to be used to improve the overall process by altering inefficient steps in the process.

7.2 Decision gate model for Project Pre-selection and Appraisal

The pre-selection and appraisal of projects model is presented in a stage-gate model. The model is based on phases that have a clear decision point between them. A project proposal requires to fulfil a certain set of criteria to be able to enter the next phase, something which makes it a suitable process to describe in a stage gate model (Robert G. Cooper, Edgett, and Kleinschmidt 2002). Furthermore, the process includes, through its stage gates, decision points where a project is considered either acceptable for entering the next stage or not acceptable and terminated. Also, in the first stage-gate the decision point includes a decision for revising the PCN of a proposal when the concept is considered important for implementation but lacks depth in its analysis. Each stage-gate has a gatekeeper that is responsible for making the formal decision (Robert G Cooper 2008). In figure 7.5, the stage-gate model for the Pre-selection and Appraisal process is presented.

Decision gates

Decision Gate	Decision	Gatekeeper
DG0	Proposal of a new project	Head of economic entity
DG1	Viability and affordability of project concept	Council of Ministers
DG2	Viability and affordability of detailed project proposal	Minister of Finance
DG3	Inclusion in the National Budget	Parliament of Cyprus

Table 7.3: Decision gates for the Cypriot QA scheme

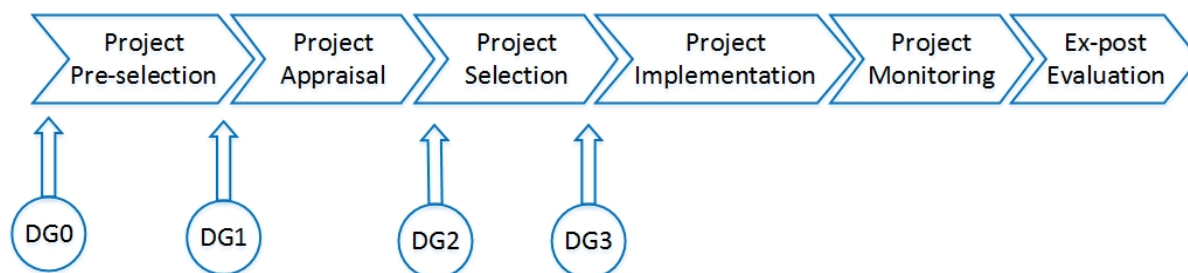


Figure 7.5: Project Selection Model of Cyprus. It includes the decision points a proposal has to go through.

7.3 Project Selection and Appraisal for Non-financially significant projects

Projects proposals that the total cost of implementation is expected not to exceed the €5 million mark and are more costly than €500 000, are classified as non-financially significant projects. For these proposals, a more simplified project selection and appraisal process is applied. The process includes a single stage decision-making process. The main document for the appraisal is the Project Concept Note (PCN), which is reviewed externally by the DG EPCD and the MoF BD. The review is evaluating project relevance, viability and affordability.

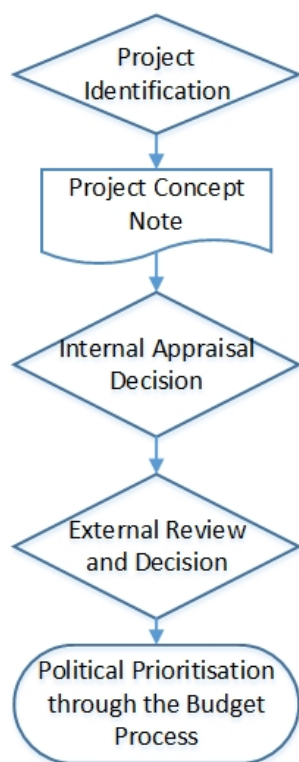


Figure 7.6: Project Selection Model of Cyprus for non-financially significant projects

A simplified illustration of the project selection and appraisal of non-financially significant projects is presented in figure 7.6. This process follows the same guidelines and criteria as all financially significant projects, until the decision gate DG1 (figure 7.5) and for a project to be selected implementation it has to pass decision gate DG3, which is approval for inclusion in the National Budget by the Parliament of Cyprus.

7.4 Environmental Impact Assessment of Projects

Environmental Impact Assessment of all public projects has a central part for the appraisal and quality assurance of public investment projects. According to the N140(I)/2005 law, all public investment projects, excluding smaller housing projects or common office buildings, must be subjected to an Environmental Impact Assessment (N.140(I)/ 2005). All projects that are serving a national security purpose are also excluded from these projects, but during the design and implementation of these, a special committee is summoned to assess possible impacts and recommend measures to prevent or mitigate these impacts.

Preliminary environmental impact assessment (Preliminary EIA)

During the project pre-selection phase, the DG EPCD requests the preparation of a preliminary environmental impact assessment for all projects that are included in the second appendix of the law. Generally, these projects are infrastructure projects, manufacturing installations and tourism infrastructure, which all are expected to have impacts on the environment. A preliminary environmental impact assessment is a predefined form that has to be filled, with the aim to answer general questions about the impacts of the project to the environment and society. The form is assessed by a council, chaired by the Head of the Environmental Agency of the Ministry of Agriculture, Natural Resources and Environment, and a decision is made regarding the project with the following results. The project's impacts can be evaluated as *acceptable*, *not acceptable*, or *there is the need for further information*. If the project impacts are not evaluated as acceptable, then the environmental council will request a Formal Environmental Impact Assessment.

Formal environmental impact assessment (EIA)

When a project is evaluated as needing further study, or if the proposed project is falling in the category of the first appendix of the N140(I)/2005 law, then a Formal Environmental Impact Assessment must be performed. Mandatory chapters for the study are the description of the proposed project, alternative description including the zero-alternative, environment factors that could be affected, impacts that could affect the project and provide preventive, mitigation or other measures to address these impacts. The EIA study is also assessed by the same council as for the Preliminary EIA. The EIA is evaluated and if the results are deemed adequate and acceptable, a recommendation on environmental sustainability is submitted to the DG EPCD.

7.5 Quality Assurance of Public Investment Projects in Cyprus

Stemming from the Pre-Selection and Appraisal framework, are the quality assurance procedures and methodologies that are practised by the governmental institutions. There are several levels of quality assurance that are applied, with the main levels being in the first two phases of the Pre-selection and Appraisal framework. In the Pre-selection phase, a quality assurance of the concept is performed, where the DG EPCD evaluates the economic viability and whether the outputs of the projects are aligned with the governmental strategies set in the Strategic Plan. Also, the project's affordability is assessed by the MoF BD. These evaluations are performed on the basis of the submitted PCN.

In the project appraisal phase quality assurance is performed on the detailed project proposal that is submitted by the responsible economic entity. Again, the DG EPCD evaluates the economic viability of the project, but in this phase it is based on the more detailed PAR. Furthermore, the MoF BD evaluates again the affordability of the proposed project.

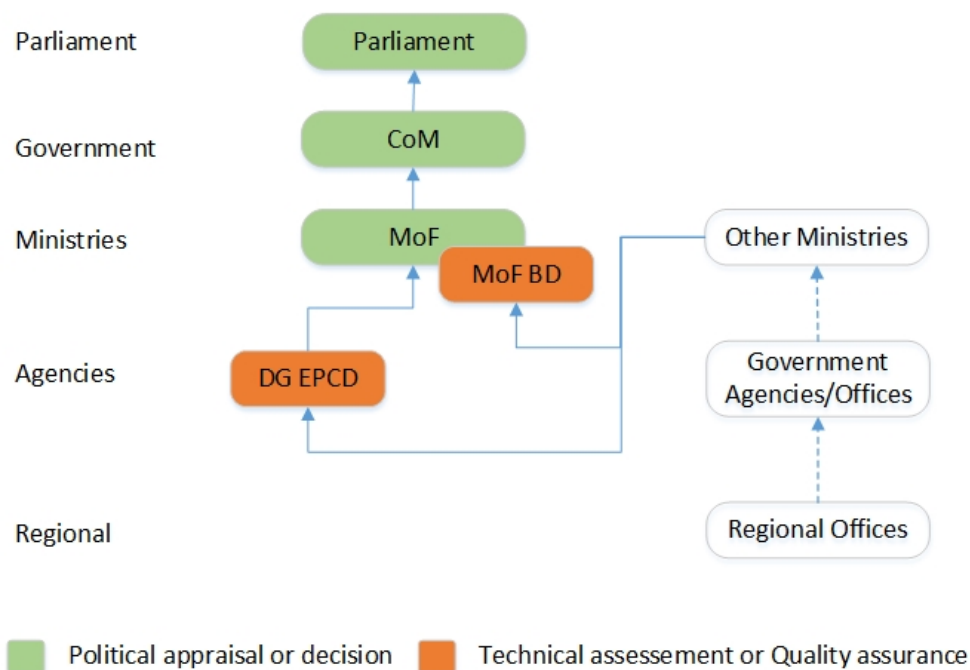


Figure 7.7: Public Investment Project Governance (Based on similar figure from K. Samset, Gro Holst Volden, Olsson, et al. 2016)

In figure 7.7, the governance hierarchy for public investment projects in Cyprus is illustrated. According to the governance hierarchy, regional offices or governmental agencies and offices propose projects for implementation to the responsible ministries. Ministries have the responsibility to prepare a PCN for the proposed project, which is submitted to the DG EPCD and the MoF BD for quality assurance. Proposals that fulfil the criteria

are passed on to the MoF for a formal approval. The CoM makes the decision to include the proposals to the yearly Budget proposal, which is formally approved for financing by the Parliament.

The evaluation of the economic viability and financial affordability of the project is based on a set of criteria. Both the evaluation agencies are basing their assessments on these criteria. The most critical criteria for evaluating viability are (World Bank 2016):

- Meeting needs: The proposed alternatives exhibits a comprehensive response to the identified needs
- Economic viability: The return for the investment is positive, considering all the benefits from the project
- Solid implementation plan: The implementation is feasible for the implementing organisation
- Risk Management: Most important risks associated with the project can be mitigated or managed

Additionally, the criteria for assessing sustainability include:

- Operational sustainability: The operation is feasible for the operating organisation
- Long-term budgetary impact: Future operations and maintenance expenses are viable for the operating organisation
- Environmental and social sustainability: Significant negative environmental and social impacts are possible to be mitigated or managed

To support the findings of the PCN and Project Appraisal Report and be able to assess environmental and social impacts, the DG EPCD requests, for the first phase, a preliminary EIA from the Environmental Agency. Further, if it is deemed necessary by the DG EPCD, a formal EIA study has to be submitted and evaluated during the project appraisal phase, in order to reach a concise conclusion concerning environmental and social impacts of a proposed project. Both the preliminary EIA and the formal EIA are central parts in the appraisal of the project's sustainability.

On another evaluation level, the Government of Cyprus has established two separate agencies, the internal audit service and the general audit office, that have the responsibility to assess that the process is efficient and effective. These evaluations are performed usually ex-post and have the main purpose on identifying inefficiencies in the process and propose measures to counter these, and not on assessing individual project proposals.

In the figure below, the QA scheme of Cyprus is presented. It includes the two steps of quality assurance and the two formal decisions that have to be made in order for a proposal to pass on from the conceptualisation phase, to project appraisal and finally selection for implementation.

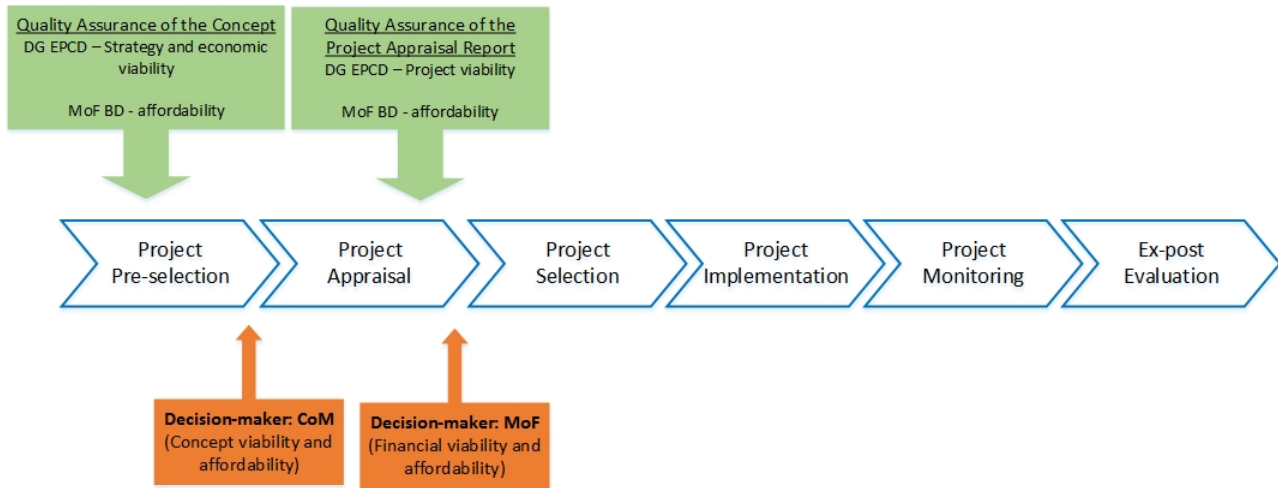


Figure 7.8: Quality Assurance of Public Investment Project in Cyprus (Based on similar figure from K. Samset, Gro Holst Volden, Olsson, et al. 2016)

Chapter 8

Implementation issues with the new QA scheme

8.1 Differences between theory and practice

Through the analysis of the interview results and the official manuals and guidelines, differences between the theoretical description of the QA scheme and the actual implementation of it have been identified. Even if the implementation of the Pre-Selection and Project Appraisal framework was in a pilot phase for one year and then in full operation only for a few months at the point this report was written, differences between theory and practise were already noticeable. These differences include:

Difference 1: Affordability evaluation not parallel to viability evaluation

Difference 2: Internal evaluation not performed by an independent evaluator

Difference 3: Establishment of a consultant base for evaluating projects the DG EPCD does not have the knowledge or capacity to perform.

Difference 1

According to the guidelines for Pre-Selection and Project Appraisal framework the evaluation of both viability and affordability would be performed simultaneously by the DG EPCD and MoF BD, respectively. But in the interviews with the MoF BD office, it was established that the process has changed already at the beginning of the implementation of the new scheme. The change was that a viability evaluation will be performed as a first phase and then if the project proposal was deemed viable by the DG EPCD, the proposal will pass on to the MoF BD for an affordability evaluation. The reasoning behind this was that it is more efficient for the MoF BD to assess the affordability when it is already established that the viability is possible and that the estimated costs in the PCN are

logical. This order of assessment makes it easier for the MoF BD, as they have already approved cost estimations, and their role is to just assess if the proposal's budget can fit in the development budget for the responsible economic entity. On the other hand, the fact that the proposal will be passed on by the DG EPCD to the MoF BD, instead of it being done simultaneously, may eventually make the process more time-consuming.

Difference 2

In the Manual it is described that a project proposal has to go through an in-house evaluation by an official not connected with the project planning before being evaluated by a senior official in the responsible ministry. The observations done in the interviews though, suggest that the in-house evaluation is not performed, at least not in the early stages of the implementation of the new QA scheme. The project proposal was sent directly to a senior official in the responsible ministry, where an evaluation was performed to determine that the project proposal was adhering to the ministry's general goals and strategies. Furthermore, the ministry official verified that the estimations presented in the proposals were logical.

Difference 3

The third difference identified between theory and practise is the establishment of a consultant pool that would evaluate project proposals on a request by the DG EPCD. The agency will request an evaluation of proposals by external consultants, when the knowledge needed to perform a comprehensive assessment is lacking in the agency. Furthermore, the DG EPCD will request for an external evaluation in the case when there is an overload of work, in order to limit the queuing time of project proposals. The reasoning behind this is to make the procedure more efficient and effective by outsourcing certain proposals to external consultants. This raises other issues that need to be resolved though. Issues such as evaluating which consultants are qualified to perform such evaluations, but also evaluate the performance of the external consultants.

8.2 Implementation issues

The results presented in the second part of this chapter represents the findings from the interviews conducted in order to gather the necessary data on the underlying problems of implementing a new QA scheme in a public administration setting. The interviews were conducted in a semi-structured manner in a way that resembles a conversation rather than a structured interview and resulted in the findings presented here. The interview findings were then compared to the Manual for Pre-Selection and Project Appraisal, in order to establish the baseline for identifying the issues related with the organisational change in the public administration. A time-line and an interview guide for these can

be seen in appendix E. Also, the method applied for the interviews can be found in the methodology chapter 2.

Through the interviews, several issues regarding the implementation of the new QA scheme were identified. The most important issues that have the possibility to affect and undermine the proper application of the Pre-Selection and Project Appraisal framework are presented in the following paragraphs. The observations are based on the study of two submitted PCNs and interviews conducted with the planners and the responsible entities for evaluating the viability and affordability of the concept. The list of issues that follows is not based on the severity of them to the application of the framework nor by an observation time-line, but it is structured in a random order.

1. Not required that the project alternatives are fundamentally different: Project proposals are presented in the PCNs as a primary project proposal, which includes three other project alternatives to the primary proposal, including the zero alternative. The alternatives are not required to be fundamentally different and can only include technical varieties of the proposal. The zero alternative is referring to the do nothing alternative.

2. Alternatives are not considered in depth: Planners do not evaluate in depth the project alternatives in the PCN. In both PCN's studied, the proposed alternatives did not represent fitting solutions to the problem and these were not developed enough in a way that they would considered a viable alternative solution to the problem presented.

3. Economically oriented structure: The structure of the Pre-Selection and Project Appraisal framework is structured in a economocentric manner, focusing on the economic aspects of project planning. The social and environmental aspects of an investment are included in the evaluation procedure, but their gravity during evaluation does not hold as much ground as the economic aspects.

4. Long-term economic, social and environmental sustainability not considered in depth: Expanding from the previous issue, social and environmental sustainability lacks gravity in the evaluation of a proposal. In addition, the consideration of long-term impacts by an investment, positive or negative, is inadequate. Long-term sustainability lacks a holistic evaluation in this process, which would take into consideration the economic, social and environmental sustainability aspects in all three levels of planning, as described in chapter 3.

5. Focus on economic criteria rather than social or environmental: It was derived from the interviews that the main consideration in approving a project proposal was the economic aspects of it. Social and environmental aspects were considered, but their assessment was based on how much it would cost for improving a negative impact or how much it would be gained by a positive impact, always in economic terms. In addition,

planners were more focused on the economic aspects rather than environmental or social and were mostly representing the operational level of planning (see chapter 3).

6. Benefits are not quantified: Costs and benefits were in both PCN's not calculated in a satisfactory manner. A calculation on the effects by the implementation of the proposal was performed, but this was not quantified in financial terms. Also, the time frame used for the costs and benefits did not cover the whole life time of a proposal and only went to a few years into the future.

7. Lack of formal methods for calculating benefits: This is a structural issue which includes the inadequacy of the public sector to calculate benefits. More specifically, it was evident from the interviews that the public sector lacked the methods and procedures to make an estimation of the economic impacts of the benefits of a project proposal. For example, the benefits from providing water supply to a city or the increase of traffic capacity of a new road, were identified by the planners, but were not quantified.

8. Non specific initial cost estimations: In both PCN's studied, a complete design and plan was performed a few years back, which provided the necessary data for cost estimations. But during the interviews it came up that for other submitted PCN's that were not accessible at the time of this study, the calculations for costs were not performed in depth. The reason was that the planners considered the procedure of a complete calculation would be too time consuming and costly for the purposes of a PCN.

9. Risk management and mitigation measures are not considered in depth: Risk management and mitigation costs are not considered in depth during the Project Pre-Selection phase. During the interviews it came up that risk management was not a priority so early in the process and risks were going to be evaluated more in-depth in the planning phase. Nevertheless, these are taken into consideration during the comprehensive PAR in the Project Appraisal phase.

10. Planners are accustomed to plan and submit every project they are assigned: This issue was found common with the planners and decision makers that have been in the public sector for a number of years. More specifically, planners were accustomed to a certain practise, based on the methods and procedures used before the implementation of the new QA scheme. It was evident from the interviews and the study of the official documentation that they were trying to apply the same procedures in their research for filling in and submitting PCN's. The planners had the expectation that their project proposals will definitely be accepted and proceed to the next phase, as they were accustomed from before. Comments like, "this will be studied further in the Project Appraisal Report" and "This aspect is not important at this phase" suggests this notion and enhances the perception that planners, decision makers and the responsible assessors should change their working culture.

11. Project affordability is assessed on a case to case basis: Project affordability evaluation, which is performed by the MoF BD, is conducted ad-hoc on a case to case basis. The responsible agency for this evaluation had until the point of writing this thesis not developed a formal procedure in order to ensure consistency in the evaluation. Through the interviews, it was explained that each project is assessed after a viability evaluation by the DG EPCD. The MoF BD evaluates projects that were deemed viable by the DG EPCD and compares them against the budget ceilings of the responsible Ministries they belong to. These ceilings are discussed and set by the COM during the discussion for setting the annual budget proposal. Adjustments to the budget ceilings are possible but only after discussion in the CoM. These are for special cases where big and costly projects exceed the budgetary limits of a certain Ministry, but is presumed as highly important for the government.

12. Project proposals are not chosen according to their NPV: All project proposals that have their PCN evaluated positively by both the DG EPCD and the MoF are put on a list with approved projects for selection for more detailed planning. The same applies for projects that have passed the project appraisal evaluation. These projects are not ranked in any order and the responsible economic entity can choose whichever to proceed with selection and inclusion in the National Budget proposal. The main problem with this method is that projects with lower NPV and IRR might be selected instead of more profitable projects, based on political pressures and aspirations of the line ministries.

13. Lack of expertise in the assessing agencies: During the crisis period, several measures were imposed in order to limit public spending. Some of the measures was to halt the hiring of new personnel, early retirement of long-serving civil servants and to restructure the public agencies. This has affected the DG EPCD, which at that period was the Planning Office of the government, and their responsibility for evaluating and performing Cost-benefits analyses was deemed redundant. That is why several officials with important knowledge required for assessing infrastructure projects, have either moved to the private sector or had an early retirement. This had drained the knowledge pool of the DG EPCD and subsequently the public sector, and at this point there might be some cases that could need hiring of external consultants for performing viability assessments.

14. Lack of project performance database: In order to have a baseline to compare costs, benefits and methods, a database of the performance of completed projects should exist. As the scheme is only in its initial stages, it is natural that there are no examples the evaluator or project planners could fall back on. A formal feedback procedure should be established to ensure that data are accessible and up to date.

15. Decision makers and engineers are prone to political pressures: As seen in the Transparency International report, (Transparency international 2017), Cyprus has a fair

amount of corruption and a structural change in the methods the public sector evaluates its public infrastructure investments will not eliminate corruptions problems by itself. It was quite evident from the interviews that political pressure is expected and that there are not much to be done to counter this, regarding procedures in the QA scheme. Of course, measures are taken by the government of Cyprus to combat corruption in the ranks of its public servants, but political pressures on individual entities responsible for assuring the viability and affordability of project proposals is hard to resolve with just structural changes. This is a matter of changing the culture of the public sector to deflect external pressures.

16. The Parliament does not require documentation when deciding on financing: The Parliament when voting for the National Budget, does not assess the projects that are included. In some cases, members of the Parliament will require all documentation related to a proposal and for some other cases they do not assess them. This is only based on their politics and for which projects they want or not want to proceed with.

17. The Parliament is not critical to project proposals: Similarly to the previous issue, the Parliament is not critical to the project proposals presented to them. The previous issue is a structural issue but being critical to every project proposal they are accepting should be a mentality adopted by the members of the Parliament.

18. The Parliament, CoM and the President can promote projects by circumventing the process: Even if the Pre-Selection and Project Appraisal framework is part of the legislation of Cyprus, there are still loopholes for the Parliament, the CoM and the President of Cyprus to bypass the procedures and be able to promote and approve for funding projects that they deem important for their political aspirations.

Analysis of the interview results

To better understand the underlying issues with the problems observed during the interviews and the study of the official manuals and documentation an analysis of the results is preformed. The main aim is to provide a basis for further discussion to provide recommendations for improvement of the QA assurance process.

The implementation issues presented in this chapter are based on the assumption that the process has just been put in operation and that the new framework has not had time to mature and evolve. Aspects presented in this thesis and in chapter 7, are expected to be revised after the framework has been in operation for a few years, in order to adapt the framework to the realities of Cyprus and make the QA scheme as efficient as possible. By documenting implementation issues during the early stages of the establishment of a new QA scheme, provides with the possibility to learn from what

aspects were successful and what were not functioning as they should and prepares the ground for better implementation in the future.

During the analysis of the interviews and the two PCN proposals, it was observed that implementation issues can be put in two distinct and general categories based on their type, who was affected by them and how this affected the operation of the new framework. These two categories are the structural change issues and change in working culture issues. They were defined by using the theories of Todnem (2005) and Bovey and Hede (2001) described in chapter 3, to make it easier to analyse the results of the research conducted. It makes the results more comprehensible and easier to generalise when giving recommendations. For the purpose of this analysis, the categories are defined as (table 8.1):

Category	Definition
Structural Change Issues	Structural change is defined as the change in regulations, laws and organisational structure, that have to be applied by the public sector to increase the efficiency of public investments.
Issues with the Change in Working Culture	Change in working culture is defined as the need for decision makers and engineers to adapt to the new mentality and work procedures the QA scheme brings with it.

Table 8.1: Defining the structural and working culture categories for the implementation issues

The first category presented is the Structural Change Issues category and the problems related to it can be seen in table 8.2. It represents a generalisation of the issues associated with procedural, organisational and regulatory problems and are based on the theory of Pathak (2010), Todnem (2005) and Luecke (2003) described in chapter 3. Procedural issues are experienced when the current procedures are not adapted to the new ones and leave some of the aspects affect the efficiency and effectiveness of the new framework. Organisational related issues refer to complications with aspects where there is a lack of management methodologies and knowledge. Regulatory issues refers to missing regulations and laws and when these are lacking, inefficiencies can occur, due to loopholes to the regulations or the process being prone to political pressures.

The issues with the implementation of the new QA scheme, presented in table 8.2 were categorised firstly as structural change issues and then categorised according to the generalised issues described in the previous paragraph. Issues such as lack of formal procedures for calculating benefits or the affordability of project proposals creates the problem of inconsistency of the procedure. While lack of expertise or the lack of a performance measure of finished projects, stem from issues in the organisational structure of the public admin-

istration of Cyprus. As for the regulatory issues, there is an evident lack of safeguard of the procedures against political pressures and the ability of high ranking politicians to bypass the procedures.

Type of issue	Issues Related to Structural Change
Procedural	The framework does not require that the project alternatives are fundamentally different
	Economically oriented structure
	Lack of formal methods for calculating benefits
	Project affordability is assessed on a case to case basis
Organisational	Project proposals are not chosen according to their NPV
	Lack of expertise in the assessing agencies
Regulatory	Lack of project performance database
	The Parliament does not require documentation when deciding on financing
	The Parliament, CoM and the President can promote projects by circumventing the process

Table 8.2: Structural Issues with the implementation of a new QA scheme

The second category of issues observed with the implementation of the new QA scheme is Change in Working Culture (table 8.3). Issues with the change in Working Culture can be generalised into uncertainty of the individuals, human reliance on habits and external pressures on the public administration. These fall into the resistance phase of individuals when confronted with organisational change, as portrayed by Bovey and Hede (2001), and Pathak (2010) in chapter 3. Uncertainty of individuals relates to issues created by the ambiguity of the methods and procedures the planners and decision makers have to enforce by utilising the new methodologies of the QA scheme. These emanate from the previous working culture, where similar methodologies were lacking and because the new guidelines might not be fully understood by the planners.

Furthermore, the human reliance on habits, can explain the appearance of some of the issues with the implementation of the new QA scheme. As humans tend to cope with the complexities of life by relying on habits, when confronted with a certain change, there is a tendency to react in our accustomed way, which becomes a source of resistance (Pathak 2010). The last categorisation of change in working culture is the external pressures. People are prone to external pressures by officials or in this case, politicians, that exceed their rank or have a certain influence on them (Bovey and Hede 2001).

Uncertainty issues emanate from the fact that some aspects of the guidelines are am-

biguous or have a certain freedom of interpretation by those applying them. Issues such as taking lightly the definition of alternatives to the main proposals and a more relaxed calculation of costs and benefits during the preparation of the PCN. Likewise, it is evident that the working habits of the planners and decision makers makes it hard to alter their routines and working culture. Habits such as an economocentric assessment of a project proposal or that planners are accustomed to completing the planning process without the project proposal to have to go through an evaluation. Finally, as seen in the latest report by Transparency International (2017), Cyprus has a high level of corruption, which has an increasing trend the last few years, it is fair to make the assumption that public officials are prone to external pressures by politicians or other individuals that have influence on them.

Type of issue	Issues Related to Change in Working Culture
Uncertainty	Alternatives are not considered in depth
	Long-term economic, social and environmental sustainability not considered in depth
	Non specific initial cost estimations
	Benefits are not quantified
Habits	Focus on economic criteria rather than social or environmental
	Risk management and mitigation measures are not considered in depth
	Planners are accustomed to plan and submit every project they are assigned
External pressures	Decision makers and engineers are prone to political pressures
	The Parliament is not critical to project proposals

Table 8.3: Issues with change in working culture with the implementation of a new QA scheme

Chapter 9

Quality assurance procedures for new public investments in Cyprus

Seeking to establish which procedures the government of Cyprus apply to quality assure major infrastructure projects has guided the research process through an extensive literature review, an interviewing session in Cyprus and a study of official manuals, guidelines and documentation. Due to the complexity of a quality assurance scheme, several topics were researched, including project governance, what constitutes value in a public setting, public sector efficiency and what a governance framework should include. Also, the topics of project evaluation and project success in the front-end phase of projects were researched, with a special attention to the evaluation of relevance and the holistic consideration of sustainability. Finally, the aspects for quality assurance in the public sector with a specific reference to measures undertaken by the government of Cyprus was studied. All these topics were necessary to be researched in order to be able to answer the first research question of this thesis:

What procedures does the government of Cyprus apply to quality assure major infrastructure projects?

In this chapter, a discussion based on the findings of the official manuals, guidelines and documentation, presented in chapter 7, are put against the theoretical background established in chapters 3, 4 and 5, to discuss the measures applied by the government of Cyprus to ensure that their public investments are financially viable and relevant towards the needs of the end users. The discussion begins with what constitutes good public project governance practise and is followed by a discussion of the public governance regime introduced in Cyprus. Furthermore, a discussion is presented on what constitutes good quality assurance practises for public investments and then the discussion focuses on the procedures applied by the government of Cyprus, under the Pre-Selection and Project Appraisal framework.

9.1 Public Project Governance in Cyprus

What constitutes good public project governance?

Deriving from the project governance definition, is the need for a clear and structured definition of the principles that should be applied for the governance of individual projects (Müller 2012; Morris, Pinto, and Soderlund 2012). The public administration creates and follows their strategic plans, by forming strategies and policies for the future (Steiner 1969). Furthermore, they have procedures and methodologies that helps with translating their strategic plans into projects. This phase is referred to as the tactical level of planning, figure 3.1, and encompasses the creation of procedures that deploys resources for operations. At the operational level, all operations and project investments are executed by creating specific procedures and processes. Considering public institutions, special attention should be given to the importance of applying the appropriate methodologies in each level of planning, to ensure that the strategies formed are representing the needs of the entirety of the society and the government and that the operations and investments are translating these strategies into concrete outputs.

For public institutions, there is an expectation from the public, that their tax-payer money shall be efficiently spent (McLaughlin, Osborne, and Ferlie 2002; Rapanos and Kaplanoglou 2014). As Abednego and Ogunlana (2006) argue, one of the traits of good governance is that organisations should be able to produce results which are meeting the society's needs and expectations, with the best use of resources and in a sustainable manner. In short, good governance should be applying efficient and effective processes to ensure the appropriate use of resources. Furthermore, good governance, specifically for public investment projects, should offer transparency on the processes applied, in the costs and economics of the investments and operations, to assure the public that the investments were efficient and effective (Morris, Pinto, and Soderlund 2012; Abednego and Ogunlana 2006). A QA scheme, such that of Cyprus, should have measures that ensure the efficiency of the investments of the government by introducing good project governance practises.

Ensuring a properly functioning governance system, a structured framework for the governance of public projects should be established (Chianca 2008; Austrian Development Agency 2009; Rajaram, Kaiser, et al. 2014). A framework like this should ensure several factors. One of them, is that the procedures for selection of project proposals, should enable the selection of the best alternatives between project proposals, based on relevance with the needs of the users and long term economic, social and environmental sustainability (Cato 2009; Ole J. Klakegg and Haavaldsen 2011). Another factor a public governance framework should ensure, is that the process is transparent, to assure the financing entities that the proposals are in fact efficient and effective (Abednego and

Ogunlana 2006; Rajaram, Le, et al. 2010; Austrian Development Agency 2009). Furthermore, participating parties should be included in the decision-making process, to provide a holistic and complete overview of the problems and needs for a particular proposal, in order to provide the basis for a proper socioeconomic analysis. Part of this governance framework is the inclusion of quality assurance during certain points in the process and also establish formal decision point in specific milestones of a proposal's development and analysis, before even it enters the implementation phase.

Public project governance in Cyprus

To ensure a proper functioning governance regime, the Government of Cyprus, has developed with the cooperation of the World Bank group, Project Investment Management (PIM) guidelines, with the aim to establish a formal governance regime for the governance of public investments (DG EPCD 2016). The PIM guidelines were issued by the MoF, and their application is required by law, for proposals that are estimated to have a value larger than €5 million (World Bank 2016). According to the PIM guidelines, the DG EPCD was given the mandate to administrate the Pre-Selection and Project Appraisal framework and also enact as one of the two agencies that evaluates the project proposal viability. The establishment of a specialised agency in the government of Cyprus for administering the QA scheme is in-line with good international practise and is regarded as functional and effective measure for a country that pursues to update and improve their public investment efficiency (Rajaram, Le, et al. 2010; Austrian Development Agency 2009; J. Odeck, M. Welde, and G. H. Volden 2015). The DG EPCD will have to ensure that the procedures are followed by all the parties involved in the scheme and also provide the necessary training to both project planners and decision makers.

As the law requires, (N.20(I)/ 2014), the overall responsibility for taking the final decisions in the quality assurance process is on the Minister of Finance, (figure 7.7). With the introduction of the FRBSL and the PIM guidelines, a structured procedure for selecting and appraising project proposals was established, as a quality assurance measure of the concept and financing project proposals. The overall responsibility for quality assuring project proposals is the DG EPCD and with cooperation with the MoF BD, they perform quality assurance by focusing on viability and affordability issues. DG EPCD, has to perform evaluations and give recommendations to the decision-makers, in a comprehensive and independent report. The agency has prior expertise in assessing project proposals because of its previous responsibilities as the Planning Office of the government of Cyprus. But as described in the introduction, many of the experts that were performing assessments and that were conducting cost-benefit analyses for several projects, have left the agency as they were considered redundant. This gap in knowledge and expertise by the DG EPCD, will be visible in the initial phases of the implementation

of the new QA scheme and expertise will improve after some years of operation. On the other hand, as it is stated by Pathak (2010), the introduction of new personnel in a changed setting can help in avoiding several issues the long-serving personnel would have when they are forced to change their culture of working. Even if new personnel will need training to be able to cope with their responsibilities, so would the long-serving personnel too, and in the process, the evaluating agency, in this case the DG EPCD, can avoid habitual problems.

Another aspect of a good governance system, is that all the participating entities in an operation should be involved in it. Involvement in the process ensures that the interest of all the stakeholders are taken into consideration and their needs are understood (Abednego and Ogunlana 2006). This is really important when considering public investment projects, as there may be many different stakeholders that could be affected by a project's implementation (Hjelmbrekke, Lædre, and Lohne 2014; Morris, Pinto, and Soderlund 2012; Pathak 2010). Another relevant characteristic of good governance is that it should be consensus driven. Involving all the stakeholders in the process and understanding their needs does not mean that the final decision is made towards their advantage. The application of good governance should be based on the needs of the many. For example, if a new road investment negatively affects more people than those whose needs are fulfilled, then the investment was not based on the best interest of the society and was possibly influenced by individuals or groups of people that have power. By involving all the participants in the process, creates a sense of belonging and this has the potential of increasing the efficiency of parts of the QA scheme. Also, this enforces the transparency of the quality assurance procedure, which in retrospect decreases the corruption in state initiated investment projects. In the description of the profile of Cyprus, it was mentioned that the corruption levels of Cyprus were quite high, regarding EU levels and it was evident by the reports of Transparency International (2017), that corruption levels were still rising. A general rule is that corruption in the public sector counteracts with its efficiency, which is the opposite of the purpose of introducing a QA scheme for public investments (Asatryan, Heinemann, and Pitlik 2016).

Arising from the governance regime for public investment projects are some issues regarding independency and functionality of the framework. In the PIM guidelines, it is described that the quality assurance of project proposals is performed and passed to the MoF as a recommendation (N.20(I)/ 2014). The issue arising from this, and which is not described in the Manual (World Bank 2016), is the methodology and criteria the MoF is using to assess the recommendations given to the MoF office by the MoF BD and DG EPCD. An appraisal performed by the MoF will take into consideration the recommendations by the two assessing agencies, but as the guidelines are not totally clear on how the MoF will evaluate project proposals, it is left to the individual Minister of

Finance or personnel in the office of the Minister to make the formal decision. The same applies when the CoM decides the inclusion of project proposals in the national Budget for financing. As these decisions are performed by politicians in a non-prescribed manner, political aspirations and pressures could affect the decision making.

A last discussion point is that positively appraised proposals are all sent to the MoF, get approved and put on a list for authorised projects for implementation. From this list, the line ministries choose projects to be included in their yearly budgets. The list of approved project proposals does not represent any ranking of the projects and leaves the selection process for proposals to be financed to the line ministries, which can also be a potential source of political pressures. So a structured process for selecting approved proposals from the MoF's list should be in place to ensure the rigidity and credibility of the process.

9.2 Quality assurance of public investment projects

To answer the first research question, an insight on how governments are quality assuring public investment projects is needed. Many of the concepts explained and analysed in the discussion about governance of public projects apply for quality assurance too. As stated in chapter 5, quality assurance on project proposals should be performed during the front-end phase, on both the concept and cost estimation aspects (Magnussen and Olsson 2006; Rajaram, Le, et al. 2010). By applying this, it is assured that the project's outputs are aligned with the end users needs and expectations, the implementation of it is affordable and that the cost estimations do not develop in a rate that will make it non viable (Rajaram, Le, et al. 2010; B. Andersen, K. Samset, and Morten Welde 2016). The application of a quality assurance scheme in the governance of public investment projects, can provide a government of a country the tools to be able to invest in the right projects and on the right budget (K. Samset, Berg, and Ole Jonny Klakegg 2006). As stated by Rajaram, Le, et al. (2010), quality assurance should be performed by a department in the government which has the necessary expertise to perform such evaluations and the authors recommend that these should be performed by either the ministry of finance, the planning ministry or a specialised department. The DG EPCD has undertaken this role of administrating the QA scheme and has the responsibility to ensure that its operation is efficient.

How does the government of Cyprus quality assure major investment projects?

With the introduction of the Pre-Selection and Project Appraisal scheme, the process of quality assuring new project proposals is divided in two distinct stages. The first stage is the assessment of the viability and affordability of the concept of the proposal. This

is performed at the end of the Pre-Selection phase. The second stage is the assessment of the viability and affordability of the comprehensive Project Appraisal Report (PAR), which includes a comprehensive project definition, an economic analysis and a selection of the preferred alternative. The responsibility for assessing the viability in both stages lies upon the DG EPCD and for the affordability, with the MoF BD. This two stage scheme is simple in implementation and operation. As seen from the analysis of the implementation issues in chapter 8, during the initial phases of the introduction of the new scheme, the planners had difficulties to adapt to the new procedures. So a simple framework as the Cypriot, could help in the process of adapting to new procedures and methodologies.

The simplicity of the Cypriot QA scheme has the possibility to allow the project planners and decision makers to adapt quickly to the new procedures, while constantly learning and gaining experience through the training sessions provided by the DG EPCD and from the feedback from the submissions of Project Concept Notes and Project Appraisal Reports. The two stages of the scheme can be considered adequate to detect most non-sustainable and non-relevant projects, or as defined by Rajaram, Kaiser, et al. (2014) white elephant projects. As the main purpose of the scheme is to increase the efficiency of the public investment model of Cyprus and reduce bureaucracy in the public administration, a framework that has simple steps can increase the efficiency of the public investment models.

The division of the evaluation in two part and two sections makes the evaluation more rigorous. Furthermore, designating the MoF BD to evaluate affordability is natural, as they have the expertise in assessing affordability, due to their other responsibilities in drafting the yearly Budget Proposal of the government. The DG EPCD, as the previous Planning Office, should possess the expertise and knowledge to assess project proposals, at least for common proposals. It is stated by the FRBSL (N.20(I)/ 2014), that the DG EPCD can outsource the evaluation to an external assessor and control its work, but it remains unclear in the documentation acquired, how this procedure should be performed. A question for further research arises from this part, which is to what degree the DG EPCD has the necessary knowledge and capacity to quality assure all types of investment proposals.

Quality assurance is performed based on a designated set of criteria, which are listed in appendix B. They are based on the evaluation of the project's relevance and economic, social and environmental sustainability and are divided into two main categories; viability criteria and sustainability criteria (World Bank 2016). The viability criteria focuses on meeting the needs of the users, economic viability, solid implementation plan and risk management plan. The sustainability criteria focuses on operational sustainability, long-term budgetary impact and environmental and social sustainability. Both categories of criteria are covering the needs for evaluating relevance and sustainability issues of a

project proposal. Furthermore, these criteria cover the strategic level of planning to some extent by evaluating needs response. Lastly, the tactical level of planning is covered, as it evaluates the procedures that are taken into consideration in the planning in regard to the implementation plan and risk management arrangements. From the analysis of the assessment criteria and the interviews, it was observed that these criteria focus mainly on the economic aspects of the proposals, while the social and environmental aspects are taken more lightly. Of course, these are taken into consideration in the preliminary EIA and the comprehensive EIA in the Pre-Selection and Project Appraisal phase respectively, but their consideration is based on their negative impacts and the cost it requires to resolve these. A more holistic assessment of these criteria should be pursued in this process, in order to maximise the effects of the QA scheme, which in turn will increase the efficiency and profitability of the government's investments (Ole J. Klakegg and Haavaldsen 2011).

Decision makers and decision to finance

According to the stage-gate model (figure 7.5), there are three formal decisions a project proposal has to get through. The first decision gate is of the choice of concept. If a project is deemed relevant with the strategic goals of the government, then the CoM, who is the formal decision maker, decides whether it should be allowed to go through to the next phase. The next phase includes the appraisal of the proposal, as explained in chapter 7. At this decision gate, the formal decision is taken by the MoF. The formal decision for financing lies upon the Parliament of Cyprus. After decision gate DG2 (figure 7.5), the MoF compiles a list of approved projects, that are allowed to be selected by the line ministries for inclusion in their annual budgets. Annual budgets of the line ministries and financial entities are included in the yearly Budget Proposal, and are submitted to the Parliament for a formal approval. By getting a formal approval through the budget of the responsible line ministry, a project proposal will be financed and implemented.

From the FRBSL and the Manual (N.20(I)/ 2014; World Bank 2016), it is unclear in what procedures and documentation is reviewed by the Parliament in order to reach a decision on financing a project or with what criteria the line ministries are choosing projects from the approved list, to include in their next budget proposal. This has the potential to create the same issues as described in the previous section. At these critical decision points, political pressures could be applied, which leaves a weak link in the QA procedure. For the scheme to be able to achieve the best results, such inefficiencies should be resolved. On the other hand, by implementing rigid procedural measures to counter this, could lead to opposite results. It could make the procedure too bureaucratic. This opens up another chapter that is pursued in this study, which is the balance between the application of structural changes and change in working culture of the entities involved in the process. The observation from the interviews for the need of this balance is presented in chapter 8 and will be further analysed in the discussion of the implementation issues

in chapter 11.

Alternative consideration

In chapter 8, an issue was identified with the procedures applied when choosing project proposal alternatives. In the QA scheme Manual (World Bank 2016), it is stated that a main proposal is submitted in the PCN and the PAR and three alternatives are included, with the zero-alternative, for the purposes of comparing alternatives to each other and choosing the best solution for the problem. The criteria used for comparing the different alternatives to the main proposal are presented in appendix C. It is required to use a set of viability and sustainability criteria and in the case of an alternative being evaluated as better than the main proposal, another PCN has to be submitted. But through the interviews, it was observed that the alternatives presented in the PCN's that were studied, were not analysed in depth. So realistically, the PCN included a main proposal, while it disregarded the other alternatives to help refine the idea and get better results.

Comparing project alternatives should be a process of equally analysed proposals and choosing the better of them, according to a predefined set of criteria. The government of Cyprus though, has set a low threshold value for proposals to go through the QA scheme. The guidelines state that all proposals above €500,000 and under €5,000,000 should submit a PCN and all approved proposals above €5,000,000 should submit in addition a PAR for further assessment. The main purpose of the low threshold is to ensure that most of the investments should be evaluated in terms of viability. From this though, emanates the issue of the need for all projects to go through such a scrutiny. The procedure becomes more time consuming and costly for each assessment due to additional planning and assessment needs. To lower these requirements in additional costs and time it was preferred to have a main proposal that needs extensive research and to be compared to less studied alternatives. But to ensure that the best solution is achieved, a selection amongst equally researched alternatives has to be performed. This issue could be resolved to a satisfactory level by either increasing the threshold value for all project proposals or by introducing an additional threshold value for bigger projects that will require the proposals to present at least three project alternatives to be compared equally with each other.

Chapter 10

Comparison of the QA schemes of Cyprus, Norway, United Kingdom and the Netherlands

By documenting and discussing the procedures the government of Cyprus apply to quality assure new public infrastructure projects in chapters 7 and 9, provides a basis for comparing the case of Cyprus with established QA frameworks of other European countries and giving potential recommendations. This chapter seeks to answer the second research question and draws many examples from the Concept report 47 (K. Samset, Gro Holst Volden, Olsson, et al. 2016):

What are the important differences between the frameworks of Cyprus, United Kingdom, Norway and Netherlands?

The comparison table that follows, table 10.1, is based on table 6.1 which was built by taking example from the conclusion of the Concept report 47 (K. Samset, Gro Holst Volden, Olsson, et al. 2016) and includes a summary of the important components of each QA scheme of Cyprus, Norway, United Kingdom and Netherlands. The table provides an overview of who is responsible for the initiation of the QA process, which entities are responsible for quality assuring project proposals, who makes the formal decision to finance and for which sectors the QA scheme applies. These components represent a basic description of these schemes and represents the key elements that make each scheme unique. The results of the discussion and comparison is used to extract conclusions on the strengths and weaknesses of the Cypriot QA scheme and aims to highlight these in order to draw attention to them and provide potential recommendations for improvement.

All countries used for the comparison have higher GDP, population and land area than Cyprus and have developed QA schemes long before Cyprus. A more comprehensive comparison would have included smaller countries that have similar attributes to Cyprus in

order to produce concrete results regarding the effects of the QA scheme on the investment mechanisms. From this, stems a topic for further research, which could look into the impacts of applying a QA scheme in a smaller economy and how a QA scheme can be adapted for smaller countries.

Responsible entity	Cyprus	Norway	United Kingdom	Netherlands
Initiation of QA process	DG EPCD	Ministry of Finance	A designated agency under the Cabinet Office	A designated government agency
Decision of choice of concept	Minister of Finance	Government	HM Treasury	A designated government agency
Applicable sectors	All, except Ministry of Defence	All, except health, oil/gas and state enterprises sectors	All sectors	Infrastructure projects
Threshold value	€500k for concept appraisal and €5 mill for feasibility appraisal	NOK 750 million	Large projects	No
Concept appraisal	DG EPCD	Government	HM Treasury	Designated government agency
Socio-economic appraisal	DG EPCD	Agency or ministry	Agency or ministry	Responsible government agency
Decision to finance	Parliament	Parliament	HM Treasury	Government
Quality assurer	DG EPCD and MoF BD	External consultant	Independent quality assurer	Designated government agency
Number of decision points	3	2	5	3
Advisory interventions	2	2	6	1

Table 10.1: Comparison of the Cypriot scheme with Norway, United Kingdom and Netherlands

The two-step quality assurance structure of the Pre-Selection and Project Appraisal framework of Cyprus resembles the QA scheme of Norway and provides the decision makers with a straightforward procedure to adhere to. Furthermore, the establishment of the independent office DG EPCD as an administrator of the framework bears resemblance to that of the United Kingdom, which the Infrastructure and Projects Authority administers. Frameworks from the other countries though, do not have a specific agency with the responsibility of administrating it and the responsibility lies with the Ministry of Finance. It is recommended in the theory that a specialised agency, like the ministry/agency of planning, or at least the MoF, should perform independent reviews of appraisal in order to ensure the long term sustainability and relevance to the strategic goals of the government (Rajaram, Le, et al. 2010; Austrian Development Agency 2009). In the case of Cyprus, the former Agency of Planning was given a new mandate as the DG EPCD, to administrate the Public Investment Management of Cyprus which includes the Pre-

Selection and Project Appraisal framework. The DG EPCD, as an independent agency in the government, has the potential to build knowledge in assessing project proposals and to offer the public administration training in improving the capabilities of the public sector to invest efficiently. Efficient and effective public infrastructure investments provide the public with projects that will attend their needs and will ensure that only profitable investments are financed (Angelopoulos, Philippopoulos, and Tsionas 2008; António Afonso and Jalles 2016; Asatryan, Heinemann, and Pitlik 2016).

10.1 Comparison of public project governance

Comparing the governance regime of Cyprus with Norway, United Kingdom and Netherlands, one can see differences, but also similarities in the entity that has the responsibility of administrating the quality assurance scheme. In Cyprus, the establishment of an independent agency responsible for administrating the QA scheme, bears resemblance with the UK governance regime. In the UK, the agency responsible is IPA, the same as DG EPCD is in Cyprus, and also, in the UK the HM Treasury is the responsible decision-maker, as the MoF office is for Cyprus. This is expectable, because as mentioned in the Manual, one of the countries that were used as an example for developing the QA scheme was the UK. In Norway, the overall administration of the QA scheme lies with the Ministry of Finance, while the quality assurance is performed by an external assurer. In the Netherlands, the QA scheme is administered by the ICRE, the Inter-ministerial Commission for Improvement of the Economy in Netherlands.

Having an independent agency as an administrator of the QA scheme, like in Cyprus and United Kingdom, provides with the possibility of increased efficiency of the process, as these agencies have mainly the responsibility of evaluating project proposals and managing the process of project selection and implementation (Rajaram, Le, et al. 2010; Austrian Development Agency 2009). On the other hand, as Rajaram, Le, et al. (2010) state, the Ministry of Finance could also serve as an administrator of the process, as is the case in the Norway, but then special attention should be given by the Minister of Finance to ensure the efficiency of the process. In the Netherlands though, the QA administrator is the ICRE, which is an inter-ministerial commission and it evaluates projects on the basis of recommendations by other agencies. The ICRE has a more political role in the scheme, compared with the DG EPCD of Cyprus, the IPA for the UK and the MoF for Norway. An independent agency as the DG EPCD, has the potential to rebuff political pressures and interference, at least at the tactical level of the evaluation.

Project and quality assurance initiation

In Cyprus, projects are initiated by the line ministries and a project proposal is submitted in the form of a Project Concept Note, as described in chapter 7. This procedure is common for all the countries used in the comparison. The difference in the public governance regimes of the four countries lies in the entity that initiates the QA procedure and the order the proposals are evaluated and selected. In Cyprus the QA administrator is the DG EPCD, while the final approval is taken by the Council of Ministers for the project selection phase and the Minister of Finance for the project appraisal phase (see figure 7.8). In Norway the administrator is the MoF and the same entity has the responsibility of taking the final decision on both the concept(QA1) and the budget (QA2), after recommendations by an external consultant. In the UK, the QA administrator is the IPA, that gives recommendations to both the HM Treasury and the Cabinet Office, which are the formal decision makers for approval of project proposals. Lastly, in Netherlands, the QA administrator is the ICRE, which is the decision maker in the process and takes recommendations for the quality assurance of proposals from other agencies.

In Cyprus and United Kingdom, there is a formal administrator that differs from the formal decision maker for approval of project proposals, unlike the Netherlands and Norway. By having different entities to administer the QA scheme and to take formal decisions, especially when the QA administrator is a non-political entity, can provide with the system safeguards from political pressures and aspirations. Also, as the agencies have the main mandate to administrate the QA scheme, can create the possibilities and the motivation for the agencies to operate the QA scheme efficiently to provide sustainable and relevant investments to the end users, the public. On the other hand, by having the agencies give recommendations on the projects that should be approved on a more political level, means that a certain level of trust should be built between the assessors, the administrators of the scheme and the decision makers. Decision makers should be able to approve projects that were deemed sustainable, relevant and profitable by their quality assessors and not disregard these recommendations to promote projects based on their aspirations (Chianca 2008; HM Treasury 2003).

Decision to finance

Another aspect that has differences between the four countries is the entity that has the responsibility of the decision to finance project proposals. In Cyprus, as in the Netherlands the decision to finance lies upon the Parliament. In both cases though, projects are not scrutinised and the Parliament does not have a significant role in the process. In Norway the project proposals are approved by the MoF and then put forward to the Parliament for political deliberation. If an agreement is reached by the Parliament, then a decision

to finance is taken. Contrary, in the UK, the decision to finance a project proposal is not political in nature and is taken by the Minister of Finance.

A political discussion on the merits of a project proposals could have both positive and negative results in the decision to finance. As is the nature of a discussion and a debate for a proposal can reveal aspects of an investment that were not thought of. On the other hand though, and specifically for highly political projects, reaching a consensus on a political level in the Parliament could be difficult. As is the nature of a Parliament, it is comprised by several parties with different aspirations and agendas, which can affect the outcomes of a discussion on financing a project. Also, experts in the government, even if they are still biased by the strategies laid by the governing party, are more qualified to take these kind of decisions as they base their decisions on their strategies and on their expertise (Todnem 2005; Bovey and Hede 2001).

10.2 Comparison of quality assurance procedures

Comparing the stage-gate models of Cyprus, Norway, United Kingdom and Netherlands there is a clear difference in the amount of quality assurance points and decisions point that need to be performed in order for a project to be financed and implemented. A clear overview of the stage-gate models of Norway, United Kingdom and Netherlands can be seen in chapter 6 and for Cyprus in chapter 7. The stage-gate model of Cyprus requires two evaluations and two formal decisions, each in the Pre-Selection phase and the Project Appraisal phase (figure 7.8). That of Norway is quite similar to the Cypriot and requires an evaluation of the concept (QA1) and a governmental approval at the pre-study phase and an evaluation of the proposal's budget(QA2) and a Parliamentary decision at the pre-project phase (figure D.2 in Appendix D). The stage-gate model of the UK is by far the most complicated and comprehensive from all four countries. It has five formal decision points and six assessment points. The project proposal is broken up in several parts, and for each part, a formal submission has to be done by the planning entity and assessed by the IPA in order for the proposal to proceed to the next phase. In the Netherlands, there are three formal decision points, the first at the idea phase, the second at the exploration phase and the last during the planning/development phase, which is the formal decision right before submission of the proposal to the government for finance (figure D.6 in Appendix D). There is only one formal evaluation performed before submission to the government by the ICRE, and it is performed by an external evaluator.

Decision and evaluation points

As seen in table 10.1 and figure D.4, the United Kingdom's framework is far more complicated and demanding than all the other, with several decision points and project assessment phases. Frameworks as such, need time to develop and be efficient. Furthermore,

these can be bureaucratic and time demanding, creating a time lag between the conceptualisation of a project proposal and the decision to finance, which in turn can cause a proposal to be obsolete or need rework to suit its initial purpose. The framework of Cyprus, similarly to the Norwegian and the Dutch, is simpler in terms of assessment phases and is designed to minimise bureaucracy. Therefore, by applying a simple structured procedure, the public administration of Cyprus can get better control of the procedures and reduce delays and cost overruns in state initiated projects.

By having less quality assurance procedures though, increases the possibilities of irrelevant and non-sustainable projects to be financed, as the time between assessment and actual implementation of public projects may take up to several years (HM Treasury 2003). Also, as there are many components that are included in the project proposals, the assessing agencies have a lot of facts and data to verify and evaluate, something that could cause some impacts to fall through the cracks. On the other hand though, the expertise and knowledge the assessing agencies have would be sufficient to identify the bigger problems that come with a project proposal, which in the end is the purpose of a quality assurance scheme (Rajaram, Le, et al. 2010).

In the case of Cyprus, quality assurance of both concept and feasibility, is divided in two separate agencies, which focuses issues like sustainability and affordability to be more thoroughly scrutinised and assessed. By having the quality assurance of a proposal divided into two separate evaluations, can benefit the quality of the evaluation, as the focus is divided between two distinct parts. Each part can be evaluated in detail and the extracted information from the analysis can give more specific results. On the other hand though, this division can prove to be difficult to apply in practice, and clear guidelines should be established in order for two separate entities to perform a complete evaluation of the aspects of a proposal in a satisfactory manner (Austrian Development Agency 2009; Rajaram, Kaiser, et al. 2014).

Threshold value

Another factor impacting the QA scheme is the threshold value that sets the limit for which projects are required to go through the QA process. The schemes of UK and Netherlands do not have a formal requirement on a threshold value, and it is stated that all large projects under the applicable sectors are required to go through the process. As the value is not set, it is up to the administrating entity to decide which projects should be quality assessed. As a rule of thumb though, all projects that exceed the proposing line ministry's budget ceiling and are requesting additional funds for implementation are required to be assessed. In Norway, a threshold value of 750 million NOK is set, and this ensures that all major investments go through the QA scheme. Similarly in Cyprus, a threshold value of €500,000 is set for all projects and these have to go through the Pre-

Selection phase. An additional threshold value is set for projects exceeding €5,000,000, that need an additional comprehensive Project Appraisal Review during the Project Appraisal phase (see figure 7.8).

By having a threshold value in place that requires projects of a certain cost to be scrutinised by a quality assurance scheme, makes it simpler and clearer for project planners and the line ministries to know if they are going to pursue a submission for their project proposal. As the research for a project proposal that has to go through the QA scheme is more costly, the planners might reconsider the cost estimated in their initial projections. This can be either positive or negative. The positive side is that the project proposals are reconsidered and smarter solutions to the problem might be found. On the other hand, cost estimations might be altered just to pass a project under the threshold value (K. Samset and Christensen 2015). For the latter not to happen, a QA scheme should have in place regulations that ensure strategic underestimation does not occur in state initiated investments, which undermines the efficiency of a scheme (L. B. Andersen, Boesen, and Pedersen 2016).

In the case of Cyprus though, a low threshold value ensures that most state initiated projects will go through at least the Pre-Selection assessment, which ensures that a project does not have any significant risks associated with it, there are not any serious impacts by its implementation and that it is according to the strategic goals of the government. A drawback of these method though is that the entities that perform quality assurance on the project proposals could be overwhelmed by the amount of proposals and that can lead to an inefficient procedure or a costly procedure, if the evaluation of the proposals are subcontracted to external consultants. This is contrary to the main purpose of the introduction of a new quality assurance scheme, that is to increase the efficiency of the public investment procedures of the government of Cyprus.

Project alternative consideration

As presented in chapter 7 and discussed in chapter 9, the procedure for considering the project alternatives in Cyprus is that it has a main project proposal that is compared with three other alternatives, including the zero alternative. From the discussion on it, it is concluded that there are potential drawbacks with this method, with the biggest one being that the comparison of the main proposal with the project alternatives is not performed in-depth. Comparing the procedure applied in the QA scheme of Cyprus with the other three countries, it can be observed that there is a difference in the methodologies. In all other three countries, project proposals include at least three alternatives, in which all three are assessed equally, until a certain point in the process, where some are eliminated and the most profitable and relevant remains to be further designed and implemented.

In this case, good international practise suggest that a procedure that includes the selection of the most profitable and relevant project amongst three or more alternatives, has the probability to produce more efficient results, comparing to the procedure the government of Cyprus follows. But for the project planners to be able to produce three different alternatives in such a satisfactory level of detail that will enable the evaluators to choose between the best alternative. Also, the fact that in the QA scheme of Cyprus the threshold for projects that are required to go through the QA process is significantly lower than all the other three countries, it means that almost every project proposal will be more time consuming and costly, which is against the purpose of the scheme. A suggestion for improvement of the QA scheme would be to have a different threshold for the bigger projects where it will require from the planners to have to design three or more alternatives in order to increase the chances that one of them is efficient and relevant with the strategic goals of the government.

Chapter 11

Implications from the issues with the implementation of a new QA scheme

A proper evaluation of public project proposals should be based on long-term sustainability and relevance towards the government's strategic goals, following the three pillars of sustainability; social, environmental and economical pillars (Haavaldsen, Lohne, and Lædre 2012). In the case of Cyprus though, the process has still remnants of the previous economocentric evaluation, which partly overlooks social and environmental aspects. Furthermore, the fact that costs and benefits are not allocated accurately when considering the life cycle of a proposal, or the lack of estimations for benefits, makes the evaluation of economic sustainability and affordability inaccurate. These issues constitute the need for the public administration of Cyprus to change its working culture to adopt a more holistic view and take into consideration a wider perspective when evaluating and financing projects.

11.1 Differences in theory and practise

From the changes applied during the first stages of the QA scheme it can be seen that the framework is evolving and the DG EPCD tries to eliminate some of its inefficiencies and solve the issues associated with it. The DG EPCD has followed up with the planners that have submitted PCNs for evaluation and the agency has identified several issues, which they are trying to resolve over time. For example, external consultants were hired to provide training to the planners and decision makers involved in the process. Examples of training sessions that were organised by the DG EPCD are an introduction to submitting a PCN, performing a life-cycle analysis and calculations of costs and benefits. This represents a feedback loop from the process of the QA scheme, which gives the DG EPCD valuable information on what functions well and what not. As Richard and Daniel (2001) argue, learning outcomes are important for the development of a scheme as it can be used for the improvement of the scheme, but also for the submission of project proposals.

In chapter 8 three important differences were identified. These differences are presented in this study in order to show the importance of adapting a scheme to the realities of a country's procedures, laws and culture, with the main aim of making the process as efficient as possible. Improvements to the scheme should be implemented continuously because the environment of the public administration is constantly changing. For the public administration to become and stay modern, according to the circumstances, improvements should be pursued by high ranking officials and governments alike (Pathak 2010; Todnem 2005). A good example of this can be seen in the history of the public administration of Cyprus. During the colonial years of Cyprus, the British had imposed to the administration several procedures and agencies that resembled those of United Kingdom and after independence, most of these were adopted by the newly formed Republic of Cyprus. These agencies and procedures though, were not being adapted to the needs of the current times, as an economic prosperity overshadowed the inefficiencies that were growing in the public administration. The same pattern continued until 2012, when the financial crisis hit Cyprus and suddenly it was made clear that a change was imperative.

The first difference between Manual and actual practice is that the affordability evaluation will be performed after assessing the proposal's viability, instead of this being performed simultaneously. As mentioned in chapter 8, the reasoning behind this was that the DG EPCD would assess the cost estimations and in the case the proposal is deemed viable, the MoF BD does not need to reassess the costs, and thus save time. The project proposal affordability will be evaluated only regarding to the proposal's budget and the development budget of the line ministry that proposes the project. Assessing this change in the sequence of evaluations, there are both a positive and a negative side to it. The positive is that the evaluation is not necessary to be performed twice, saving resources and time for the public administration, and especially for the MoF BD, that has several other responsibilities regarding the formation of the yearly national budget. On the other hand, it can make the process more time consuming and bureaucratic as the MoF BD will have to wait for DG EPCD to finish their evaluation before they can start with the affordability assessment. An affordability assessment on the basis of the proposals budget regarding the line ministry's budget is not expected to be as time consuming as an evaluation of a PCN or a PAR, for example, thus the time needed for it will not affect the process significantly.

The second difference identified between theory and practise is that the lower level in-house evaluation was not conducted. After interviewing two project planners and an officer in a Ministry, it was observed that this step was not performed, at least for those two particular project proposals. But as the proposals were old projects that were rejected before and redefined as new proposals, there is the possibility that the senior management of the agencies did not consider the extra step important. Also, as the ministries are

currently understaffed, the extra evaluation will put pressure on already stretched out resources. An internal evaluation of project proposals raises other questions though. How can a formal framework be able to ensure that an in-house evaluation contributes to project viability? The answer to this question is hard to answer and this research does not focus on those aspects. As Rajaram et al (2014) state, the allocation of public resources are time consuming and costly. Also, evaluations as such should be impartial and independent, in order to contribute to value increase and long term sustainability of an investment (Chianca 2008; Yang 2016; Cato 2009).

In order for an in-house assessment of the PCN and the PAR to be efficient, formal evaluation criteria should be prescribed in the form of regulations and guidelines. The importance of implementing this step in the evaluation process is essential for providing an additional quality assurance of the data provided by the planning agencies. It is evident by the reports by the Audit agency that some of the major factors of public investment inefficiency are mistakes during the initial planning that go untreated until project implementation and that there are not enough studies that back up the data provided in a proposal's planning (Audit Agency 2003; Audit Agency 2002). A proper evaluation process that includes not only external evaluations such as the Pre-Selection and Project Appraisal framework but also internal scrutiny by impartial planners in the same agency, gives the proposals more credibility and increases the probability of a public investment to be sustainable in the long-term and cover the needs of the stakeholders (Chianca 2008; HM Treasury 2003; Rajaram, Le, et al. 2010; Austrian Development Agency 2009).

The third difference seen during the interviews is the intention of creating a formal framework that sets requirements for external consultants to be able to be hired for performing the quality assurance of project proposals, in the form of PCN's and PAR's, on behalf of the DG EPCD. The subcontracting of project assessments by the DG EPCD to other consultants will be performed when the DG EPCD lacks the necessary knowledge for a meticulous evaluation or when the DG EPCD has too many proposals to evaluate. For the consultant pool to be created, several steps have to be resolved and also there are several issues with this implementation, mainly regarding additional costs to this process. Additional costs created by hiring external consultants can take the form of different factors. The most prominent is the actual payment requested for hiring the consultant, to make their own studies and present a report on their findings on project viability. Another source of cost is the need for the DG EPCD to evaluate how thorough the investigation and assessment was, which requires an assessment of the work of the consultants. So even if the process will be more efficient, the authorities have to check the additional costs that come with hiring external consultants. Furthermore, another issue regarding this, was discussed during the interviews and is that as the market in Cyprus is rather

small, so qualified external consultants are scarce, which may require a recycle of the same consultant firms to perform evaluations.

11.2 Issues with the implementation

Due to the fact that the QA scheme is newly introduced, it is expected that some aspects of it are not as efficient as initially planned. The fact that the Manual was designed and produced by the World Bank, makes it non-realistic to be fully adapted to the needs and realities of Cyprus, with the first version of it. As experienced in other countries, the implementation of the QA schemes in Norway and United Kingdom required a significant amount of years to reach a point the QA schemes were functioning efficiently (Christensen 2009; Williams, Ole J. Klakegg, et al. 2010). As seen in the previous section, this is already happening in the QA scheme, as the DG EPCD identifies and improves aspects of the scheme that were deemed inefficient. This process requires for it to be in operation for some time in order to determine which aspects of it are functioning properly and which should be altered and in which way to make the procedure more efficient.

In chapter 8 different types of implementation issues were presented. From the analysis of the findings, the issues were divided into to general categories by the use of the theory of Bovey and Hede (2001), Burnes (2004) and Luecke (2003). The authors suggest that for change in an organisation to be successful, four main factors should be subjected to change; behaviour, structure, processes and culture. For this study, the factors of structural and culture change are further analysed, as these are the most evident aspects that affect the efficiency of the Pre-Selection and Project Appraisal framework. It can be expected that some structural issues with the implementation are experienced during the initial stages of the new QA scheme (Luecke 2003). These can be seen in table 8.2. Issues such as lack of expertise for performing thorough evaluations and lack of a project database for comparisons will be solved over time. Other issues such as political pressures and enabling financing decisions by the Parliament without consideration of the proposals, are weaknesses of the new framework that need to be addressed by creating formal requirements in the process.

Based on the results of chapter 8, this section tries to answer the third research question this study has set on examining:

What are the most prevalent issues with implementing a new QA scheme?

In this chapter, the different implementation issues that were observed during the interviews and the study of official documents and were presented in chapter 8, are discussed and put against the theoretical background established in chapters 3 and 5. For many of the issues discussed, potential recommendations for improvement are discussed, which are based on previous experiences and studies found during the literature review.

Organisational, Regulatory and Procedural Issues

The structural issues that were observed during the interviews can be categorised as either procedural, organisational or regulatory (Burnes 2004; Luecke 2003). The underlying issues of the structural issue categories presented in chapter 8 can be considered preliminary, because of the number of cases studied, but the procedural, organisational and regulatory categories can be validly defined. Many of these issues have already been identified by the DG EPCD and they have planned measures to resolve them. The organisational issues identified do not pose any threats for the long-term efficiency of the QA scheme and expertise in assessing project proposals in the MoF BD and DG EPCD will develop by time. Another solution for organisational issues is the establishment of a project performance database that will gather data by the ex-post evaluation of completed projects and the identification of inefficiencies with the process (Rajaram, Le, et al. 2010). Taking an example from the Norwegian model, the Concept programme (NTNU 2001-2016) was established at NTNU and is financed by the Ministry of Finance in order to evaluate the process and offer recommendations for improvements of the QA scheme. A similar arrangement with one of the universities in Cyprus or another research centre could provide the researching capacity for the public administration of Cyprus to perform ex-post evaluations and create a performance database that has the possibilities of improving the long-term success of the QA scheme.

Another factor emanating from the structural issues are regulatory restrictions. One of the issues detected is according to the Pre-Selection and Project Appraisal framework, it is not required by the Parliament to go through any of the studies for project proposals before agreeing to finance them through the budget approval process. As explained by the Director of the DG EPCD, continuous attempts are undertaken to inform and educate all the parts involved in the process, about the process and the needs for quality assurance of project proposals. A regulatory commitment though is not pursued, at least not for now, that requires that the members of the Parliament have to go through the documentation of the project proposals and discuss the merits of the investments proposals before the decision for financing. This resembles the QA schemes of Netherlands, where the decision of finance is the responsibility of the government and the Parliament approves the national budget proposal without evaluating the project proposals in it. A formal requirement, such as a regulation, should be in place in order to ensure that the members of the Parliament assess the need of the project proposal they are agreeing to.

The most important regulatory inadequacy is that the Parliament, the CoM and the President of Cyprus can circumvent the process by promoting projects according to their own agendas. By implementing projects without quality assuring and ensuring that these are sustainable in the long term and relevant with the needs of the end users, produces inefficiencies to the public financing procedures that will affect the rest of the process

of financing proposals that go through the QA scheme (Haavaldsen, Lohne, and Lædre 2012). In order to ensure the efficiency and effectiveness of the QA scheme, it has to be safeguarded by political aspirations and by having politicians circumvent the procedures. Regulations should be in place that prevents this to happen and ensures the proper function of the process. Political decisions can have the potential of producing projects which their outcomes are against their initial purpose and are not serving the needs of the end users as they are pursuing their own agendas, which are not based on the results of actual studies for the problem in question (K. Samset, Gro Holst Volden, Morten Welde, et al. 2014). A solution to this is to move the decision making process as far as possible from the political sphere, a measure that has the possibility to stir up some reactions by the politicians, that are using project proposals to promote their agendas through them.

The third type of issue identified during the interviews is procedural issues regarding the QA scheme. The first procedural issue observed in the scheme is in the way the project alternatives are presented and managed. The Manual requires that for a submission of a PCN, a main project proposal should be developed, with three project alternatives to be analysed and compared with the main proposal, including the zero alternative. As seen in chapter 10, this is different than the other countries studied, which raises some questions about the efficiency of the evaluation process. When considering a project proposal it is important that several solutions are considered, analysed and compared, in order to reach the most efficient solution, with the least cost to the problem (Avineri, Prashker, and Ceder 2000; Beaujon, Marin, and McDonald 2001; Pena, Guasch, and Escribano 2000; Morten Welde et al. 2014). According to the literature, this is important to safeguard the long-term economic, social and environmental sustainability and that the needs of the end users are met. Also, by developing several alternatives for a certain problem, various solutions are identified and studied in-depth. This increases the chances for finding a solution that could solve a problem with other ways than initially anticipated. On the other hand, an approach to evaluating project alternatives that is based on evaluating three or more equally studied alternatives, is more time consuming. But it has the potential to find solutions that are more sustainable and cost less, which ultimately increases efficiency of the QA scheme.

Conceptual choice of three or more alternatives allows for the planners to see the problem from several perspectives, creating a deeper understanding of the underlying issues of the problem in hand (K. F. Samset and Gro Holst Volden 2016; Pena, Guasch, and Escribano 2000). But by requiring all project proposals go through the same lengthy procedure that is the Pre-Selection and Project Appraisal framework, has the potential to overload the capacity of the DG EPCD and the MoF BD to assess the proposals and produce a result that goes against the purpose of the scheme. To have an efficient framework for assessing state promoted projects in order to enable a sustainable investment portfolio by

the government of Cyprus, the threshold should be increased, at least for large projects, were the impacts of having a less costly and more efficient project implementation are larger.

Another procedural issue is that the structure of the QA scheme is economocentric and the economic criteria of evaluation overshadow the social and environmental criteria. This can be observed in Appendix B, where most of the criteria are economically oriented. This does not mean that the social and environmental aspects are disregarded in the evaluation process or that the economic evaluation is not important for a government. The evaluation of the social and environmental aspects of the project proposal though, is primarily based on the preliminary EIA and the comprehensive EIA, described in section 7.4. The main observation made during the interviews and the analysis of the official documentation is that if the social and environmental factors do not pose any significant economic setbacks to a project proposal then it is considered socially and environmentally sustainable. In order to maximise efficiency and effectiveness of a public investment, all the three factors of sustainability should be evaluated accordingly and seek measures to improve the impacts and effects by all three of these (Directorate General for Regional and Urban Policy 2014; Shiferaw and Ole J. Klakegg 2012; L. B. Andersen, Boesen, and Pedersen 2016; Rajaram, Kaiser, et al. 2014). A possibility to include all three aspects in a balanced evaluation, is by adopting further social and environmental criteria, than those presented in the Manual.

The criteria for evaluation presented in Appendix B and C are used for evaluating the PCN and the PAR. An analysis of them makes it obvious that these are more economocentric and focuses on economic factors more than the social and environmental aspects. Nevertheless, these aspects are considered during the submission and evaluation of an EIA, which needs to be passed through a panel of evaluators, consisting of a council made up by representatives of several ministries and headed by the ministry of Agriculture, Natural Resources and Environment. From the interviews, it was not made clear to what degree the cooperation between the environmental assessment council and the DG EPCD was and to what extent the DG EPCD were considering the recommendations made by the council.

The intentions of the DG EPCD with the preliminary EIA and the PCN is to merge the two procedures into one to avoid the extra work by the planners in the line ministries. This though has not been achieved at the time of writing this thesis. A merge of the two evaluations will in the long run, include more environmental and social aspects of a project proposal. This is supported by Rajaram, Kaiser, et al. (2014), as he states that some of the issues of inefficiencies in a public investment mechanism could be weak-interagency cooperation and that issues with environmental safeguards can result in significant delays and cost overruns. The definition of the degree the DG EPCD is taking into consideration

the evaluation of the preliminary EIA and the comprehensive EIA is unclear. Thus, one of the guidelines given by the OECD (2010) and Chianca (2008), is that all the evaluations should be used as feedback by the decision makers in order to have the full picture of the problem the investment tries to solve and be able to suggest the best alternative that can solve the problem most efficiently and economically.

Furthermore, during the initial interviews, it was observed that there was a lack of formal methods of calculating the benefits of project proposals. But during a follow up inquiry with the DG EPCD, it was established that the agency had already identified that particular issue and they had commissioned an external consultant to provide, amongst other, a comprehensive training to a large number of planners and decision makers involved in the process. Even if measures have already been taken to resolve this issue, it is important to mention, as the calculation and correct representation of the benefits of a proposal, has a central part in identifying long-term sustainability of an investment. Ensuring that the presented benefits are realistic and comprehensive ensures that a project will be profitable (Rajaram, Le, et al. 2010).

Project proposal affordability is based on a case to case basis, as the MoF BD had not established a formal procedure to assess proposals. The process of creating a formal evaluation process had not started when the interviews were conducted, and it was admitted by the MoF BD that when they had researched and enquired about other similar processes, they had little luck in finding formal procedures that have been functioning well. The MoF BD and DG EPCD are aware of the drawbacks of the absence of a formal procedure to assess the affordability of a proposal and they have started to take measures for resolving this. A standardisation of the assessment process of project affordability according to a set of pre-defined criteria, would provide with a more efficient and time-effective QA scheme. A standardised affordability assessment process will allow for a quicker evaluation of proposals and also reduce potential mistakes in overlapping budget appropriations when considering a large number of projects simultaneously. This process though should possess enough flexibility in it though in order to give room for adjustments to the cost estimations. Cost estimations are prone to increase as the project phases progress, due to several factors, such as strategic underestimation, cost estimation techniques are not adequate or mistakes in the estimation process (B. Andersen, K. Samset, and Morten Welde 2016; Magnussen and Olsson 2006; Flyvbjerg 2014; Torp et al. 2016).

Finally, an issue according to the selection of project proposals during the project selection phase was observed (figure 7.8). Projects that have their PCN and PAR evaluated and approved by the MoF, are put on a list of approved projects, where the line ministries can pick projects to implement. This list is not based on profitability or project efficiency and represents just approved projects. The issue with this methodology is that in many cases, not the most profitable projects are chosen by the line ministries and the decision

on which projects should be financed can be based on political aspirations of the responsible minister. This issue is not as important as those mentioned above as the projects on the list are supposed to be profitable, but this represents a loophole in the procedure where political pressures and aspirations could be applied.

Issues with External pressures, Habits and Uncertainty

By suggesting a change in the working culture of the planners, the decision makers and the assessors (table 8.3), does not mean that the procedures applied until prior to the implementation of the QA scheme were wrong or inefficient. But for the new scheme to be able to function efficiently and produce satisfactory results, new methodologies and procedures need to be put into practise (Rajaram, Kaiser, et al. 2014; OECD 2010). The public servants are not accustomed to these new practises and methodologies yet, which is clearly observable during the interviews. In chapter 8, three categories for the need for change in the working culture of the public administration are presented and include issues with external pressures, habits and uncertainty. The issues were observed during the interviews and the study of the official documents and manuals.

Deriving from the last structural issue, are the issues with external pressures. Potential external pressures identified are that the decision makers and project planners are prone to political pressures and that the Parliament are only critical to project proposals that they have political aspirations with or are pressured by their political party to act upon. It was identified that in the interviews that there were no formal safeguards for the avoidance of political pressures on individuals in the quality assurance process and that corruption is possible to happen. But the application of procedural measures to combat corruption by individuals has the possibilities of making the scheme too bureaucratic and will counter its initial purpose of being an efficient procedure to ensure good practises in public investments and the only realistic countermeasures are to try to change the working culture and mentality of the public servants (Stefes 2007; Asiedu and Freeman 2009).

An extreme countermeasure for eliminating corruption is the hiring of new personnel in decision making positions or the restructuring of the organisations that plan and make decisions in the quality assurance procedure (Pathak 2010). As public organisations are inherently difficult to change due to the rigidity of the already infused values and practises applied for several years, a change in administration provide with an opportunity to change deeply rooted cognitive models of the public administration (Pierson 2004). One way or another, for the Pre-Selection and Project Appraisal framework to be efficient, it should be safeguarded by corruption and external pressures with strict rules and regulations, that runs together with the QA scheme (HM Treasury 2003; Rajaram, Kaiser, et al. 2014).

The second category of issues with the working culture of the public sector are the habits the public servants have (table 8.3). Humans rely on their habits to cope with the

anxiety of a change (Bovey and Hede 2001), which in this case is the introduction of the new QA scheme, which drastically change the methods and methodologies of the every day work of the public servants. More specifically, it was observed by the interviews and the study of the two PCN's that there was still a focus on the economic criteria rather than social and environmental, similarly as the mentality utilised before the implementation of the new scheme. Another aspect widely observed is that in these initial phases, the planners are still accustomed that all their project proposals that go through the Pre-Selection phase (figure 7.8), will be approved for further investigation and planning. This assumption should cease and the planners should see that the PCN's should be as comprehensive as their time-frames allow in order to be approved by the DG EPCD and the MoF BD in their evaluations. It is the responsibility of the assessor agencies to ensure that the planners learn that not every proposal will go through and that some need to be reworked and other proposals will be scrapped.

The third type of issues with the change in working culture is uncertainty. Uncertainty is related to issues of ambiguity and from aspects that have a certain degree of interpretation. Firstly, it was identified that the project proposal alternatives are not considered in depth. This is potentially stemming by the framework itself, which requires a main project proposal with three alternatives to it. This was identified as a possible factor which makes the project planners to consider the alternatives as not important for the procedure and the motivation to investigate these alternatives in depth is less. Specifically the planners of projects should investigate more the project alternatives as these are important in coming up with better solutions that are more efficient, sustainable and economical and not rely solely on their first proposal.

Furthermore, an uncertainty was identified regarding a holistic evaluation of long-term environmental, social and economic sustainability. From the planners interviewed and the study of the PCN's and the Manual, it is evident that the focus is mainly on the economic aspects of the project proposals. Similarly to the structural issue, the mentality of the public servants is economocentric and measures have to be taken to resolve this. One countermeasure for this is for the assessing agencies to give feedback on projects that base their evaluation on mainly economic aspects and neglect the social and environmental aspects, which will make the planners reconsider their approach to problem solving. Another countermeasure is that a change is performed on some of the requirements in the PCN to include factors regarding social and environmental factors in their analyses and not only as part of the preliminary EIA. Considering equally the social, environmental and economical aspects of a proposal will ensure the long-term sustainability of it and the relevance of it according to the end user needs (Ole J. Klakegg and Haavaldsen 2011; Haavaldsen, Lohne, and Lædre 2012).

Chapter 12

Conclusion

This concluding chapter presents the findings researched and discussed through this study. A set of recommendations for improvement of the QA scheme of Cyprus follows and ends with recommendations on aspects of this study that need further research in order to be more appropriately answered. The study presented in this thesis is considered a preliminary research on the wide topic of public project governance and quality assurance of public investments in Cyprus. Research questions were established in the introduction of this thesis and are pursued answered throughout it. Major findings, conclusions and recommendations are presented based on the three research questions:

1. What procedures does the government of Cyprus apply to quality assure major infrastructure projects?
2. What are the important differences between the frameworks of Cyprus, United Kingdom, Norway and Netherlands?
3. What are the most prevalent issues with implementing a new QA scheme?

12.1 Major Findings

The QA scheme of Cyprus

The Pre-Selection and Project Appraisal framework was put in operation in 2016 to ensure long-term sustainability and relevance of public investments. It is administrated by the DG EPCD, with the overall responsibility of the Minister of Finance and is divided in two distinct stages of evaluation, the first at the Pre-Selection phase and the second at the Project Appraisal phase. Both evaluations are based on the assessment of the viability and affordability of the project proposal according to a predefined set of criteria by the DG EPCD and MoF BD, respectively. Decision makers in the process includes the Council of Ministers in the Pre-Selection phase, the Minister of Finance in the Project Appraisal phase and the Parliament for the final decision for financing.

A notable finding observed is that of the inclusion of alternatives in the PCN and PAR. The procedure requires a main project proposal to be submitted, together with three other alternatives, including the zero alternative. These are not required to be fundamentally different in any way and as observed, are not studied in-depth by the planners, which raises concerns about their role in the evaluation.

Another notable finding is that formal decisions are taken either by the government or politicians, which raises concerns about the robustness of the scheme against external political pressures. It is discussed that measures undertaken to resolve this issue should be balanced in order to avoid making the scheme too bureaucratic, by introducing time consuming safeguards.

Lessons learned from the comparison with other European countries

The Pre-Selection and Project Appraisal framework was compared with the QA schemes of Norway, United Kingdom and Netherlands, with the aim of extracting conclusions about potential strengths and weaknesses of the scheme of Cyprus. The establishment of the DG EPCD as the administrator of the QA scheme, similarly to the UK scheme, provides with the possibility of increased efficiency of the framework. Many of the political influences can be restrained due to the non-political nature of this independent agency.

Differentiating the administrator of the QA scheme and the formal decision maker can contribute to improved efficiency of the framework, due to the concentration of the assessing entities to project proposal evaluation. Furthermore, the assessing procedures are again safeguarded by political pressures. This separation of responsibilities requires though good cooperation and trust between the two entities.

The quality assurance scheme of Cyprus requires project proposals to go through a two-step evaluation process which assesses viability and affordability. Compared to the United Kingdom, it is a fairly simple procedure, which is easy to follow for the public administration. It has the potential to reduce delays and cost overruns in state initiated projects.

A relatively low threshold value for projects that are required to go through the Cypriot QA scheme ensures that most of them will be evaluated according to viability and affordability. Compared to other countries there is a risk that the QA scheme will be inefficient, due to the large amount of project proposals that are needed to be evaluated.

Comparing the methodologies of other countries and that of Cyprus, it is clear the Cypriot QA scheme has different project alternative consideration. Norway, united Kingdom and Netherlands are analysing three equally planned proposals before selecting one

of them, while in Cyprus there is a main proposal with three other alternatives being proposed. It has been observed during the interviews that these alternatives are not planned in-depth when submitting a PCN.

Issues with the implementation of a QA scheme

Already from the early stages of the operation of the Cypriot QA scheme, there were observed differences between what was described in the Manual (World Bank, 2016) and actual practise. This suggests that the administrators of the QA scheme are identifying potential problems with the new QA scheme and strive to address them. A constant review and improvement of the scheme can encourage an improvement of the efficiency and effectiveness of it over the years, ensuring the purpose of the introduction of the scheme.

Even if the DG EPCD identified and has made changes to the scheme, the results from these study uncovered several issues regarding the implementation of the new QA scheme. These were divided in two categories, structural change issues and issues with the change in working culture. Structural change issues were then analysed and categorised in three separate types, procedural, organisational and regulatory issues, while the issues with the change in working culture were categorised as issues stemming from uncertainty, habits or external pressures.

Organisational issues are not found to be threatening the long term efficiency of the scheme, but measures should be taken in order to improve them. Organisational issues such as lack of expertise of the planners, assessors and decision makers will improve, while the lack of a finished project database to be used as a benchmark for future projects, is expected to improve over time. Lack of regulatory restrictions on some aspects of the scheme were identified through the interviews. These include the need for a requirement that would ensure that the Parliament evaluates project proposals prior to voting for approval of the national Budget. Furthermore, transparency in the decision making should be incorporated in order to hinder the Parliament, the CoM and the President of Cyprus circumvent the process to promote their own agendas.

The largest category of structural issues is defined in this study as procedural issues. These include the methodology of project alternative consideration, the economocentric nature of the evaluation process and criteria, the lack of formal methodologies for evaluating cost and benefits, lack of a standardised procedure for evaluating project affordability and arbitrary selection of project proposals from the approved project list of the MoF to be included in the national Budget proposal. Issues such as these impede the scheme's effectiveness and public investment efficiency.

Issues with the working mentality of the planners and decision makers that are involved

in the scheme were also identified. The most prevalent is the vulnerability of some features of the scheme to external pressures and corruption. Even if this study did not uncover serious flaws of the system, these are still important to mitigate for the QA scheme to function properly and produce the intended results. Furthermore, it was identified that project planners and decision makers were still trying to do things the same way as they were used to, bringing in habitual issues that are hindering the process. An observation was made that the planners were expecting that all their proposals will go through until the detailed planning phase, as they were used to from the previous procedures. Lastly, issues with uncertainty of the methodology was observed. Several aspects were ambiguous for the entities in the QA process, which could be stemming from the lack of formal training on the QA scheme or by the Manual allowing room for individual interpretation of some features of it.

A general conclusion throughout the discussion is that the implementation of a new QA scheme will always bear habits and methodologies of the previous procedures and that time is needed to be able to resolve most of these. All the entities involved in the process should embrace these changes and ensure that the process is not affected by external political pressures. A balance between procedural changes and change in working culture is advisable to avoid the development of a bureaucratic framework that will safeguard the long-term sustainability and relevance of new public investment projects. In the next section, a presentation follows of the recommendations for improving the QA scheme that were proposed in the discussion of the results of the study.

12.2 Recommendations for improvement of the QA scheme of Cyprus

From the discussion of the research questions, several points of recommendation came up. These include aspects that were already known to the DG EPCD and were in the process of finding measures to resolve these. As the main purpose of this study was not to resolve these issues, further research should be performed in order to establish the actual effect these recommendations could have for the efficiency and effectiveness of the QA scheme.

General recommendations

A general recommendation arising from the comparison and the discussion about the QA scheme in chapter 9, is that the administrators of the scheme should avoid accumulation of rules and regulations that will make the process bureaucratic and time-consuming. A simple to apply scheme, which evaluates project proposals according to a straightforward set of criteria, has the potential to be successful and be able to produce sustainable and relevant investments for the government of Cyprus.

Taking an example of the Concept research programme that is financed by the MoF of Norway and run by NTNU (NTNU, 2001-2016), the establishment of a similar research programme for evaluating the performance of the QA scheme has the potential of researching the QA scheme in-depth and evaluating it, which can offer recommendations for its improvement. Commissioning a research institute or a university in Cyprus to perform ex-post evaluations and create a performance database will increase the possibilities for the long term success and development of the QA scheme.

Structural improvements

1. For large projects, there should be a proposal of three main alternatives rather than a main proposal to be compared to three other secondary alternatives.
2. Project affordability evaluation should be performed in a structured manner and according to a pre-defined set of criteria.
3. Measures, such as formal regulations, should be enforced in order to safeguard the process from political and other external pressures. An extension to this measure is that the QA process should be pursued to be moved away as far as possible from political decision making, as this may affect the outcomes of the investments.
4. Create a set of criteria to evaluate project viability in a holistic perspective, by evaluating in a balanced way all three aspects of sustainability; the economic, social and environmental aspects.
5. Institutional capacity and legal issues should be identified and described.

Working culture improvements

1. Expect that for some years there will be some inefficiencies with the operation of the QA scheme and after some years perform an independent evaluation of it to evaluate inefficiencies.
2. Provide constant training to the entities involved in the QA process to eliminate habits and uncertainties that impede the scheme's efficiency.
3. The DG EPCD has to provide constructive feedback to the planners in order to make them understand that submitting a fully completed PCN will reduce workload in the Project Appraisal phase.

12.3 Recommendations for further research

Due to the nature of this thesis as a pre-study of the Quality Assurance scheme of Cyprus and the issues with its implementation, further research should be performed to verify

the results. Also, the changes the DG EPCD is performing to the Pre-Selection and Project Appraisal framework should be followed up in order to keep the public investment governance framework and the stage-gate model presented in chapter 7 updated. As the QA scheme has only recently been introduced, changes are expected in order to increase the effectiveness of it and in order to be able to identify inefficiencies that need improvement. Research regarding problems with the QA scheme and the effectiveness of the changes performed to it, has the potential to reveal important aspects that by improving them can affect positively the outcomes of the public investments of Cyprus.

Research should be performed that will study the differences between the methodologies used for designing and comparing project alternatives. The first methodology is as in the Cypriot QA scheme, the proposal is to have a main project proposal that is compared with three other alternatives. The second is as in Norway and United Kingdom, in which three alternatives are studies and compared to each other, in order to choose the best solution. Also, the research could study the impacts of the use of the different methodologies have on the outcomes of the projects and the overall efficiency of public spending.

In the list that follows, there is a presentation of important topics for further research that were identified throughout the thesis:

- Further research could look into what measures can be introduced in order to safeguard a QA scheme from political pressures. Also, the research can focus on the positive and negative impacts the political interference could have on the outcomes of the end outputs from the investments.
- There is lack of a formal process that can assess the affordability of project proposals by the MoF BD. Further research could be focusing on defining a pre-defined process for this assessment that leaves ground for a certain amount of flexibility, due to the nature of the cost estimation development throughout the project.
- Further study is needed to determine how the evaluation criteria should be set, for a holistic perspective in sustainability, taking into account a balanced evaluation between the social, environmental and economic aspects. Furthermore, the impacts of each aspect should be studied, in respect to how it affects the outcome of an investment.
- The comparison of the QA scheme of Cyprus should be performed with countries with similar characteristics in order to get a more realistic representation on the differences of the effects of a QA scheme when the scale of its operation is shrunk to fit that of a smaller country and a smaller economy.

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Part II

Appendix

Appendices

Appendix A: Conference paper proposals

Paper 1: "Implementing a Quality Assurance Scheme for Major Public Infrastructure Projects: The Case of Cyprus"

Paper 2: "Quality assurance scheme for public investment projects in Costa Rica"

Appendix B: Criteria for Pre-Selection of a PCN

Appendix C: Qualitative comparison of project alternatives

Appendix D: Quality assurance of other European countries

Appendix E: Interview guide

Paper 1

"Implementing a Quality Assurance Scheme for Major Public Infrastructure Projects: The Case of Cyprus"



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Implementing a Quality Assurance Scheme for Major Public Infrastructure Projects: The Case of Cyprus

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Abstract

This paper addresses issues concerning the implementation of a new quality assurance (QA) scheme for public infrastructure projects in Cyprus. The aim of this pilot study is to highlight these issues in order to make researchers and government officials aware of what the implementation of a structured QA scheme for public infrastructure projects entails. An initial scoping literature review was based on international literature on quality assurance schemes. This was followed by a study of official manuals and guidelines regarding the application of the new Project Selection and Appraisal framework of Cyprus. In addition, carrying out in-depth semi structured interviews resulted in the identification of implementation complications, such as difficulties in cost estimation, definition of alternatives and projects not adhering with the general strategies of the government. Furthermore, the presentation of the new quality assurance framework of Cyprus and its comparison with other established QA frameworks opens the way for further analysis. The results can provide the premise for further investigation and discussion for public institutions that are introducing new quality assurance procedures. The presentation of the Project Selection and Appraisal framework of Cyprus highlights the efforts by the Government of Cyprus to improve the efficiency of public expenditure procedures.

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Keywords: Quality assurance scheme; Public project governance; Public investment management; Project evaluation; Cyprus

1. Introduction

Quality assurance schemes are established by governments to ensure long-term sustainability and relevance of public investments.¹ Governments in developed countries have begun in recent years establishing formal requirements and frameworks to ensure appropriate public expenditure.² Frameworks as such improve the efficiency of public fiscal policies by reducing wasteful public spending and reallocating expenditure from lower value to higher value projects.³ A framework for converting the strategic goals of the base organization for long term project success should be imbued in the project management procedures when designing and implementing projects.⁴

Situated in the eastern Mediterranean, the island of Cyprus became independent from the British empire in 1960, and thus shares many similarities in the public administration sector. Furthermore, from 1st of May 2004, it became a member of the EU and from 2008 it entered the Eurozone. With an estimated 1,2 million inhabitants and a GDP per capita of \$34,400, Cyprus is considered a developed country, and the main economic sectors are tourism, financial services, shipping and real estate.⁵ Corruption levels in Cyprus are considered moderate, and according to Transparency International, ranks in a 47th position amongst 176 countries with a score of 55 out of 100.⁶ From the report, it is evident that corruption levels have been increasing in the last years, and from this arises the need for a more structured control of the finances of the public administration.

To address this, the government of Cyprus, introduced in 2016 a new framework for assessing the viability and affordability of projects, as early as the conceptualization phase.⁷ According to it, projects above €500,000 must go through a mandatory concept appraisal, while all projects above €5,000,000 have to go through a mandatory comprehensive project appraisal. The framework sets evaluation criteria to public investment projects in terms of financial, social and environmental sustainability, but also requires an assessment of affordability. During the implementation of this new framework though, several issues came up. These issues highlight the need for improvement of the structural procedures of the process, but also the need for a change in working mentality by the public administration.

One of the main aims of this paper is to document how public infrastructure projects in Cyprus are selected for implementation and more specifically how these are quality assured, financed and governed, taking into consideration the whole life cycle of projects. Furthermore, special interest is given into the comparison of these procedures with other established frameworks of European countries to create a base for further analysis and discussion on the advantages and disadvantages of the Pre-selection and Project Appraisal framework. Finally, as it was evident from interviews conducted during the study for this pilot project, there are several issues associated with the implementation of a new public quality assurance scheme for project proposals. These are interesting, not only for the government officials in Cyprus, but also to government officials of other countries that are in the process of applying a new QA scheme to their countries. The following three questions are addressed:

- What procedures does the government of Cyprus apply to quality assure major infrastructure projects?
- What are the important differences between the framework of Cyprus, U.K., Norway and Netherlands?
- What are the most prevalent issues with implementing a new QA scheme?

2. Project governance in the public sector

Governance provides a framework for decision-making and managerial action within an organization that is based on transparency, accountability and defined roles.⁸ Public governance has the responsibility to determine the policies, strategies and project implementation and operation. Governance can generally be divided in the operational, tactical and strategic level of planning.⁹ At the operational level, project plans are carried out, at the tactical level, the

procedures for the tactical resource deployment are developed and at the strategic level, the general strategies and policies are determined.^{8,10} From a quality assurance perspective, the most important of these is the strategic.¹¹ It can be argued that even if a project is a success from a project managers' perspective, if it fails to serve its strategic goals and user needs, then subsequently this project is a failure.¹² Strategic level of planning should be based on the interrelations between the triple bottom line of sustainability as a holist view.^{13,14} The triple bottom line represents a holistic and long-term representation of sustainability and includes the economy that is interrelated with the society, which in turn is interrelated with the environment. This long-term evaluation of the strategies and objectives based on the triple bottom line provides a sound basis for a structured quality assurance framework.^{1,11}

Public investment governance is generally characterized as inefficient, both in time and cost, and inefficiencies such as weak interagency coordination, politically driven decisions, corruption and allocation of public resources are common.¹⁵ These causes public projects, and subsequently to public sector procedures, delays and cost overruns, failure in meeting goals and objectives, poor quality, "white elephant" projects with little economic and social value or even incomplete projects.¹² The implementation of a quality assurance framework that adheres to a set of criteria is highly advised in order to avoid or minimize the effects of these shortcomings of the public sector.^{11,15,16}

3. Quality assurance schemes

Several studies state the importance of the application of a structured, systematic and mandatory quality assurance schemes for public investment projects.^{15,16,17} A scheme as such should take into consideration both concept and cost estimation of a proposal and should be based on a structured set of criteria. These should aim to eliminate political influence, corruption and optimism bias of the engineers, but also aim to improve intercommunication between ministries and departments, limit inefficient investments and ensure long term sustainability and relevance of an investment.^{1,15} This notion is supported by the OECD which defines quality assurance as any activity that is assessing and improving the merit or the worth of a development intervention or its compliance with given standards.¹⁸

A quality assurance scheme should include aspects that ensure that investment scopes are serving the strategic goals of the proposing entity.¹⁹ An evaluation should exploit existing data and knowledge to ensure long-term sustainability.²⁰ Furthermore, the independency of the assessors and the project proposers should be ensured and be safeguarded from political or institutional pressures. As a minimum, a conceptual assessment of a project proposal should precede a formal feasibility study, in order to screen out in an early phase white-elephant projects and set the baseline for major design elements.¹⁵

For a quality assurance scheme to be efficient, it is necessary that proposed projects go through an evaluation during its front-end phase. Project proposals that have their concept evaluated early in their life cycle tend to be less costly to modify to satisfy its strategic goals or terminate if the proposal is not deemed aligned with its strategic goals.^{8,19,21} As OECD states, an evaluation should be systematic and objective and aim at determining relevance, efficiency, effectiveness, impact and sustainability of a proposal.¹⁸ These evaluation criteria developed by OECD are necessary to adhere to, as it ensures the long-term success of an investment. During the front-end evaluation of a project concept, a special attention should be given to relevance and long-term sustainability, as these are detrimental in determining project success, from an early phase.¹¹

3.1 Quality assurance of public investments in Cyprus

Available literature states that the public sector performance of Cyprus was ranked highly relative to new EU members and other emerging economies.²² In addition, Cyprus ranked average in public sector efficiency. This suggests that the public sector procedures, even if they are considered decent compared to other emerging economies, have room for improvement. As part of the public administration reform that was imposed by the IMF and the European Commission in the Memorandum of Understanding, the Government of Cyprus has implemented the Project Pre-selection and Appraisal framework, to improve public investment efficiency.^{10,23} As stated in a report from the European Commission in 2016, the implementation of this framework is well in progress, but it is expected to take several years until fully operational and effective.¹⁰

As part of the public administration reform of Cyprus, the Parliament of Cyprus has voted a legislation on Fiscal Responsibility and Budget System Law (FRBSL).²⁴ Per this law, new public project proposals should go through a

structured procedure of assessment. This procedure is called Pre-selection and Appraisal of Public Investment Projects.²⁵ The main aim of it is to ensure that only relevant and long-term sustainable projects are implemented.

The European Commission had identified efficiency issues with the funding of public investment projects during the initial assessment of the economic assessment of the economy of Cyprus in 2012.²³ FRBSL, and subsequently the new project assessment procedure, was imposed by the International Monetary Fund (IMF) and the European Stability Mechanism (ESM) in the Memorandum of Understanding signed for the bailout of Cyprus during the economic crisis of 2012 in order to ameliorate these issues.^{26,27} In coordination with the World Bank, the Directorate General for European Programmes, Coordination and Development⁷ (table 2), which is the former Planning Office for the government of Cyprus, developed a Manual for the appraisal of Public Investment Projects.²⁵ The assessment framework run in a pilot phase in selected ministries during 2016 and from January 2017, it was expanded to include all the ministries, excluding the Defense ministry.

As Cyprus was enjoying a relatively good economic development for several years, researchers did not emphasize on the study of issues such as public investment efficiency. Furthermore, international literature focuses more on the structure of a quality assurance framework, rather than potential issues with the implementation of such a framework. Thus, the aim of this paper is to shed light on quality assurance of public investments in Cyprus and highlight potential issues during the implementation of it, using the example of Cyprus.

4. Research methodology and limitations

The research was initiated with a literature study, with a focus on international literature on project governance and implementation of quality assurance schemes. A scoping literature review was performed, utilizing known search engines like Google Scholar and Oria.no (Norwegian online library). It was delimited to specific articles with the use of keywords, such as quality assurance scheme, public project governance and public project appraisal.²⁸ Referenced articles are from the last five to ten years, since the field is still being researched and is evolving.²⁹

Furthermore, a special attention was given in literature, manuals and guidelines regarding public infrastructure projects in Cyprus, their appraisal and financing by the public administration. The manual for Pre-Selection and Project Appraisal of Public Investment Projects²⁵, is the main document utilized to describe the procedures for quality assuring public investments in Cyprus.

In addition to the literature study, seven interviews were conducted in a qualitative approach with the main aim of gathering information that was not available through the available literature, manuals and guidelines.³⁰ The interviews were carried out in January 2017 and includes the directors of the two administrating offices of the QA scheme, project engineers and the intermediates between those two in the line ministries. These in-depth interviews were conducted in a semi-structured way and followed a basic interview guide formulated as a guide to a discussion.³⁰

Due to the limitation in time and scope in this study, the results are considered preliminary and further investigation into the conclusions of this paper is expected to verify and investigate the initial results in depth. Also, as the new quality assurance scheme has just been put in operation, changes in the procedures of it are expected, which can result in making some of the study's conclusions obsolete.

5. Pre-selection and Project Appraisal of Public Infrastructure Projects in Cyprus

According to the Manual for Pre-Selection and Appraisal of Public Investment Projects all projects with an expected cost over €500,000 must go through a mandatory concept appraisal, while all projects above €5,000,000 have to go through a mandatory feasibility study in addition.^{7,25} The responsible entities that are performing quality assurance on new project proposals are the Directorate General for European Programmes, Coordination and Development (DG EPCD) and the Budget Directorate of the Ministry of Finance (MoF BD) (figure 1). The DG EPCD is an independent governmental agency with the expanded role of administrating the Pre-Selection and Project Appraisal framework.⁷ It performs assessments on economic viability and assures that the strategic goals of the government are adhered. The MoF BD, as part of the Ministry of Finance, is responsible for the preparation of the National Budget of the country. Their responsibility is extended to evaluating the affordability of project proposals.

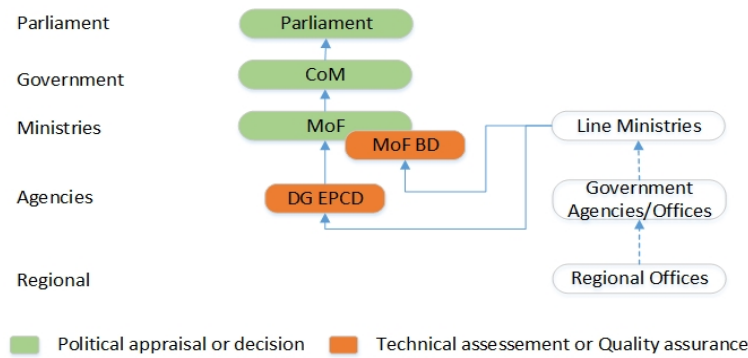


Fig. 1: Simplified governance regime for public investment projects in Cyprus

The Pre-selection and Project Appraisal framework is divided in six distinct phases (figure 2). Quality assurance of projects is concerned with the first three phases of the framework and include assessment of the project's concept and a comprehensive project appraisal.

- **Pre-Selection:** Preparation of a Project Concept Note (PCN), which is a spreadsheet with a set of questions regarding, project rationale, strategic case, initial cost and benefit estimations, alternative solutions and sustainability issues. The PCN is submitted by the proposing economic entity to both the DG EPCD and the MoF BD to assess the economic viability and affordability of the project respectively. The Council of Ministers (CoM) makes a formal decision on inclusion to accepted projects list.
- **Project appraisal:** A comprehensive project appraisal is prepared by the proposing economic entity and together with an Environmental Impact Assessment, is sent to the DG EPCD and MoF BD for economic and affordability assessment. The comprehensive project proposal includes the definition of the project proposal, a comprehensive economic analysis and a comprehensive project appraisal on affordability and sustainability.
- **Project Selection:** The Council of Minister (CoM) makes a formal decision for inclusion of a project in the yearly Budget proposal and the Parliament of Cyprus makes the decision for financing by accepting the Budget proposal.

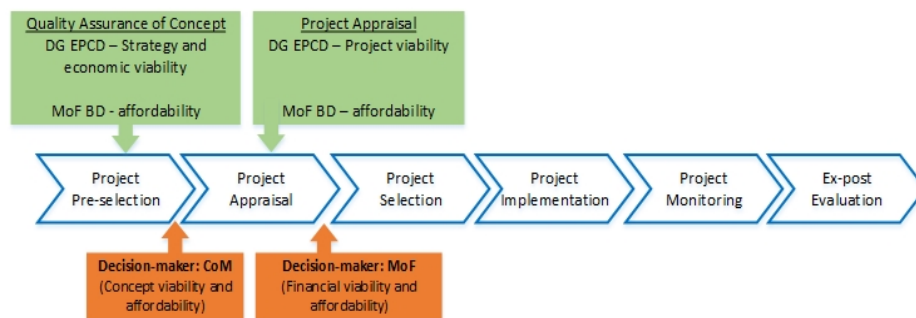


Fig. 2: Public project model in Cyprus.

The project appraisal phase is based on several quality criteria, predefined in the Manual.²⁵ The most important criteria include strategic alignment with governmental goals, technical and financial feasibility, realistic cost estimations, that social and environmental impacts are acceptable and operation management is satisfactory. For a project to be selected for financing, it should satisfy all the criteria set in the Manual. A special attention is given though to the economic aspects of a project and its long-term economic sustainability. Social and environmental criteria are considered, but their significance do not hold as much gravity as the economic. Specifically, at the project selection phase, the Parliament does not require a documentation of the projects in the Budget and is only requested for selected projects.

5.1 Comparison of the QA scheme of Cyprus with other countries

A comparison with established frameworks of other European countries serves in identifying the differences between them and provides the ground for further analysis and discussion. Table 2 is based on a previous comparison performed by Concept report nr.47.²

Table 1. Comparison of the quality assurance scheme of Cyprus with other countries.²

Responsible entity	Cyprus	Norway	United Kingdom	Netherlands
Applicable sectors	All, except Ministry of Defense	All, except Oil sector, Health and State enterprises	All	Infrastructure projects
QA scheme administrator	DG EPCD	Ministry of Finance	IPA	Designated gov. agency
Concept appraisal	DG EPCD	Government	HM Treasury	Designated gov. agency
Socio-economic appraisal	DG EPCD	Agency or ministry	Agency or ministry	Designated gov. agency
Decision to Finance	Parliament	Parliament	HM Treasury	Government
Quality assurer	DG EPCD and MoF BD	External consultant	Independent quality assurer	Designated gov. agency
Threshold value	€500k - concept appraisal €5 mill – feasibility appraisal	NOK 750 mill.	Depends on size	No

5.2 Issues with the implementation of the QA scheme

Through the interviews, several issues regarding the implementation of the new QA scheme were identified. These were split into two general categories, structural change and change in working mentality. Structural change is defined as the change in regulations, laws and organizational structure. Change in mentality is defined as the need for decision makers and engineers to adapt to the new mentality and work procedures the QA scheme brings with it. The most recurring and important issues are presented in table 2.

Table 2. Categorization of important issues with the implementation of the Pre-selection and Project Appraisal framework

Structural Change	Change in Working Mentality
The process can be easily affected by political pressures	More focus on economic criteria than social or environmental
The Parliament does not require documentation for projects in the Budget	Alternatives are not considered in depth
Projects proposals not ranked according to their NPV – projects with low NPV might be prioritized in front of better ones	Initial cost estimations are done superficially, still following the old way of promoting projects
Projects alternatives are not required to include fundamentally different solutions	Life cycle analysis on costs and benefits not taken seriously
Affordability assessment is performed on a case to case basis	Decision makers and engineers are prone to political pressure
Lack of expertise in evaluation agencies	Risk management and mitigation are not considered in depth
Lack of finished project database to compare with new proposals	Members of the Parliament should be more critical to project proposals – request more documentation

6. Discussion

Documenting the procedures the government of Cyprus is applying in order to quality assure new public infrastructure projects, provides a basis for comparing the case of Cyprus with established QA frameworks of other European countries. The two-step quality assurance structure resembles the QA scheme of Norway and provides decision makers with a straightforward procedure to adhere to. Furthermore, the establishment of the independent office DG EPCD as an administrator of the framework bears resemblance to that of the United Kingdom, which the

Infrastructure and Projects Authority administrates. Frameworks from the other countries though, do not have a specific agency with the responsibility of administrating it and the responsibility lies with the Ministry of Finance.

As seen in table 2, the United Kingdom's framework is far more complicated and demanding than all the other, with several decision points and project assessment phases. Frameworks as such, need time to develop and be efficient. Furthermore, these can be bureaucratic and time demanding, creating a time lag between the conceptualization of a project proposal and the decision to finance, which in turn can cause a proposal to be obsolete or need rework to suit its initial purpose. The framework of Cyprus, similarly to the Norwegian and Dutch, is simpler in terms of assessment phases and is designed to minimize bureaucracy. Therefore, by applying a simple structured procedure, the public administration of Cyprus can get better control of the procedures and reduce delays and cost overruns in state initiated projects.¹⁵ By having less quality assurance procedures though, increases the possibilities of irrelevant and non-sustainable projects to be financed, as the time between assessment and actual implementation of public projects may take up to several years. In the case of Cyprus, quality assurance of both concept and feasibility, is divided in two separate agencies, which focuses issues like sustainability and affordability to be more thoroughly scrutinized and assessed.

The Pre-selection and Project Appraisal framework, even if it is administered by an independent agency, can be prone to political pressures and influences. Final decisions on project viability and financing lies with the Council of Ministers and the Parliament, respectively, and these entities have the power to override the evaluations of the assessing agencies to promote their own agendas. This drawback of the scheme is evident in the other countries' schemes too, as the decision for financing lies with either the Parliament or the Government, except in the UK, which is the HM Treasury's responsibility.

6.1 Implementation issues with a new QA scheme

A proper evaluation of public project proposals should be based on long-term sustainability and relevance towards the government's strategic goals, following the three pillars of sustainability, society, environment and economy.^{1,13} In the case of Cyprus though, the process has still remnants of the previous economocentric evaluation, which partly overlooks social and environmental aspects. Furthermore, the fact that costs and benefits are not allocated accurately when considering the life cycle of a proposal, or the lack of estimations for benefits, makes the evaluation of economic sustainability and affordability inaccurate. These issues constitute the need for the public administration in Cyprus to change its working mentality to a more holistic view and take into consideration a wider perspective when evaluating and financing projects.

As the implementation of the new framework is at its early phases, structural and procedural issues are expected. Issues such as lack of expertise in evaluation and lack of a project database for comparisons will be solved over time. Other issues such as political pressures and enabling financing decisions by the Parliament without consideration of the proposals, are weaknesses of the new framework that need to be addressed by creating formal requirements in the process.

7. Conclusion

The Pre-Selection and Project Appraisal framework of Cyprus was developed by the government of Cyprus in cooperation with the World Bank, based on good international practice. This is reflected in the similarities with other established frameworks. Two independent agencies enact as the quality assurers for new project proposals and the Council of Ministers and Parliament have the power to accept and finance these. A low threshold for project proposals ensures that most projects go through the framework, which safeguards the procedure from financing costly or irrelevant projects. This low threshold though, can affect the process by making it too bureaucratic, which can result in an inefficient procedure.

Issues such as lack of expertise and scarcity of background information can be resolved over time. On the other hand, issues such as being prone to political pressures and a mentality of proposing projects without proper analyses are important to be resolved through formal requirements and regulations. What is important is for the public sector to learn from these shortcomings to be able to make changes to improve its efficiency. This can be achieved by

acknowledging mistakes and failings and improve on them. Working mentality has to change and the new structural procedures have to be established and adjusted with the realities of Cyprus.

This pilot study focused only on the issues regarding the change in regulations, laws and organizational structure and the difficulties the public administration sector has in changing the way they are doing things. Further research on project proposals and interviews with the administrators of the QA scheme is needed to identify other aspects that can affect the effectiveness of the new quality assurance scheme. In addition, the presentation of the Pre-Selection and Project Appraisal framework is theoretical in nature, as it has just been put in operation. A continuous evaluation of the efficiency of the new Pre-selection and Appraisal framework is advised by evaluating completed projects that have gone through the scheme. This will provide the ground for improvements of the procedures and methodologies used by the Government of Cyprus.

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Paper 2

"Quality assurance scheme for public investment projects
in Costa Rica"



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Quality assurance scheme for public investment projects in Costa Rica

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Abstract

Quality Assurance Schemes are implemented by governments due to the necessity to ensure quality in the decision-making process during the front-end phase of a project. Costa Rica is also beginning to implement such schemes in their management of public projects. This paper addresses the differences between the Norwegian, British and Costa Rican schemes. It also points out the criteria considered for the choice of concept and describes the different forms of financing in Costa Rica. Three methods were chosen: a review of literature for the three countries, review of official documentation in Costa Rica and 10 interviews with Costa Rican senior public officials responsible of managing public investment projects. The Costa Rican scheme is more similar to the British than the Norwegian. Main elements assessed in the Costa Rican system include technical, financial, legal and environmental issues. The financing of projects in Costa Rica depend on the kind of institution proposing them and if it requires public debt. This pilot study provides a starting point for authorities to maintain an ongoing research regarding management of public investment projects. Besides, the paper presents how the scheme is currently working, setting foundations for further evaluations to develop a more robust system.

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Keywords: quality assurance scheme; state project model; front-end governance; public project governance; Costa Rica; public investment

1. Introduction

There is a growing understanding about the importance of front-end management in the life cycle of public investment projects¹, or any project in general. Quality Assurance Schemes, also known as State Project Models, have been introduced in different countries of the world², aiming for project success and project management success. This success is globally defined by 5 criteria, proposed by the OECD: efficiency, effectiveness, impact, relevance and sustainability³. Front-end management, and subsequently quality assurance schemes, are focused on the two latter. Relevance and sustainability are within the scope of strategic and tactical planning, as opposed to operational planning⁴.

Costa Rica has recently begun to adhere to this tendency, understanding public investment as an engine to the economic system and development in general⁵. Costa Rica is considered a developing country⁶, with a small territory of just over 51 000 square kilometers and a population of almost 5 million inhabitants. It has a mean income per inhabitant of around \$10 400, as of 2015⁷, and a corruption perception index score of 58, situated on position 41 in the world⁸.

Costa Rica was considered a leading country in Latin America in terms of infrastructure in the 70s. During the 80s, a recession hit the region, which led the country to experience an increase in financial debt. Trying to heal the economy, public investment stopped being a priority for governments, resulting in a lag on public infrastructure. Recent governments, starting in 2006, have opted to prioritize public investment again by developing a national system for planning public investment projects, with a culmination of a state project model. The purpose of the system is to guarantee that the decisions taken around the formulation, selection and evaluation of the projects have been submitted to a systematic process, aiming for those decisions to be the most adequate as possible. This process includes both qualitative and quantitative analyses, taking into consideration economic, social, environmental and disaster-risk factors^{9,10,11}.

The main challenge faced by the government is to change the mentality of the people responsible of managing public projects. Establishing a new scheme which has a systematic approach and changing the practices used for many years becomes a difficult task. Constant training and hiring specialized workers are the tools for the government to face these challenges. The government has a very complex system, where different institutions become responsible for managing projects, depending on the sector and financial situation of it.

This paper answers the following research questions:

- What are the main differences between the Norwegian, British and Costa Rican quality assurance schemes?
- Which aspects are considered in the choice of concept in the Costa Rican scheme?
- Which are the different forms of financing projects in the Costa Rican model?

The main limitations encountered by conducting this research were time and accessibility of government authorities. Having limited time leads to a narrower research, which makes future broader studies on the subject a necessity to fully understand the whole system. This pilot study was conducted from Norway, with a limited time for interviews in Costa Rica, which results in some authorities being left out because of their availability during that period.

2. Concepts and definitions

Project governance is a decision-making framework that guides the development of a project and within which the critical project decisions are made. The relationship of the project with the whole development policy of the government is identified, the real problem and the selection of initiatives are analyzed, stakeholders are informed and involved, cost-benefit analysis are conducted, the wishes of people and politicians are considered and the possibility of the proposed project is evaluated¹². Poor project governance leads to project failure, while good project governance allows effective and efficient decision making¹³.

The measurement of time, cost and quality should not be confused with measuring success. When attempting to measure success, one must make a distinction between project success and the success of the project management effort. The project is considered an overall success if it meets the technical performance specification and/or mission

to be performed, and if there is a high level of satisfaction concerning the project outcome among key people in the parent organization, key people in the project team and key users or clientele of the project effort. Therefore, one project can be considered successful even when it did not fulfill one of all the project management success criteria¹⁴.

The term value proposition either addresses the question of how to create value in an internal strategic meaning or is addressed to the supply side to explain how the specific product should provide value for money. It becomes an explanation of what use value the project is intended to enable, in accordance with the owner's strategy¹⁵.

A concept is a mental construction intended to support the solution of a problem or the satisfaction of a need, and dissimilar concepts may be alternative solutions for the same problem. Therefore, the task becomes to identify and test all these concepts to determine which one is the best, which will be chosen as the starting point for designing the project¹.

The concept is concerned with the economic and social aspects of the project, as opposed to the technical aspects¹⁶. Many projects are troubled by not having a concept development phase, being decided up front, without studying or assessing different alternatives, including the zero alternative, which consists in continuing as before, with no major investment but with adjustments necessary to make it feasible.

Professionals are commonly occupied with “doing the projects right”, but the matter should be taken one step back, with actually “doing the right projects”¹⁷. The latter is agreeing about what the purpose of the project is in the first place and choosing a conceptual solution that serves the purpose well.

The choice of the appropriate projects requires an effective front-end project governance process to meet the expectations of key stakeholders. Because of this, it becomes very important to establish a project governance model that would facilitate decision-makers to anticipate, understand and act around the consequences of their choices and decisions^{18,19}.

The front-end phase of a project goes from the time initial concepts are conceived until funds are appropriated to the project. Concept development starts out with an overall analysis of needs, problems and requirements to identify the most feasible project strategy, the project's main features and its objectives. This process aims to identify the overall generic concept and the different concept alternatives that should be considered. The concern is essentially on the purpose and on how well it will be served by the outputs of the project¹.

Project stakeholders are individuals, groups and organizations who are actively involved in the project, or whose interests may be positively or negatively affected because of project execution or project completion¹. The key direct stakeholders are the commissioner, the contractor and the users. The different stakeholder perspectives can be associated with the three different levels of planning: strategic, tactical and operational⁴. A strategic plan is a high-level view of the organization, its vision, objectives and value. It is the foundational basis of the organization and will dictate decisions in the long-term. The tactical plan describes the tactics the organization plans to use to achieve the ambitions outlined in the strategic plan. The operational plan describes the day-to-day running of an organization. It charts out a roadmap to achieve the tactical goals within a realistic timeframe²⁰.

OECD has established five evaluation criteria for development interventions³, which, translated to projects, can be defined as¹:

- Efficiency: the degree to which project outputs have been delivered as planned and in accordance with budget.
- Effectiveness: the extent to which the objective has been achieved.
- Impact: all other positive and negative changes and effects of the project, both in the short and the long term.
- Relevance: whether the objectives are aligned with needs and priorities of users and the society.
- Sustainability: whether the positive effects of the project will be sustained after the project has been concluded.

The most important reasons for lack of relevance are: user needs are unknown, misunderstood or ignored, and project objectives are unknown or misunderstood. The most important reasons for lack of sustainability are: lack of commitment to the project from key stakeholders, conflict over objectives and/or strategies concerning the project, low economic and financial benefits compared to operational costs, and business or other conditions changing between concept stage and final delivery²¹.

The Concept Programme defines a project model, also known as quality assurance scheme, as a standard classification of project phases with specific decision points and corresponding documentation requirements. The decisions are made at critical stages, and a project cannot proceed to its next phase until it has received “green light”

to go ahead. This is a general model for all major projects in several sectors to ensure good governance at a higher level. The scheme is meant to strengthen the professional quality of decision documents upfront by introducing the decision points, also known as decision gates²².

3. Methodology

The results provided in this study were obtained by studying three sources. First, a review of available literature was conducted, finding relevant concepts and definitions, as well as documentation about the quality assurance schemes of Norway and United Kingdom. Second, legislation and official documents from the Costa Rican government were revised to fully understand the model. Finally, ten interviews were conducted with Costa Rican senior public officials.

Addressing the literature review, including collecting different books and articles, was conducted using a scoping review²³. The literature search process²⁴ began using starting key words such as “quality assurance” or “project appraisal”, which initially led to an unmanageable amount of results. The key words were modified to obtain more relevant results and the titles could be screened and filtered, in accordance to their abstract mainly. Oria, the academic library in Norway, was the search engine used, due to the previous knowledge of the research done around the topic, and mainly because one of the models studied is the Norwegian. Other search engines were Google Scholar and Scopus. The final key words used included “quality assurance scheme”, “investment projects” and “front-end project governance”, written according to the website’s search functions and algorithms.

The search for official documentation was not complicated, since all the necessary documents are open to the public in the Ministries’ websites and easy to obtain. The guides and supporting laws were mainly obtained from the Ministry of Planning, which is the institute responsible for carrying out the quality assurance process in Costa Rica. In total, there were 8 official documents revised, including guides, laws and executive orders, to understand the model from a theoretical stand.

The last source of information was obtained through 10 semi-structured interviews with Costa Rican authorities to fully understand the functioning of the project model. They were prolonged case study interviews²⁵ for about 2 hours each, with people working in different institutions within the Costa Rican government, who are directly related with the formulation, approval or financing of public investment projects. These interviews include a protocol and a format in accordance to the General Interview Guide Approach²⁶. This kind of interviews have the particularity of being more structured than the informal interview, but with flexibility in their compositions. That way, the questions and the conversation may change a little while the interview develops, although a general path must be followed throughout the meeting.

The limitations encountered throughout the process were time, which leads to the impossibility of reaching out all the desired people to interview. Another limitation is that the study is conducted from Norway, which makes communication less efficient.

4. Main differences between the Norwegian, British and Costa Rican schemes

Table 1 shows the main characteristics of the quality assurance schemes in Norway, United Kingdom and Costa Rica. The differences and similarities are presented in each of the main criteria identifying each scheme. Different institutions between each scheme are responsible for starting the process and the decision on the budget. The quality assurance in Norway is performed by private external consultants, while in the UK and Costa Rica they are performed by officials within the government. The decision on the budget is approved by the Parliament in Norway and Treasury in the UK, but in Costa Rica it depends entirely on the institution and the kind of financing for the project. Norway has an established threshold value for the projects who enter the scheme, while UK and Costa Rica do not have it specified. Within the scheme, the Parliament in Norway will always take the final decision, while in UK and Costa Rica, it is not as necessary to have approval from the Parliament or Congress.

Table 1. Differences and similarities between the Norwegian, British and Costa Rican models²

Criteria	Norway	United Kingdom	Costa Rica
Responsible of starting the process	Ministry of Finance	Agency under the Cabinet Office	Institutions within the Government
Decision on the budget	Parliament	Treasury	Depending on the financing system
Sectors included	All, with some exceptions	All sectors	All sectors
Threshold value	750 million kroner	Those projects considered "large"	No
Performer of quality assurance	External consultants	Independent quality assurance	Ministry of Planning and Ministry of Finance
Approval in every stage	No	Yes	No
Parliament or Congress involved in decision making	Yes	On exceptional projects	Depending on the financing system
Consideration of alternatives (including zero-alt)	Yes	Yes	Yes
Approval by the Ministry of Finance	Yes	Yes	Depending on the financing system

5. Aspects considered in the choice of concept in the Costa Rican scheme

Table 2. Aspects considered in the choice of concept in the Costa Rican scheme²⁷

Aspect	Characteristics
Identification	Problem identified, Optimization of zero alternative, Alternatives, Project objectives, Expected results, Adjustment to development plans, Influence area, Beneficiaries
Market	Market conceptualization, Characteristics of goods and services, Objective population, Demand and supply estimation, Prices and rates analysis, Commercialization channels, Information and divulgation strategies
Technical	Geographic location, Size, Technologies, Engineering, Opinion of the community about the technical proposal, Social responsibility
Disaster risk	Siting of the location, Vulnerabilities identification, Quantification of risk to disasters, Risk reduction alternatives, Cost and benefits from mitigation of risks
Environmental	Evaluation of environmental impact, Corrective/compensatory measures and their costs
Legal	Adjustment to current legal norms, Characteristics of the legal framework
Administrative	Organization and administrative structure, Planning and programming of the execution, Evaluation of institutional risks
Financial	Costs (investment and operation), Income, Budgetary aspects (financing, interest rate, amortization period, depreciation), Financial analysis (MARR, financial flow, NPV, IRR, C/B ratio, Sensitivity analysis, Optimal time to invest)
Socioeconomic	SDR, cost flow, PVC, EAC, ENPV, EIRR, B/C ratio, Cost-Effectiveness ratio, social price of workforce, social price of goods, Macroeconomic impacts (distributive and employment impact)

Table 2 presents the criteria considered for the choice of concept of a project in Costa Rica, showing all the requirements to be fulfilled before the project is approved by the Ministry of Planning. The evaluation performed by the Ministry of Planning is mainly a check of the presence of the requirements, since it is responsibility of the

institutions' leaders to ensure a correct choice of concept by considering all these criteria, instead of a team from the Ministry of Planning evaluating the different criteria.

6. Different forms of financing projects in the Costa Rican model

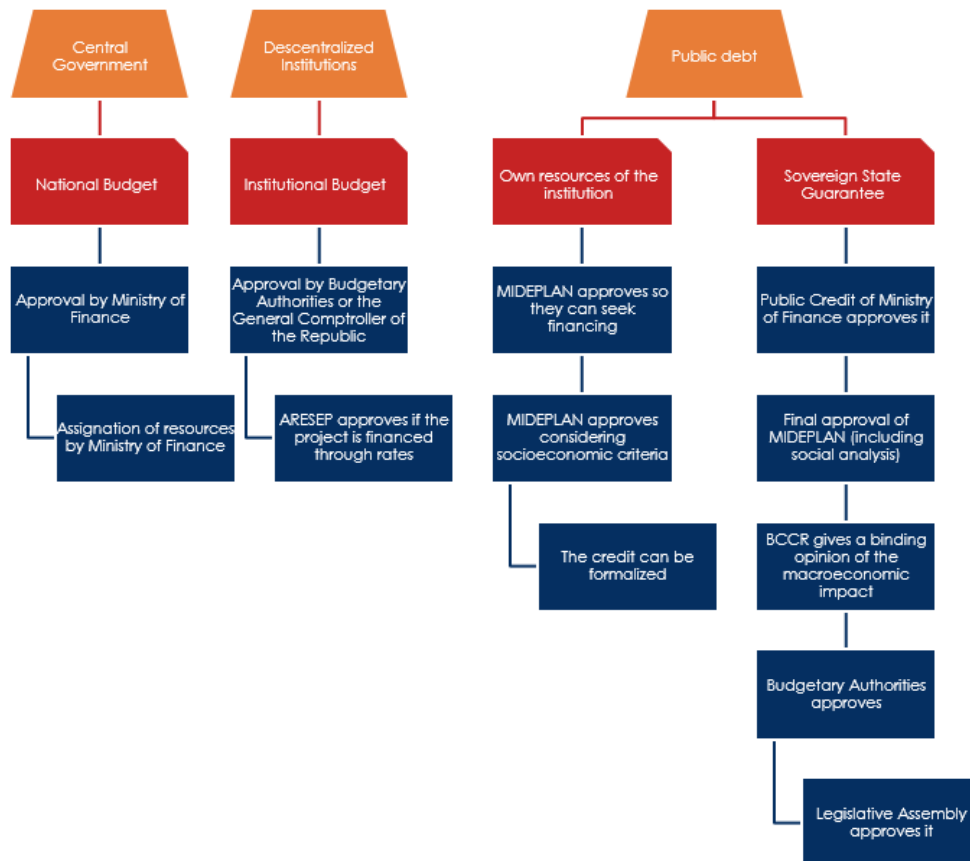


Fig. 1. Different forms of financing public investment projects in Costa Rica

Figure 1 shows the different forms of financing projects, depending on the type of institution or if the project requires financing through external loans, which leads to public debt. If the project does not require public debt, the financing is approved either by the Ministry of Finance, in the case of projects within the Central Government, or the Budgetary Authorities or the General Comptroller, in the case of decentralized institutions. If the project is financed through rates, for example tolls, the Regulatory Authority for Public Services (ARESEP) needs to approve the rates.

When the project requires public debt, there are two options: the first one is that the institution gets into debt, because it has the capacity to cover it. In this scenario, the Ministry of Planning (MIDEPLAN) approves the financing by considering socioeconomic criteria (see Table 2), and later the credit can be formalized. The other scenario is when the State must cover the debt. The Ministry of Finance becomes the guarantor of the operation, and the Department of Public Credit approves it, and then the Ministry of Planning, with a social analysis, approves for the next stage. Following comes the binding opinion of the macroeconomic impact of the project by the Central Bank (BCCR). Finally, the Budgetary Authorities and the Legislative Assembly, popularly known as Congress, approve the final budget.

7. Discussion

This paper is set out to identify 1) the main differences between the Norwegian, British and Costa Rican quality assurance schemes, 2) the aspects considered in the choice of concept in the Costa Rican scheme, and 3) the different forms of financing projects in the Costa Rican model.

The results show the differences between the quality assurance schemes between Norway, United Kingdom and Costa Rica. Norway has established a more simplistic model, with only two decision gates. The United Kingdom has a more complex system, and Costa Rica resembles this one in some factors, and it is especially evident when the project requires public debt, which creates many decision gates and approval from different institutions. Both the Costa Rican and the British schemes have people within the government to quality assure their own projects. Norway hires external quality assurers, which guarantees transparency in the decisions, not being influenced by political pressures, at least theoretically. In Norway, the Parliament is involved in the final decision of all the projects within the scheme, but in the other two countries, the involvement of Parliament or Congress is only required on exceptional cases. However, although due to its economic status, Costa Rica has been carrying out several projects with external funding, which makes the Congress be present in many decisions regarding projects, and that may lead to delays because of political reasons.

The different criteria considered for the choice of concept of projects in Costa Rica shows the government's efforts to establish a systematic scheme which can ensure quality in the decision-making process during the front-end phase, adjusting to the statements of the National Plan for Development²⁸. However, the state project model has only been recently implemented and changing the mind of public officials who have worked for a long time without a proper scheme has proved to be very challenging. Through the interviews, it became evident that the system is not yet completely working as it is described on the theory and there are legal loopholes that weaken the power of the Ministry of Planning on its function of being the main responsible for the quality assurance scheme. Nevertheless, the institutions have been improving their planning departments by gradually employing capable professionals who have been trained to manage projects in a proper way. In addition, the National Plan for Development is changed every 4 years when the government changes, and there is no guarantee on a continuity of the government plans.

The source of financing projects in Costa Rica varies significantly depending on the institution which is proposing the project. The Ministry of Finance only approves around 34% of the national budget and the General Comptroller of the Republic approves the remaining 66%. Handling public funds this way has created some astonishment in different parts of the world because of its uncommonness. This means that there are two institutions, and sometimes three or four in exceptional cases, which approve and allocate the resources for public investment projects. This can become a problem if the decisions are not being taken homogeneously. The system becomes even more complex when public debt is required, which is understandable because of the economic impact the project may have on the country's economy, both in macro and micro levels. Having so many decision stages slows down the process, which can lead to cost overruns. The main issue detected is that a big percentage of projects are being funded by external loans, with international organizations having a direct influence on the project. This situation may lead to prioritize projects which are not so necessary for the country now.

In addition, there is not an external framework for decisions on funds allocation. International experience has shown that this is very important for an appropriate financing of public investment projects, since decisions will not be affected by political influences. Using a framework guarantees that decisions will be taken considering social and environmental criteria and not only economic reasons. Besides, the framework for budgeting will be of public knowledge, which guarantees transparency.

8. Conclusion and further work

The scheme for formulation, selection and evaluation of projects has been recently implemented in Costa Rica in an attempt to enhance the economy in the country, understanding public investment as an important tool to achieve that purpose. There are many similarities in the scheme with developed countries such as the United Kingdom and Norway, but also important differences, especially with the necessity of Costa Rica to execute projects through external loans, incurring in public debt.

The quality assurance scheme in Costa Rica, in theory, has a framework in which there are many aspects to consider in the choice of concept, aiming for a correct selection of the projects. However, in practice it has been proven to be challenging to walk away from old practices. Nevertheless, young professionals and constant training maintain the effort of moving forward towards a more robust model.

The responsibility of approving the financing public investment projects depends entirely on the type of institution proposing the project and if it requires public debt to finance it. These differences make the scheme more complex than those in developed countries, with more organizations taking part in the decision gates.

This paper presents a pilot study, which means that constant evaluations on the scheme need to be done to fully describe and understand the Costa Rican quality assurance scheme, including pointing out evident or potential strengths and flaws, compared to other schemes. Moreover, the scheme has only been recently implemented, and ex post evaluations have not been programmed yet. Therefore, only after several years can the success of the implementation of the scheme be measured. The decision framework of financing projects stands out as one of the most important areas to be studied, since this topic was out of the scope of this paper.

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Appendix B

Criteria for Pre-Selection of a Project Concept Note

The criteria used by the DG EPCD for assessing a PCN during the Pre-Selection phase are divided in eight categories. The project proposals will be assessed on the basis of the information provided in the PCN and all criteria must be assessed positively for a proposal to enter the next phase. At this stage, the assessment is performed on a qualitative manner and during this phase, it is not expected to identify the most profitable projects but to eliminate the so called white elephant projects.

For a project proposal to pass the Pre-Selection Phase all of the criteria shown from table B.1 to table B.8 should be adhered too and assessed by the DG EPCD and MoF BD. The project proposal assessors though, will focus more on the Preliminary Economic Case and Analysis of Alternatives criteria, table B.4 and the Fiscal and Financial Sustainability criteria, table B.5, since these criteria are the most relevant for viability and affordability assessment.

As mentioned in the Manual, questions under category C, will not constitute a factor for a proposals' rejection at the Pre-Selection phase, but this will be discussed between the MoF BD and the responsible Ministries in the context of the strategic planning and the budget process.

A. General

1. The information provided in the PCN is adequate to arrive at a pre-selection opinion.
 2. It is clear which organisation is implementing the project and who will ultimately be responsible for delivering the project on time and to budget.
-

Table B.1: General Pre-Selection Criteria (World Bank 2016)

B. Project Rationale and Assessment of Need

3. The problem or opportunity to be addressed is clearly demonstrated and the way in which the project will help solve the problem or respond to the opportunity is explained and makes sense.
 4. The description of the scope of the project is sufficiently detailed for pre-selection stage and there are no obvious omissions of major components that could potentially jeopardise the achievement of the project purpose.
 5. There is an urgent need, i.e., within the next 3 years, for the services of the project as demonstrated by evidence of one or more of the following:
 - existing demand for a facility close to the end of its economic life or technologically obsolescent
 - a severe capacity constraint in existing facilities resulting in suppressed demand
 - strongly growing demand, likely to outstrip the capacity of existing facilities in the near future
 - demand for new services not previously provided.
-

Table B.2: Project Rationale and Assessment of Need Criteria (World Bank 2016)

C. Strategic Case for the Project

6. The project will contribute to the achievement of relevant strategic goals and objectives as set out in approved national or ministry strategic plans or other such documents.
-

Table B.3: Strategic Case Criteria (World Bank 2016)

D. Preliminary Economic Case and Analysis of Alternatives

7. The proposed technical solution is appropriate to the problem identified, i.e., the envisaged technology is neither too advanced nor over-specified.
 8. The postulated project benefits are plausible and the target beneficiaries represent a priority for government.
 9. Benefits to users are likely to be achievable at an acceptable cost, for example, approximate capital costs per user or per unit of output are in line with comparable projects and/or international experience.
 10. On balance, there is good reason to believe that the proposed project costs are likely to be exceeded by the potential benefits.
 11. Alternative solutions have been considered and the more promising among them have been identified for inclusion in subsequent in-depth analysis for appraisal.
-

Table B.4: Preliminary Economic Case Criteria (World Bank 2016)

E. Fiscal and Financial Sustainability

12. The medium- to long-term budgetary impact of the project is not inconsistent with budgetary projections and trends, taking into account the existing commitments of the economic entity proposing the project.
 13. If the project is to be implemented and operated by a self-financing economic entity, its financial overall position - cash flow and solvency - is sound and likely to remain so.
-

Table B.5: Fiscal and Financial Sustainability Criteria (World Bank 2016)

F. Implementation Arrangements

14. The responsible implementing agency appears to have the necessary capacity to deliver the project or is very likely to be able to make good any non- critical weaknesses before implementation begins.
-

Table B.6: Implementation Arrangements Criteria (World Bank 2016)

G. Sustainability Issues

15. The sustainability of the project is not likely to be compromised:
- By a shortage of funding for operations and/or maintenance; or
 - By critical weaknesses in the capacities of the operating entity which are unlikely to be resolved in time for project completion.
16. Mitigation measures can be foreseen for any potentially critical environmental or social impacts.
-

Table B.7: Sustainability Issues Criteria (World Bank 2016)

H. Approach to Further Studies

17. Suitably comprehensive requirements for further studies, including social and environmental impact assessments where necessary, have been presented.
-

Table B.8: Further Studies Criteria (World Bank 2016)

Appendix C

Qualitative comparison of project alternatives

Submission of a PCN, either if the proposal is in the €500,000 to €5,000,000 category or the €5,000,000 and above category, has to provide at least three alternatives to the reference project. The alternatives are compared to the reference project according to a set of viability and sustainability criteria, in order to establish that the reference project is the most viable on the long run and affordable, compared to the other alternatives. If an alternative of a proposal is found to be more viable and sustainable, then a new PCN should be submitted for the proposed project.

Viability Criteria

1. Meeting needs: Extent to which the alternative represents a comprehensive response to the identified needs.
 2. Economic viability: Extent to which the alternative optimises benefits and delivers a return on the required spending – investment and life-cycle costs – from the perspective of the operating entity and society as a whole.
 3. Reliable implementation arrangements: Extent to which the alternative is commensurate with the capabilities of the implementing organisation
 4. Risk management: Extent to which any significant risks associated with the alternative can be mitigated and/or managed
-

Table C.1: Viability Criteria (World Bank 2016)

Sustainability Criteria

5. Operational sustainability: Extent to which the alternative is commensurate with the capabilities of the operating entity.
 6. Long-run budgetary impact: Extent to which future operations and maintenance expenditures are in line with realistic budgetary expectations or finances of the operating entity.
 7. Environmental and social sustainability: Extent to which any significantly negative environmental and social impacts can be mitigated and/or managed.
-

Table C.2: Sustainability Criteria (World Bank 2016)

Appendix D

QA schemes of Norway, United Kingdom and the Netherlands

For the purpose of providing a basis for comparison and further discussion for the QA scheme of Cyprus, a brief presentation is provided on countries that already have a functioning and acknowledged QA scheme. The following appendix provides only a short description of these QA schemes and is based on the Concept reports nr. 46 and 47. (K. Samset, Gro Holst Volden, Olsson, et al. 2016). The description provides an insight on the governance regime and the quality assurance procedures for public investment projects and summarises with the a small depiction of the results from each QA scheme.

Norway

The Norwegian QA scheme, is also referred to as the State Project Model and is part of the Ministry of Finance's external quality assurance of large investment projects. The Norwegian government has established a structured governance system to handle the quality assurance of large investment projects as early as the conceptualisation phase. The governance system has two stage-gates, referred to as QA1 and QA2, with the QA1, being the stage-gate which concerns the evaluation of the choice of concept and the QA2 which concerns the external quality assurance of the cost estimate and management documentation. A threshold of NOK 750 million has been set, that requires projects that have a higher initial budget estimation to go through the quality assurance scheme.

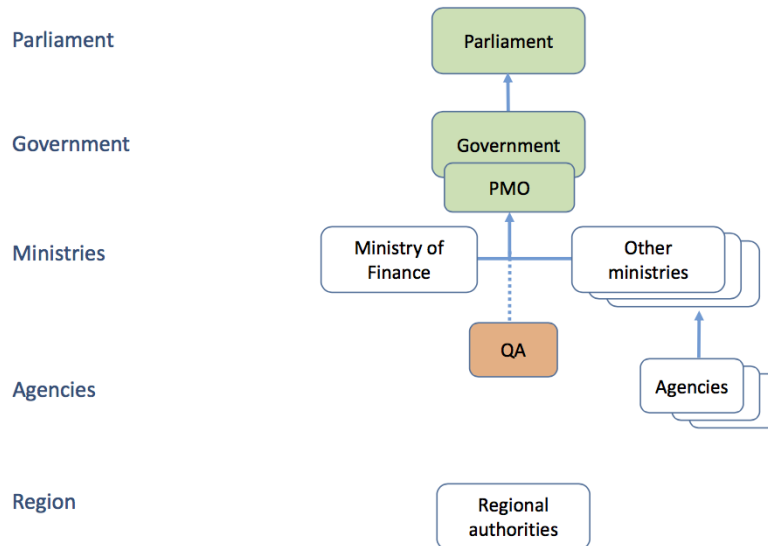


Figure D.1: Investment Project Governance (K. Samset, Gro Holst Volden, Olsson, et al. 2016)

The norwegian stage-gate model involves only two decision points that require documentation and it applies in the front-end phase of a project, from the conception of the idea to the final funding decision (see figure D.2).

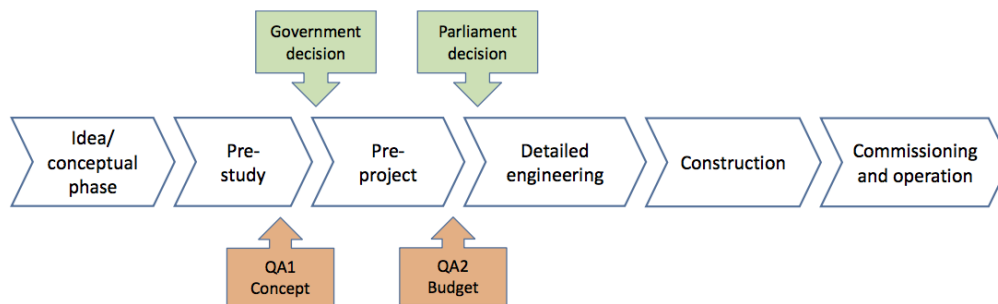


Figure D.2: The Norwegian Stage-gate Model (K. Samset, Gro Holst Volden, Olsson, et al. 2016)

Quality assurance of the choice of concept (QA1)

The first stage-gate in the model comes after the completion of the pre-study phase and a decision is made by the government whether if the project should be allowed to continue from the pre-study phase to the pilot project phase (pre-project phase). This conceptual appraisal requires a number of analyses, which include needs analysis, strategic analysis, overarching requirements, possibilities study, alternative analysis and guidelines for the pre-project phase.

The quality assurer has the responsibility to appraise the alternatives regarding relevance in terms of the needs, strategy, overarching requirements and utilisation of the opportunity space. The quality assurer should also conduct an uncertainty and economic analysis and finally, make a recommendation on the decision making strategy and provide with guidelines for the pre-study phase.

Quality assurance of the management documentation (QA2)

The purpose of the second stage-gate is to ensure operational success and the main focus is on providing a realistic budget for the project and a realistic timeframe for the completion of the project. The quality assurance of the budget and the management documentation is underdone after the completion of the pilot project (pre-project). The main objective of this stage-gate is the reappraisal of the proposed budget and timeframe by an external quality assurer.

There are two entities that shall prepare documents for this stage-gate phase, the responsible agency or ministry for the project and an external quality assurer. The documents by the responsible agency or ministry represent the initial pre-project documentation which should include an overall strategy document, a complete base estimate for the costs and a complete appraisal for two fundamentally different contract strategies.

The external quality assurer duties are to review the documents by the ministry or agency, and also to prepare a separate analysis of success factors and uncertainty scenario. Furthermore, the cost uncertainty analysis starts out with the base cost estimate and should be supplemented with additional costs due to the uncertainties of the initial costs. The quality assurer should then make recommendations regarding the budget costs and the management of the project regarding budget, organisational structuring and time frames.

Experiences with the Norwegian QA scheme

The Norwegian Quality Assurance scheme was implemented 15 years ago and a number of public investment projects have been subjected to it. It is too early to properly assess the lifetime sustainability of the completed projects, but the final budget can be assessed. As shown, 80% of the finished projects stay within the budgeted costs, which is a considerable improvement from before the implementation of the QA scheme.

United Kingdom

The United Kingdom QA scheme is applied for national projects, that are under the responsibility of the government. Quality assurance of the largest central government investment projects are mandatory and the entities responsible for it are the HM Treasury and the Cabinet Office. The Infrastructure and Projects Authority (IPA) are managing the scheme and is reporting both to the HM Treasury and the Cabinet Office (see figure D.3).

Apart from that, IPA has the responsibility to publish an overall assessment on the Government Major Projects Portfolio (GMPP) and categorise them in a colour-coded form. The GMPP is IPA's project portfolio and includes projects that are developed by the UK government which need additional funding on top of the allocations that are given to the line ministries. The purpose of this is to provide a disciplinary measure to the line ministries by applying transparency to the assessments of their projects. There is not a threshold on the expected cost of a project when included in the GMPP but typically, these projects are larger than those involved in the Norwegian QA scheme.

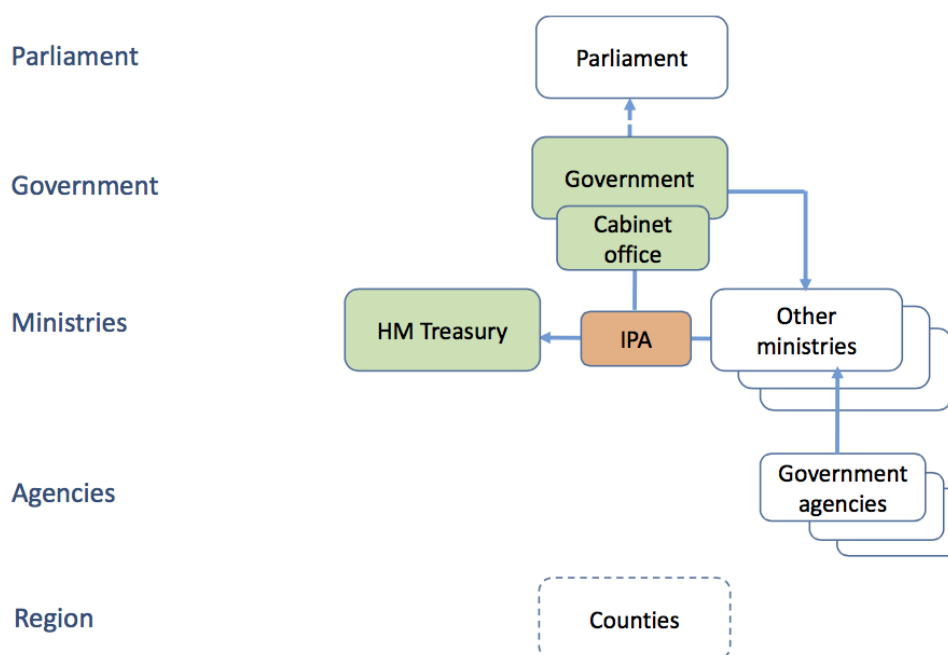


Figure D.3: Investment Project Governance (K. Samset, Gro Holst Volden, Olsson, et al. 2016)

UK's stage-gate model is divided in four separate phases, the policy formulation, project initiation, implementation and commissioning and operation (see figure D.4). On the bottom of figure D.4, is the illustration of the quality assurance performed by the IPA in each phase and on the top, the formal decisions by the HM Treasury are shown.

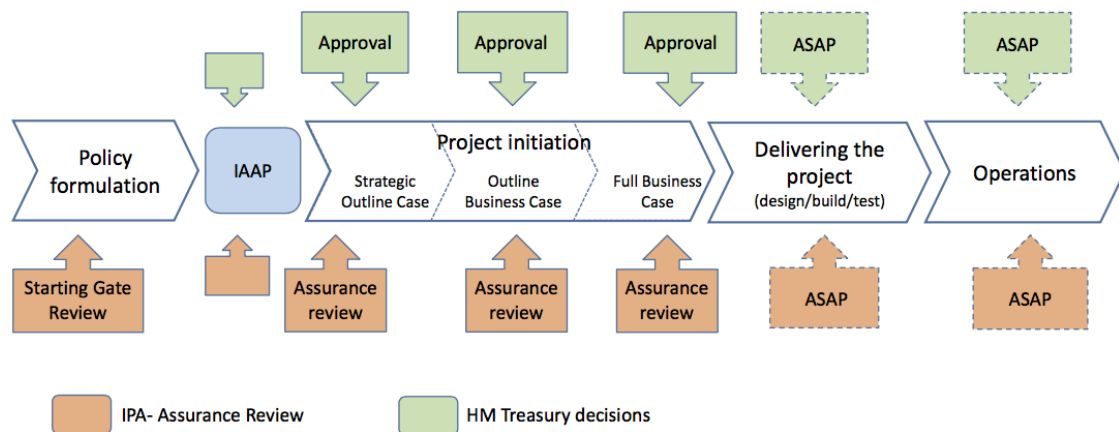


Figure D.4: The UK Stage-gate Model (K. Samset, Gro Holst Volden, Olsson, et al. 2016)

Starting Gate

The Starting Gate is a quality assurance gate that is assessing the project's viability and that it does not entail unnecessary risks. It also evaluates whether the project proposal is in line with the governments strategies. Quality assurance of the Starting Gate is based on a general risk assessment.

Integrated Assurance and Approval Plan (IAAP)

IAAP is a plan for quality assurance and decision points and should be prepared by the line ministry that proposes a project. The IAAP's purpose is to support the line ministry to be able to complete the project successfully. It should be approved by the IPA and HM Treasury to be able to proceed to the next project phase.

Business Case and OGC Gateway process

The project initiation phase, figure D.4, is based on a quality assurance scheme that includes at least three points of assessment. The three points are based on three different versions of the business case; Strategic Outline case, Outline Business case and Full Business case. According to the OGC process, additional quality assurance points should be included after the project initiation phase. At least one quality assurance should be performed during the implementation phase and another one after the commissioning of the project.

HM Treasury requires that a Business case be formed according to the Five Case method. It comprises of the strategic case, the economic case, the commercial case, the financial case and the management case. By forming the Business Case in five separate cases, allows for the analysis and appraisal of a proposal to cover all the perspectives of a proposal and enable the IPA and HM Treasury to assess the different segments of a Business case individually.

As mentioned, the OGC Gateway process is divided in three distinguished steps. The first step is the Strategic Outline Case, where the focus lies on the proposal's strategies and economic issues and the main aim is to limit the number of alternatives. The second step is the Outline Business Case, where the focus is on a more detailed analysis of the alternatives that come stronger out from the previous decision gate. Key criteria during this appraisal are primarily economical, but also include issues with the project structure and implementation planning. The third step is the Full Business Case, which is a comprehensive report on the Business Case and includes only the best alternative, chosen in the previous step. This step focuses on profitability of the concept, whether the implementation plans are robust and that there are not significant risks that can affect the implementation and operation of the investment.

Each step has to be quality assured by the IPA and be formally approved by the HM Treasury, before it can commence to the next step of the Business Case. In addition to the Business Case, the UK government and IPA have established other quality assurance measures during the front-end and implementation phases. Instead of the OGC Gateway process, a Project Assessment Review (PAR) can be applied, but this has to be decided during the IAAP. PAR is a more comprehensive assessment than the OGC and it can be performed on the proposal's entirety or to some of its aspects, in order to focus on specific challenges. Furthermore, IPA has Consequential Assurance and Intervention measures that enables the agency to address specific implications with ongoing projects.

Quality assurance is performed usually by 2-3 experts, who are independent to the project. They can be civil servants or external consultants and they are appointed by the IPA on a case-by-case basis. The output of the quality assurance is a report with recommendations and is performed intensively by interviews over 3-5 days.

Experiences with the UK QA scheme

Based on several evaluations by the UK government (these can be seen in more detail in the Concept report), it is concluded that the establishment of an agency solely responsible for quality assurance is appropriate and efficient. Still, there are some issues remaining, such as more involvement in the process by the line ministries and a better specification of the requirements during the front-end phase.

The Netherlands

The Dutch QA scheme is applied for infrastructure projects under the Ministry of Infrastructure and Environment (I&E). The scheme was introduced after the proposals of a government-appointed commission in 2007 to swifter process and implement large investment projects. It is constituted of a clear financial framework and the assessment of several alternative conceptual solutions. Projects that fall under the other Ministries are undergone under procedures and processes developed by each ministry, but as the Ministry of I&E has by far the largest portfolio of investments, most of new proposals go through this scheme.

The framework is called Multi-year Plan for Infrastructure, Spatial Planning and Transport (MIRT) and is administered by an inter-ministerial commission for improvement of the economy (ICRE), as seen in figure D.5. The commission is evaluating project proposals based on the reports prepared by the initiating parties, but also gets assistance in the form of appraisals and advice from independent institutions like Netherlands Bureau for Economic Policy Analysis and the Netherlands Environmental Assessment Agency. These independent institutions have a technical role in assessing project proposals and assess the integrity of the proposals. The ICRE though, has a more political role in the assessment and it assesses project proposals against each other, on the basis of governmental strategies and policies according to financial, environmental and social aspects.

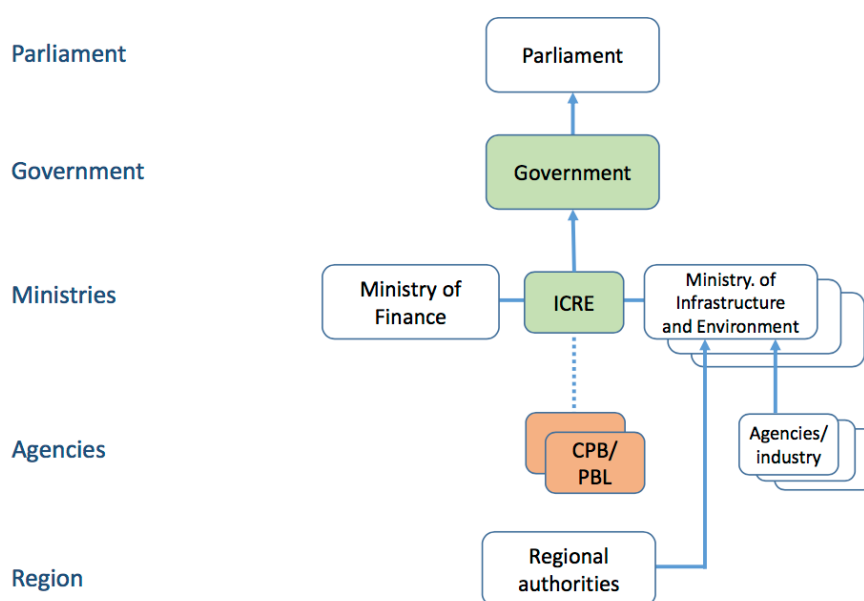


Figure D.5: Investment Project Governance in the Netherlands (K. Samset, Gro Holst Volden, Olsson, et al. 2016)

The decision made by the ICRE is consultative in nature and submits a formal recommendation to the government. The government has the power to make the final decision to submit project proposals to the budget for approval from the Parliament. The Parliament does not have a significant role in the decision making process (K. Samset, Gro Holst Volden, Olsson,

et al. 2016). Responsibility for planning, governance and implementation of the project, after the adoption of a project in the Budget, falls with the initiating party.

The stage gate model

The MIRT process is divided in three distinct phases, figure D.6, and four decision gates and follows the political process of the initiation of the formal process, seen as Initial decision in figure D.6. This decision point is referred to as MIRT1 and requires a political or technical decision from the Ministry of I&E to initiate the MIRT process. It is based on documentation of the problem and the need to solve the problem.

After the first decision point follows the Exploration phase, where an identification of the three best alternatives for solving the problem and requires a problem analysis and a needs analysis. The appraisal is preformed by technical experts in collaboration with the Ministry of I&E, evaluating the three alternatives and generating three investment cases, as a basis to choose one of them. This phase leads to an administrative decision that identifies the preferred alternative, named MIRT2.

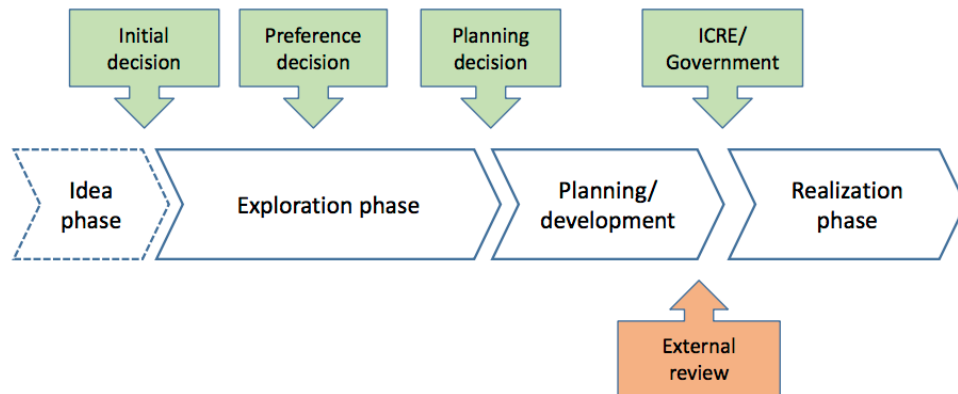


Figure D.6: The Dutch Stage-gate Model (K. Samset, Gro Holst Volden, Olsson, et al. 2016)

The next phase, the Planning/Development phase, starts after the decision commence planning, where a detailed study on the preferred alternative is made. The results from this study is presented to the inter-ministerial committee, ICRE, and is then subjected to political deliberation. If the proposal is deemed satisfactory, it is then submitted to the government for prioritisation in relation to other investments. This represents the final decision point in figure D.6.

Experiences with the Dutch QA scheme

Based on the findings from an evaluation of the Dutch QA scheme, it can be concluded that the implementation of the QA scheme has affected the front-end phase of projects by defining

the process, which led to quicker decisions regarding which concepts should proceed. Overall, positive results were observed in terms of project progress.

Appendix E

Interview guide

The interviews were conducted in the period between 12th of January 2017 and 13th of March in Cyprus. There were a total of seven (7) interviews, with several backgrounds, positions and experience. The interviews were semi-structured and in-depth, with a set of questions to be answered, but were conducted in a manner that resembles a discussion rather than a questionnaire (Bryman 2015). The reason behind this was to make the interviewees more prone to answer truthfully and not what they are supposed to answer, according to their job description.

Interview timeline

Date	Position
12/01/2017	Director of the Directorate for Public Investment at DG EPCD
12/01/2017	Planning Officer A' at the Directorate for Public Investment at DG EPCD
18/01/2017	Senior Officer at the Water Development Department
20/01/2017	Senior Officer at the Public Works Department
23/01/2017	Officer of Agriculture, Natural Resources and Environment Ministry
13/03/2017	Director of Budget Directorate of Ministry of Finance
13/03/2017	Officer A' of Budget Directorate of Ministry of Finance

Table E.1: Interview timeline

Interview questions

The questions listed under were used as a guideline for the discussion under the interviews. These were not followed in any order and questions were asked as the discussion progressed. Most of

the questions in the next list were asked to all of the interviewees, while more specific questions, presented in the following lists were asked to specific positions.

1. What were the reasons for creating the new framework for Public Investment Management?
2. What were the procedures for selection and appraisal of new investments before the implementation of the Pre-Selection and Project Appraisal framework?
3. Did you identify any problems with the old procedures?
4. What are the procedures for appraising project proposals by the DG EPCD?
5. What are the procedures for appraising project proposals by the MoF BD?
6. What are the criteria for project appraisal?
 - (a) In what phase are these applied?
 - (b) To what degree are the social criteria considered in an appraisal?
7. What is the role of the Preliminary EIA and Formal EIA in the appraisal procedures?
 - (a) During which phase are these considered?
 - (b) To what degree are the environmental issues considered in an appraisal?
8. What is the expertise of the DG EPCD in appraising project viability?
 - (a) How are projects appraised, when there is a lack of expertise in the Agency?
9. What is the expertise of the MoF BD in appraising project affordability?
 - (a) How are projects appraised, when there is a lack of expertise in the Directorate?
10. How does the Office of the MoF appraise projects?
 - (a) To what degree are the recommendations of the DG EPCD and MoF BD taken into consideration?
 - (b) What are the procedures of project appraisal by the MoF?
 - (c) Which criteria are taken into consideration?
 - (d) Do social or environmental issues have a significant part in the decisions?
11. How are projects ranked by the MoF, after approval through the DG EPCD and MoF BD?
12. Which procedure is followed for projects funded through the European Structural Funds?
 - (a) Similarities and differences with the Pre-Selection and Project Appraisal framework?
13. How is the independency of the QA scheme ensured?
14. In your opinion, is the QA independent from political pressures?

15. In your opinion, which parts of the frameworks do you considered inadequate? How can these be improved?
16. What is taken into consideration by the Parliament when voting for the National Budget?
 - (a) Does the members of the Parliament request documentation for the project proposals in the Budget?
17. What type of documentation is sent to the Parliament prior to the vote for the National Budget?
18. Your experiences from the new QA scheme.

The following list of questions were asked primarily to those who prepare the project proposal at the line ministries:

1. How did the idea for the project proposal develop?
2. How did the project proposal develop and studied for submission to the Budget before the implementation of the new QA scheme?
 - (a) According to needs or goals of the Department?
 - (b) According to construction/operation costs?
 - (c) Who did evaluate the soundness of these proposals?
 - (d) With which criteria?
 - (e) Was the whole life-cycle considered in the proposal?
3. How was the scope of the current project proposal established?
4. What were the procedure for choosing the alternatives of the primary project?
 - (a) How were the alternatives chosen?
 - (b) With what criteria?
5. How was the costs and benefits of the current project proposal established?
6. What were the procedure for choosing the costs and benefits of the alternatives of the primary project?
 - (a) How were the costs and benefits established?
 - (b) What is the time frame of the costs and benefits that were considered?
 - (c) With what methods were these established?
7. What difficulties did you find when researching and filling in the PCN?

8. Did you get any training prior to submitting the PCN?
9. Did you request/get any help from DG EPCD while completing the PCN?
10. If you want to change something from the new QA scheme, what would it be?

The following list of questions were asked primarily to those who appraise the project proposal in-house in the line ministries:

1. How were the strategies of the Ministry developed?
2. How are these strategies translated into projects?
3. How was the PCN appraised by you?
 - (a) With what criteria?
 - (b) What did you think was the most important aspects of the PCN, that had to be correct?
 - (c) How did you evaluate long-term sustainability and accordance to the goals of the Ministry?
4. How important for the Ministry is the inclusion of detailed project alternatives, so early in the procedure (in the PCN)?
5. How important for the Ministry is the inclusion of detailed costs and benefits, so early in the procedure (in the PCN)?
6. Does the Ministry take any other measures in order to ensure that a project proposal follows the strategic goals of the Ministry?

The following list of questions were asked in addition to relevant questions from the previous lists, in the interviews with the MoF BD:

1. How does the MoF BD evaluate the affordability of a project proposal?
2. What are the criteria for the assessment?
3. How did the new procedure develop?
4. What are the criteria for inclusion of a proposal in the Budget?