PAPERS

Governance of Major Public Investment Projects: Principles and Practices in Six Countries

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ABSTRACT

This article compares the Norwegian scheme for quality assurance of major public projects with similar project governance schemes in five other OECD countries.[1] All schemes have been introduced since the turn of the millennium and seem to be fairly consistent with recommendations from the project management literature. There are also a number of differences between the six schemes, for example, with regard to parties and roles, comprehensiveness, flexibility, organization, and whether portfolio management is covered. It is too early to make conclusions about their relative effects, but the evidence thus far indicates that there is much to learn across countries.

KEYWORDS: project governance; governance framework; public projects; front-end

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INTRODUCTION

Public investment projects amount to large sums, both in relative terms and absolute figures. The McKinsey Global Institute (2013) estimates global infrastructure spending to be at 4% of the total global gross domestic product, mainly delivered as large-scale projects. However, public investment projects face a number of challenges and have varying reputations. There is broad literature on what Hall (1981) termed "great planning disasters," which are projects with cost overruns, time delays, and either no benefits or very limited benefits, and that are sometimes so controversial and infeasible that they end up being closed down or severely altered. The problem of cost overrun is particularly well documented (Morris & Hough, 1987; Flyvbjerg, Skamris Holm, & Buhl, 2003a; van Wee, 2007). For example, Flyvbjerg et al. (2003a) analyzed 258 infrastructure projects in 20 countries over a period of 70 years, and concluded that the cost overruns were significant and the situation had not improved during the period. The more serious, but equally common, problem is when projects do not meet the expectations of users and society. For example, Pinto (2006, p. 7) quotes from an *Infoworld* article describing, "a U.S. Army study of IT projects [that] found that 47% were delivered to the customer but not used; 29% were paid for but not delivered; 19% were abandoned or reworked; 3% were used with minor changes; and only 2% were used as delivered." Similarly, Flyvbjerg, Bruzelius, and Rothengatter (2003b) showed that benefit shortfalls are a consistent problem in the transport sector.

These problems are not limited to the public sector—see, for example, Merrow (2011), who documents similar challenges in the private sector. The public sector, however, has some additional challenges, including multiple objectives, difficulties in measuring success, and having to deal with a wide array of external stakeholders in the democratic decision-making processes (Klakegg & Volden, 2016). Public projects are the outcome of a political tug-of-war between stakeholders in society, whose needs and priorities will concur or conflict to varying degrees. The outcomes of such processes are not always predictable. This is clearly shown in Miller and Lessard's study of 60 international projects (Miller & Lessard, 2000). Some authors emphasize dishonesty and "strategic explanations" as the causes of project failure, including deliberate misrepresentation in project appraisal by promoters (Flyvbjerg et al., 2003b), which is referred to as "perverse incentives" by

[1]This article is based on a research project funded by the Concept research program and retrieved from www.ntnu.no/concept. Preliminary results were presented in Samset, Volden, Olsson, and Kvalheim (2016).

Volden and Samset (2015). However, the public sector, too, has some internal challenges, such as a weak capacity for designing a strategic vision, lack of skills, and lack of coordination among levels and actors, as noted by the Organisation for Economic Co-operation and Development (OECD) (2015b).

The very largest of such projects are the most crucial: they are "too big to fail," they are very expensive, and they have high levels of inherent uncertainty and risk (Le Quesne & Parr, 2016). Special measures are therefore required to ensure successful implementation and outcome. In order to deal with these challenges, some governments have established designated governance schemes for the very largest projects. Norway was a pioneer in this endeavor and introduced an overarching framework for the governance of major public projects in the year 2000. See, for example, Volden and Samset (2017) for a presentation of the Norwegian framework and its effects, some of which are very encouraging; other countries have introduced similar frameworks in recent years. In this article we provide a description and a comparative analysis of how such project governance schemes are currently being organized and handled at the central government level in six countries: Norway, the United Kingdom, Denmark, the Netherlands, Canada (Quebec Province), and Sweden. Common to all schemes is that they are intended for project governance by a central government and applied to projects that involve particularly high costs, risk, and complexity, or are highly innovative. For example, in Norway, there are 20 to 30 such projects annually.

Our contribution to the literature is the compilation of a set of innovative project governance schemes, in which we highlight their differences and similarities and present the preliminary evidence of their impact. The results should not only be of academic interest, but should also provide information for other countries considering the introduction of similar mechanisms for improving the success of major public projects, including the OECD's ongoing work to establish a common framework for governance and delivery of infrastructure (OECD, 2015b), which seems to have focused more on delivery models and less on the strategic project perspective. All schemes are relatively recent, however; therefore, it is too early to determine with certainty their impact and degree of success, and this should be a topic of future studies.

This article starts with definitions of key concepts and principles related to project governance and presents key findings from the literature, while highlighting the importance of the front-end phase and role of central government. Each country's governance scheme and its underlying stage-gate models are described, as well as the involved parties and their roles, the use of independent quality assurance in the process, and a number of other elements. Similarities and differences between the schemes are explored to discuss the significance of principles and practices of the different approaches to project governance.

Governance of Public Sector Investment Projects

Governance

In general terms, *governance* relates to "all of processes of governing, whether undertaken by a government, market or network, whether over a family, tribe, formal or informal organization or territory and whether through the laws, norms, power or language" (Bevir, 2013, p. 1). The term governance means "to steer." In political science, it refers to what happens at the government level in a society. It concerns the role of government in facilitating the attainment of societal objectives. The government generally has three types of policy instruments at its disposal: the stick, the carrot, and the sermon, corresponding to regulation, economic means, and information (Bemelmans-Videc, Rist, & Vedung, 1998). The instruments may be either affirmative or negative. The model has its parallel in the regime of the World Bank (World Bank, 2000), in which the regulation element is described in terms of rules and restrictions, the economic element in terms of competition pressure, and the information element in the forms of transparency and assistance.

Governance is often used as a normative concept, whereby the quality of governance is compared to a standard of "good governance." For example, the United Nations Development Programme (UNDP) (2006) defines good governance as "among other things *participatory, transparent*, and *accountable*. It is also *effective* and *equitable*. And it promotes *the rule of law*" (our italics). Similarly, the Council of Europe (2014) suggests 12 principles for good governance, including *sustainability* (long-term orientation) and *competence* and *capacity*. Regardless, the social and economic consequences of poor governance policies and systems may be considerable.

A related term is *corporate governance*, which refers to the mechanisms, processes, and relations by which corporations are controlled and directed. Müller (2009) distinguishes between the traditional "shareholder perspective," which limits corporate governance to a question of how to incentivize management to deliver good financial results, and the "stakeholder perspective," which is broader and takes a wide range of other stakeholders into account. According to the OECD (2015a), good corporate governance involves a set of relationships between the organization's management, its board, its shareholders, and other stakeholders. Moreover, good corporate governance requires a structure defining how the organization's goals should be determined, how such goals should be realized, and how this should be followed up (OECD, 2015a).

Project Governance: Principles and Components

The term *project governance* has only recently become an important issue in the project management community and literature. It refers to the processes,

systems, and regulations that the financing party must have in place to ensure that projects are successful (i.e., that relevant and sustainable project alternatives are chosen and delivered efficiently) (Volden & Samset, 2017). The Project Management Institute (PMI) (2013) defines project governance in a similar way, as "an oversight function that is aligned with the organization's governance model and that encompasses the project life-cycle [by providing] a comprehensive, consistent method of controlling the project and ensuring its success by defining and documenting and communicating reliable, repeatable project practices." A key project governance issue is that the interests of the implementing agent will not necessarily be aligned with those of the financing party or project owner. Project governance seeks to ensure that an implementing agent, in this case represented by the project manager, will act in conformity with the interests of the owners (Tirole, 2001). Project governance is thus a system of appropriate checks and balances that enables transparency, accountability, and defined roles, while at the same time supporting project managers in delivering their objectives. This corresponds well with what Morris and Geraldi (2011) define as the institutional level of managing projects, which focuses on shaping the context and conditions to support and foster projects, although Morris and Geraldi focus more on the support function than the governance function. As noted by Crawford et al. (2008), there is a possible conflict of interest facing a project sponsor (owner), between the "governance perspective" and the "support perspective." On one hand, the sponsor should have an external focus, representing the enterprise and the client's interest, and on the other hand, he or she must have an internal focus, providing project management with support to fulfill their role efficiently. Crawford et al. find that the sponsor role is played out quite differently in different organizations. In our study, the focus is primarily on the governance perspective.

Various definitions and typologies of project governance are suggested in the literature. Williams, Klakegg, Magnussen, and Glasspool (2010) distinguish between governance *of* projects, which aims at efficient delivery, and governance *through* projects, which aims at choosing the right concepts and ensuring that effects are realized and are sustainable. Müller, Shao, and Pemsel (2015) distinguish between *project governance* and *governance of projects*, where the former refers to the governance of a single project, and the latter to the governance of groups of projects, such as a program or portfolio.[2] In a similar manner, Too and Weaver (2014) note that publications discussing project governance can be classified into two main groups. The first group focuses on governance of single projects, typically involving several actors and stakeholders, when a contract will specify the specific governance arrangements for that project. The second group of publications examines governance models linking different project-related levels (project, program, and portfolio) within an organization, and thus sees project governance as a subset of corporate governance. In our study, the focus is on governance schemes applying to all major investment projects at the national level. Accordingly, our perspective is the *governance of projects* in Müller's terminology, but we take the central government perspective rather than a given organization's perspective. A natural implication is that we emphasize governance *through* projects somewhat more than the governance *of* projects (cf. Williams et al., 2010).

[2]Project governance includes, among many other things, the governance part of the project management methodology, the role of the steering group, and the sovereignty and authority with which the project manager can manage his or her project. By contrast, governance of projects includes issues such as the level of institutionalization of project management, for example by using similar reporting systems, methodologies, or project selection techniques across the group of projects (Müller et al., 2015).

Flyvbjerg et al. (2003b) discusses which criteria should underpin megaproject governance regimes. Based on a large set of empirical data, they found that the main problem with major public projects is that the stakeholders have a self-interest in their implementation (whether financial or political); they underestimate the risk and they are not held accountable to central government, which adopts a more overarching perspective of maximizing public benefits. The authors talk about the "megaproject paradox," and propose the following alleviating measures:

1. Risk and accountability must be accorded much more of a key role in decision-making processes.
2. Risk analysis and risk management requirements must be imposed.
3. The authorities should remain at "arm's length" and not become involved in promoting the project, but limit their role to formulating overarching objectives and ensuring that such objectives are attended to by the project.
4. In order to bring about responsible decisions, one should:
    - ensure transparency;
    - specify performance requirements;
    - impose clear requirements for the construction and operation of the project; and
    - involve capital from private investors since their willingness to invest will be a project viability test.

Haanes, Holte, and Larsen (2006) reviewed different models for decision making in major public projects based on best practice in Norway and other countries and suggest the following minimum requirements:

- Clearly defined project phases
- Clearly defined decision points
- Quality assured basis for the decisions
- Simplicity
- Some degree of standardization and common terminology

Likewise, Narayanan and DeFillippi (2012) state that project governance schemes should incorporate five elements: stage-gate approval processes, formal roles and responsibilities, stakeholder representation, quality assurance, and contracts and sign-offs.

More recently, several standards and guides have been developed to address project governance models, in particular as part of corporate governance. For example, the Association for Project Management (APM, 2011) has established 13 principles for the governance of project management, and has defined four main components of schemes that adhere to them:

1. Portfolio management—ensuring that each project is aligned with key business objectives
2. Project sponsorship—providing a link between the permanent and the temporary organization, typically by defining a project sponsor or project board as the "governance agent," with decision making, directing, and representational accountabilities
3. Project management capability—ensuring that the teams responsible for projects are capable of achieving the objectives that are defined at project approval points, which is a question of skills, available tools and processes, and a clear mandate (among others)
4. Disclosure and reporting—ensuring that project reports provide timely, relevant, and reliable information that supports the organization's decision-making processes, without fostering a culture of micro-management

Such principles and guides may be more or less detailed, and more or less mandatory. Some project governance models are behavior oriented, requiring that certain detailed rules are followed (e.g., common project management methodology), whereas others are outcome oriented and give more autonomy to the project manager. These two "paradigms" may also be denoted as bottom-up and top-down (Müller, 2009). The top-down model is more often found in organizations with a high level of trust and a high level of project management skills.

Some organizations have established project management offices (PMOs). A PMO is an internal group or department that defines and maintains standards for project management; provides training, monitoring, and reporting on active projects and portfolios; and, in some cases, takes a more strategic role, acting as the owner of the project portfolio. PMOs may take many forms, as demonstrated by Hobbs and Aubry (2008), but they often have a central role in a project governance model (Morris & Geraldi, 2011; Müller et al., 2014).

In this article, we focus more on the structural than the non-structural elements of project governance. However, it should be noted that project governance is not only about laws and regulations, as it is not possible to determine every action. Based on Foucault's work, Müller et al. (2014) introduced the term *governmentality* in the project management literature. Governmentality is a combination of "governance" and "mentality," and addresses the human side of governing—the attitude that governors have toward those they govern, and whether governance is enforced through strict rules or through soft "cultural" values that members of an organization share and respect. Similarly, Klakegg and Meistad (2014) divide governance into structure-based and relationships-based governance. The former incorporates the elements mentioned above, such as stage-gate approval processes, roles and responsibilities, and quality assurance; whereas relationships-based governance typically includes non-hierarchical elements such as leadership, motivation and incentives, resource allocation, trust and ethics, alliances and involvement of stakeholders, informal relations, and communication.

According to Miller and Hobbs (2005), large complex projects will require a governance system that is not static and hierarchical, such as is commonly used for smaller projects. There needs to be scope for changes along the way, because both the planning and implementation phases of large public projects last for a long time. Governance will therefore assume different forms in the various phases of the project cycle. This highlighting of *flexibility* is supported by Müller et al. (2014), who seek to identify "organizational enablers" for good governance and governmentality. The most prevalent finding of their study is the importance of flexibility—the lower levels of governance require flexibility in the choice of methods and processes, whereas the higher levels of governance require flexibility in people's mindsets and attitudes toward work. Furthermore, there are needs for vision and values provided by top management and management's development of a culture that fosters flexibility and self-responsible employees.

The Importance of the Front-End

A project's life cycle consists of several phases (Figure 1). The *front-end phase* is the stage when the project only exists conceptually, before being operationalized. This encompasses all activities from when the idea is conceived until a final implementation decision is made. A distinction is commonly made between the *conceptual phase*, the *pre-study*, and the *pre-project*, as shown in Figure 1. In the conceptual phase, the conceptual solution and the overall project strategy are decided, and thus the key premises underpinning the project, as well as its characteristics and objectives. In the pre-study and pre-project phases, the decisions are more concrete with regard to contractual strategy, mode of delivery, and subsequently the detailed project design with regard to budget, activities, scope, schedule, and quality. This is followed by the *implementation phase*, which encompasses anything that happens after a final funding decision has been made, and includes *detailed engineering* and actual *construction*. Finally, the *operational phase* consists of commis-

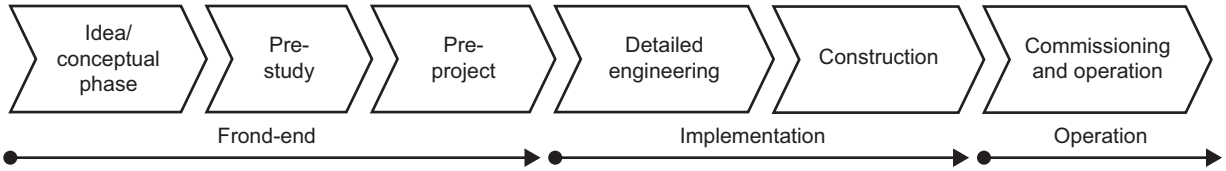

Figure 1: Project phases.

sioning and, subsequently, operation and maintenance.

A governance framework for the full life cycle of the project should be prepared at the outset, given that certain phases are more critical and in need of governance arrangements than others (HM Treasury, 2007). A number of authors have highlighted the importance of paying more attention to the front-end of projects to ensure project success (Shenhar, 2004; Williams & Samset, 2010; Morris, 2013, Samset & Volden, 2016). Morris (2013) highlights the importance of taking a holistic and "big picture" perspective on the project, and notes that in the early years, the project management community had an extremely narrow focus, reflecting only on the project itself and ignoring the critical front-end phase in which the most essential and overarching issues are decided. Many of the factors that later create problems in the construction phase, leading to projects delivering too late and over budget, arise early in the project definition stage (Morris, 2009). Williams and Samset (2010) note that the choice of concept has the largest impact on strategic project success and is thus highly critical. Other fundamental issues in the front-end are: to ensure realistic cost estimates (and counteract tactical budgeting); to ensure a rational planning process and a transparent democratic process; and to achieve predictability over time, since the front-end phase often extends over more than one parliamentary cycle.

A study of more than 1,000 projects, conducted by the World Bank, may provide solid evidence for the importance of the front-end phase (World Bank, 1996). A thorough review of the scope and quality of prior checks, prior assessment, and project design before the implementation of projects was linked to whether these turned out to be successful or not when examined in retrospect. The World Bank concluded that no less than 80% of the thoroughly prepared projects were successful, whereas as much as 65% of those initiated without proper preparation turned out to be unsuccessful. A corresponding study of 23 Norwegian projects delivered similar findings (Whist & Christensen, 2011).

The "Top Layer" and the Role of Central Government

This study is concerned with project governance from the perspective of central government, regarding investment projects that are funded by the state and implemented by line ministries and state agencies. In Norway, municipalities and counties are responsible for their own investments and may have their own governance schemes, which are not discussed here. We discuss how the governance of projects is currently organized and practiced at the overarching level. A governance framework is hierarchical, in the same way as a management system, where the top level is accountable for the whole system but delegates the responsibility and authority for defined actions to subordinate levels (Too & Weaver, 2014). Thus, central government, ultimately on behalf of the whole population, should set the conditions for projects (as well as other public sector activities) to deliver value to society; it should also impose *overarching requirements* with regard to, for example, structures, processes, and outcomes, but should not intervene in detailed project implementation (Samset, Berg, & Klakegg, 2006). Responsibility for implementing projects and programs is delegated to the different line ministries and agencies, which define the specific governance arrangements necessary to ensure tactical and operational project success.

Taking "the central government perspective" does not imply that we believe that central government can always be regarded as one unit and that all government decisions are made rationally. In practice, public project decisions are made through political processes in which agreements about goals and fundamental assumptions cannot be taken for granted (O'Leary, 2012), and in which there are many examples of irresponsible behavior, even from the top level (Miller & Hobbs, 2005). It is important to note that project governance structures and processes, which focus more on improving administrative processes than on political processes, do not ensure good *decisions*; they simply provide the framework within which good decisions can be made. This is probably the best one can do within a democratic political system.

An important part of governance schemes should be to ensure that decisions are lifted up to the appropriate level. Accordingly, the government itself should be involved in the management process on a strategic level, such as approving very large and critical projects. This is in line with the reform processes often referred to as Post-

New Public Management (Christensen, 2009), which is based on the premise that such an approach will enhance effectiveness and efficiency, without losing political impact.

The Study, Selected Countries, and Methodology

The starting point for this study was the Norwegian project governance framework, which the authors have followed for a number of years. The framework was an attempt to resolve or mitigate some common challenges observed in public projects in the 1990s, and the preliminary results are encouraging (Volden & Samset, 2017). However, it is only one of many possible ways to set up a project governance scheme, and our intention has been to review replicable systems in other selected countries, relate them to the Norwegian system and each other, and to discuss the following questions: Are they apt to ensure project success as intended? What are the differences and similarities between the schemes? What can Norway learn from the other countries and vice versa?

The other countries included in this study—the United Kingdom, Denmark, the Netherlands, Canada (Quebec Province), and Sweden—were selected primarily because they too are at the forefront in developing a public sector investment project governance system, with schemes introduced after the turn of the millennium. Quebec is merely one of several provinces of the Canadian Confederation, but has extensive independence in the area of infrastructure investments, and is included with the other studied countries due to its early initiative and advanced project governance scheme. Another determining factor was that all of the studied countries were OECD countries with a high level of economic development. There are, however, significant differences between the countries, not the least in their demographic and natural conditions, which implies that they differ also in their economic prospects for developing infrastructure. Norway (and to some extent also Sweden and Quebec) has a small population, long geographic distances, and areas that are virtually uninhabited, but nonetheless has a broad political consensus that the scattered and remote settlements should be maintained by building roads and public infrastructure. It is therefore obvious that the criteria for project selection may include societal objectives other than "value for money" in economic terms.

Two existing studies have compared the Norwegian governance framework with the British one (Williams et al., 2010), and with the British and Dutch frameworks (Klakegg, Williams, & Shiferaw, 2015), respectively. These studies constitute an important background for our study. Williams et al. (2010) conducted a case study and concluded that in all the four projects examined, the governance framework was useful in its own way, but also that there was some potential for improvement, such as more assessment of the project during the early stages (which has since been introduced in the United Kingdom). Klakegg et al. (2015) conclude that consistent project governance provides rewards, but they note that effort must be made to preserve the effect, otherwise it might "wear off." Another relevant study was conducted by Trafikanalys (2012), which has presented and discussed the systems regarding planning and assurance of transport projects in the Nordic countries, focusing mostly on cost figures. Other than the above-mentioned studies, we are not aware of any studies focusing on project governance models on a country level. Our study comprises more up-to-date descriptions of the governance frameworks in the same three countries as those studied by Klakegg et al. (2015), along with three additional countries. It is still no more than a case study, but it allows for comparisons that are somewhat more systematic and for evaluations of the development, content, context, and preliminary effects of the governance frameworks.

Some countries have more than one scheme, for example, depending on the sector. In these cases, we restrict the study to the governance models that concern the largest sectors measured by investment volume. Other schemes are cross-sectoral, such as the United Kingdom, Quebecian, and Norwegian schemes, and apply to all types of infrastructure investments. A common feature of all schemes, however, is that they are used for large investment projects that entail high costs or are highly complex.

This study is principally based on document reviews, backed up with interviews with key informants at the ministry level in the relevant countries and/or persons with special knowledge of the various schemes, in order to obtain documentation and verify the descriptions of the schemes. The documentation provided by the governments has varied. In some countries, the authorities have provided thorough descriptions of their schemes, and in the United Kingdom they have even made evaluations publicly available, whereas in other countries limited descriptions have been provided; therefore, we have had to supplement them with other sources, such as research reports and interviews. The information concerning the scheme in the Netherlands was primarily obtained from a doctoral dissertation that focused specifically on that scheme (Shiferaw, 2013).

In order to compare governance in the various countries, we have examined the development and content of the schemes, including which objectives countries have defined for them, which internal and external parties have been involved, their duties and responsibilities, how decisions have been made at the political level, and how the schemes have been structured at the project level. The reference point has been a scheme adhering to the recommendations from the literature, including both the overall principles of good governance and the more specific recommendations concerning project governance schemes. These principles and recommendations include stage-gate

approval processes with clearly defined phases, decision points and quality assurance, highlighting the front-end, lifting decisions to a high political level, being simple and flexible, promoting a portfolio perspective, and transparent processes and decisions.

The Governance Schemes

Norway

The background to the Norwegian governance scheme was a series of negative experiences with cost overruns, delays, and limited viability of some public investments in the 1990s, resulting in a government-initiated study to review the systems for the planning, implementation, and monitoring of large public investment projects. The authors of the study (Berg et al., 1999) concluded that the underlying documentation was deficient in a number of projects and that failures in the front-end phases were generally the main cause of problems during implementation. The authors proposed the introduction of an external quality assurance (QA) scheme in the decision phase for the largest public projects.

The QA scheme, introduced in the year 2000, is often referred to as the State Project Model, and is mandatory for investment projects with an anticipated budget exceeding 750 million Norwegian Kroner (approximately US$90 million).[3] It involves some 20 to 30 projects per year, mostly in the building, transport, construction, and information and communications technology (ICT) sectors. Initially, the purpose was to improve project efficiency, with a special focus on cost and delivery, but it was expanded in 2005 to enhance the effectiveness of the investments (i.e., more successful projects in terms of higher benefits for each Norwegian crown spent through, for example, improved cost control and conceptual solutions).

The Ministry of Finance is responsible for the administration of the QA scheme, which in principle, involves a very simple model with only two decision gates. No specific changes to the procedures of the various government agencies are required with respect to, for example, the implementation of the model, project organization, and use of steering groups, PMOs, or project sponsors, thus enabling them to implement their projects as before. Current requirements, however, are somewhat stricter with regard to the planning documents, intended to assure quality and the comprehensiveness of analyses. It is also a requirement that at least two conceptual solutions should be analyzed in addition to the zero option. This is intended to counteract the tendency for path dependency, which has largely characterized established practice. In contrast to previous practice, the documents prepared by the agencies (in some cases by the line ministries) have to be quality assured by external advisors before being submitted for appraisal at the political level. The quality assurers are pre-approved private consultants who have framework agreements with the Ministry of Finance. They have a limited mandate that requires them to examine the *quality* of the documents and not to address the political issues relating to the choice of project. They are also required to perform a separate independent, probability-based, cost estimation and a business case.

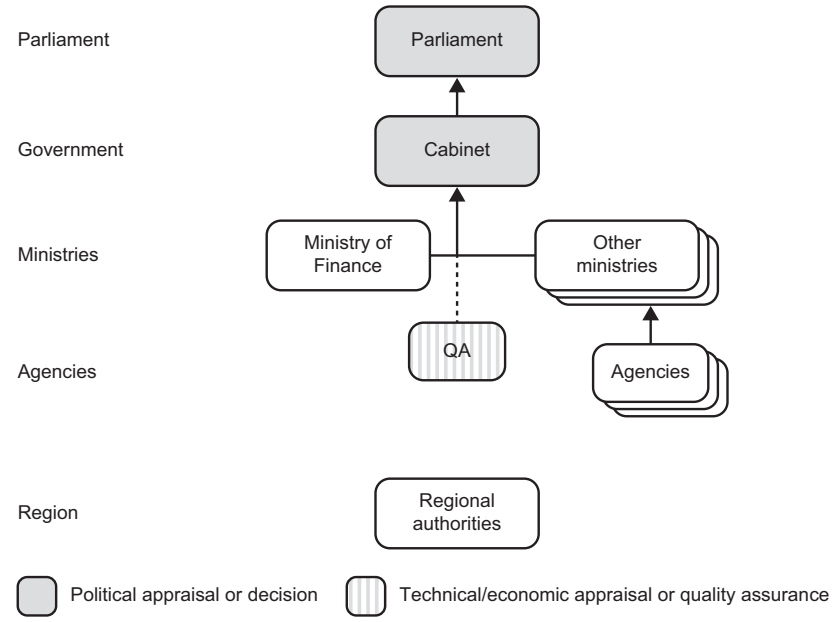

Figure 2: Investment project governance in Norway.

Figure 2 shows the roles and principles in investment project governance in Norway. Individual ministries are responsible for new investment initiatives, the vast majority of which are initiated and planned by a subordinate agency. These planning documents are then subjected to external quality assurance on behalf of the relevant line ministry and the Ministry of Finance. The line ministry will summarize the findings and recommendations in a memorandum, which will be submitted to the Cabinet for political appraisal before the matter is presented to Parliament for its approval and final decision.

The State Project Model involves two stages, as shown in Figure 3. The first stage concerns the choice of concept. The agency's pre-study (comprising an

[3]NOK 750 million

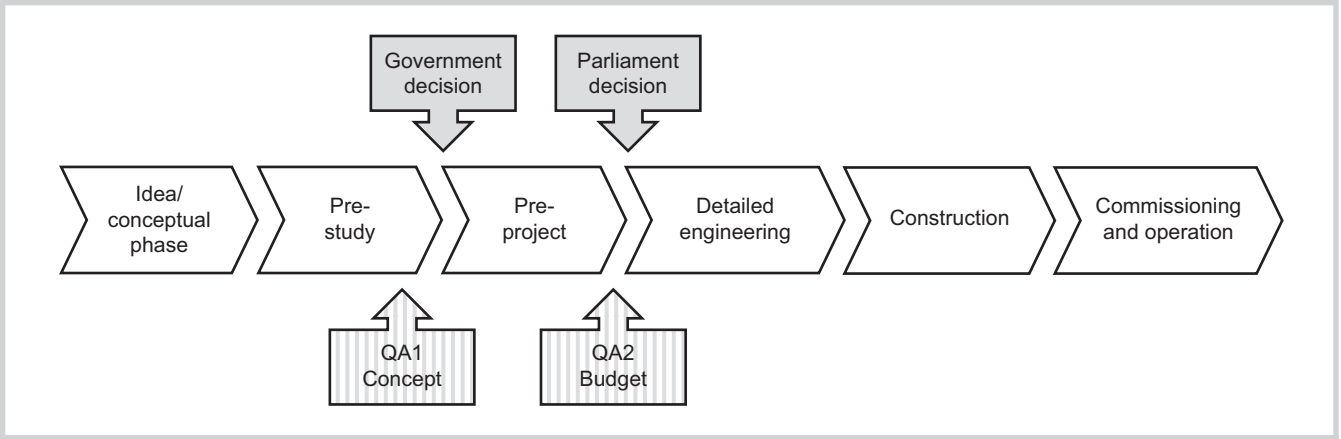

Figure 3: The Norwegian State Project Model.

assessment of needs, alignment with government strategy, the opportunity case, and the business case) is subjected to an external quality assurance of the choice of concept (QA1). At this stage, it will be decided at the central government level whether to reject the project or to move on to the pre-project phase, and in such cases which concept to choose.

At the next stage, when the pre-project has been finalized, the agency has to present an overall project management document, which provides information on, for example, objectives, budgets and target cost, implementation strategy, and contract strategy. This document is then subjected to external quality assurance of the cost estimate and management documentation (QA2). Budgets are based on formal uncertainty analyses and stochastic cost estimation. The recommended budget will commonly be close to the P85 level, and the recommended target cost for the responsible agency is normally lower and close to the P50 level.[4]

[4]With stochastic (probability-based) cost estimation based on either mathematical analytical methods or simulation, the result will be a cumulative probability distribution of the investment cost. P85 implies that the cost will be at or below this level with 85% probability. Similarly, there is a 50% chance that a budget at P50 will be adhered to. The budgeted cost should include a residual reserve and therefore be higher than the expected cost. At the same time, the target cost for the agency should be more ambitious, to give incentives for efficiency and cost control. In Norway, the difference between the budgeted cost and the target cost is kept as a residual reserve, normally on a ministry level.

The line ministry and the Ministry of Finance will summarize the quality-assured documents and the recommendations based on them, in a memorandum to the government. Special prominence is then given to the proposed budget; thereafter, the government will submit the matter to Parliament, which will make the final decision and stipulate both the budgeted cost that commits the responsible ministry, and the target cost that commits the agency. Alternatively, Parliament may reject the project at this level.

The Other Case Countries—Establishment and Scope

In common with Norway, the background to the governance schemes in the other five case countries was negative experiences from past projects, especially with regard to cost overruns and delays:

- Like Norway, the United Kingdom was a pioneer. In the year 2000, a separate unit—the Office of Government Commerce (OGC)—was created at HM Treasury, to manage a scheme applying to the largest and riskiest public projects. Initially, it focused on budgets and project management documentation, drawing on experts from the private sector, and a number of follow-up points throughout the project life cycle. The OGC developed a standardized gateway process and public project methodology that came to be widely disseminated. Subsequently, the scheme was strengthened, with focus increasingly being placed on the front-end (a so-called Starting Gate review was introduced), on portfolio management, and on the education of public project leaders. In 2011, a new unit, the Major Projects Authority (MPA), was established, with a stronger mandate, given directly by the Prime Minister, and this unit reports jointly to HM Treasury and the Cabinet Office. In 2016, the MPA merged with Infrastructure UK to form the Infrastructure and Projects Authority (IPA). Preliminary evaluations suggest positive effects of the scheme on project management and cost savings. Main sources for a description of the scheme and experiences are HM Treasury and Cabinet Office (2011) and National Audit Office (2012).
- Denmark, inspired by the United Kingdom and Norway, launched a scheme applying to transport projects, in the wake of a study of cost overruns in 12 transport projects (Ministry of Transport and Building, 2010a, 2010b, 2010c, 2015). A financial management model was established in 2003 to streamline decision-making processes for the various sectors. In 2007, the financial management model

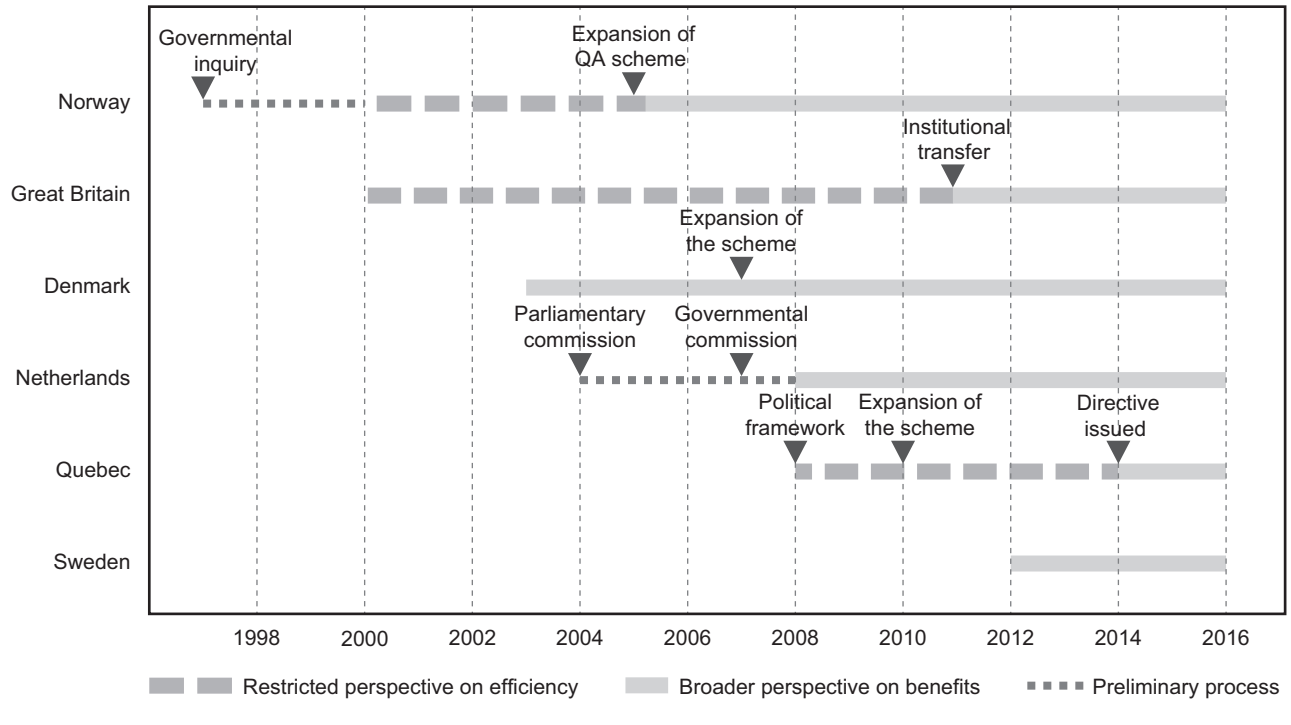

Figure 4: Introduction of investment project governance schemes in six countries.

was expanded, both by requiring projects in excess of US$36 million[5] to be subjected to external quality assurance, and by adding an experience-based correction factor to the cost estimate. Decisions are lifted to the parliamentary level.

- In the Netherlands,[6] each ministry is responsible for its own major projects. In 2008, the Ministry of Infrastructure and the Environment, which has by far the largest portfolio, introduced an integrated investment program, MIRT, which includes a mandatory stage-gate process. The predominant issue to be addressed was how to avoid cost-overruns and speed up the implementation of major infrastructure projects, but also more generally to ensure a robust foundation for major projects, with broad participation from affected parties, commitment at the political level, and the assessment of several alternative conceptual solutions.
- In Quebec, in 2008, the Treasury Board established a political framework for the governance of large public sector investment projects. The scheme was revised and strengthened in 2010, and again in 2014, when it was given in the form of a *directive*, with increasing focus on the front-end (Secretariat du Conseil du trésor, 2014). The organization of the scheme has been developed and strengthened over time. In 2014, a unit reporting to the Treasury Board, the Société Québécoise des Infrastructures (SQI) was established as the project manager for all major infrastructure projects, in association with the sponsoring line ministry.
- Sweden was the last of the case countries to introduce a governance scheme, which happened in 2012, and only for transport projects (see Trafikverket, 2014). Traditionally, the transport agency has had a rather independent role, but decisions regarding major projects are now lifted up to a government level, as in the other two Scandinavian countries. The decision base for the choice of concept includes assessments of needs and alternative options, and more formalized uncertainty analyses of cost estimates have entered into use in recent years.

The background to and development of the various schemes in the six cases are summarized in Figure 4. It is interesting to observe that several countries have expanded and strengthened their schemes over time, and reorganized the management of them. Generally, the purpose of most of the schemes initially related to the efficiency aspect in the implementation of the projects. Later, a somewhat broader perspective on the front-end and the choice of concept was adopted in Norway, the United Kingdom, the Netherlands and, finally, in Quebec. In Sweden, the requirement for conceptual appraisals as well as environmental assessments

[5]DKK 250 million
[6]Main source: Shiferaw (2013).

have long been a key focus. Denmark still has a somewhat narrower focus, but includes economic and transport analyses.

Overview of the Schemes

A detailed comparison of the various governance schemes in the six case countries is presented in Table 1. The findings concerning specific elements of the schemes are discussed separately in the following subsections.

Projects Covered

The United Kingdom, Quebec, and Norway have governance schemes that in principle apply to all sectors where the state is responsible for infrastructure projects (funding, procuring and, in many cases, implementing and operating). The other countries have schemes that only apply to one or some sectors, and certain sectors are exempted, as in Norway.

In all countries, the schemes focus on projects with central government funding that are large, complex, or otherwise involve risk on the part of the central government. Only three countries have introduced a general threshold value defining which projects should be encompassed: Norway, Denmark, and Quebec. A threshold value is a simple criterion for deciding whether a project is subjected to the regime, but its application may seem rigid and not always optimal. This criticism has been leveled against the Norwegian scheme. In the United Kingdom, the Infrastructure and Projects Authority makes an overall assessment as to whether a project should be encompassed by the scheme, and it has chosen to include a considerable number of modernization projects that are "small" in terms of investment cost, but highly complex and innovative, and thus risky.

Parties and Roles

Figure 5 provides an overview of how project governance is organized in the six case countries. The gray boxes imply influence over decisions taken at the various gates in the stage-gate models, with a special focus on the front-end (choice of concept and final approval of the project), and the pattern-filled boxes indicates the quality assurance function.

We find that the government plays a key role as a decision maker in all countries, primarily with regard to the final choice of project alternative. In the Scandinavian countries, the final approval is elevated all the way to the parliamentary level. Presumably, this has to do with these countries being relatively small, but also because they normally have minority governments, and thus need support at the parliamentary level. It may also be noted that many central government–funded investment projects in Scandinavia, especially within transport, are highly politicized, and not viewed exclusively as measures for national economic growth (Boge, 2006).

By contrast, in the United Kingdom and Quebec the Treasury has an important role in advising the government, based more on economic and technical considerations than on political concerns. Klakegg et al. (2015) generally hold that the UK scheme is somewhat more "business-like" than the Norwegian one; it is largely based on best practice in the private sector, and attaches major weight to financial and profitability issues. In the Netherlands, the role of advising the government is performed by an inter-ministerial commission (ICRE) with representatives from the various ministries, and with the Ministry of Finance having a very strong position. It should also be noted (although not shown in Figure 5) that the Dutch scheme involves broad participation of stakeholders in the front-end of public projects in a more systematic manner than those in the other countries—the purpose being to pull discussions toward the front-end and avoid tugs-of-war in later stages.

Most project appraisals are conducted at the agency level in all countries, with their sponsoring line ministries being involved to varying degrees. Quebec stands out in that the new designated government agency, SQI, is responsible for all infrastructure projects across sectors. The quality assurance function is performed by parties independent of those who conduct the appraisals, and these reviewers have a key role in most countries, feeding their advice directly into the decision-making process.

Quality Assurance Reviews

Independent quality assurance reviews are performed in all the countries. In Norway, the use of external experts has been controversial. The criticism is partly that it prevents the development of adequate expertise within the public administration; partly that the consultants do not possess enough sector competence; and partly that when a group of consultants is pre-qualified for such work, it may achieve something akin to a monopoly position. The same kind of criticism is heard in Denmark. In Sweden, where much of the quality assurance takes place on an ad hoc basis and internally within government agencies, the criticism is rather that it becomes difficult to ensure that the quality assurance is sufficiently independent and professional. In the Netherlands, Quebec, and the United Kingdom, designated public bodies are established to perform the quality assurance function. In Quebec, quality assurance is performed both internally in the SQI, and then again by SCT at the Treasury Board before the project is presented to political decision makers.

An important principle of all schemes is that the external quality assurance arrangement only has an indirect impact on the decision-making process. The decisions are to be made at the political level, and the recommendations of the quality assurer have advisory status only.

The Stage-Gate Models

All six countries use stage-gate models in their governance schemes, defining the number of project phases, decision points, and the types of analyses

Governance of Major Public Investment Projects

Criteria/Country	Norway	Denmark	Sweden	The Netherlands	United Kingdom	Quebec
Who initiates the QA process?	Ministry of Finance	Ministry of Transport	Agency	A designated government agency	A designated government agency	A designated government agency
Who decides the choice of concept?	Government	Parliament	Agency or Government	A designated government agency	Treasury[1]	Council of Ministers
Who determines the budget?	Parliament	Parliament	Agency or Government	Government	Treasury	Government
Sectors included[2]	All, with some exceptions[3]	Transport sector	Transport sector	Infrastructure projects	All sectors[4]	Infrastructure projects
Threshold value (million)	NOK 750	DKK 250	No	No	Large projects[5]	CAD 50
Who appraises the project?	Agency or ministry[6]	Agency	Agency and regional authority	Responsible government agency	Agency or ministry	A designated government agency
Who performs quality assurance?	External consultants	External consultants	A designated government agency, and internally	A designated government agency	Independent quality assurers[7]	A designated gov. agency
Requires co-funding from promoters	No	No	No, but may happen	For all in excess of EUR 60 billion	Desired, but no requirement[8]	To be considered, not required
Budgeted cost	P85 (normally)	Basic calculation + 20%[9]	In the portfolio		Estimate plus supplement	Estimate plus supplements[10]
Target cost	P50 (normally)	Basic calculation + 10%	Budget[11]		Estimate plus supplement	Budget
Decision points	2	2	2	3	5	5
QA or advisory interventions	2	2	Ongoing	1	6	Ongoing
Transparency	Yes	Limited	Limited	Limited	Some	Limited
Portfolio management as part of the scheme	No	No	No	Yes	Yes	Yes

Notes:

[1]Concerns approval of business case; the line ministry may have determined the choice of concept much earlier

[2]Some countries may have different schemes in some sectors

[3]All, except for health, oil/gas, and state enterprises

[4]Central government infrastructure investments and ICT/restructuring projects

[5]No threshold value; relevant factors are size, complexity, requirement for a separate statute, and the degree of innovation

[6]External resources are drawn on in some cases, from the private or public sector, including QA resources

[7]Both private and public sector technical experts

[8]This varies between sectors

[9]The 20% supplement is managed at the portfolio level and is transferable from one year to the next

[10]The government should be informed if it is anticipated that the budget will be overrun

[11]Recently based on stochastic cost estimation (P50).

Table 1: A comparison of the governance schemes in six countries.

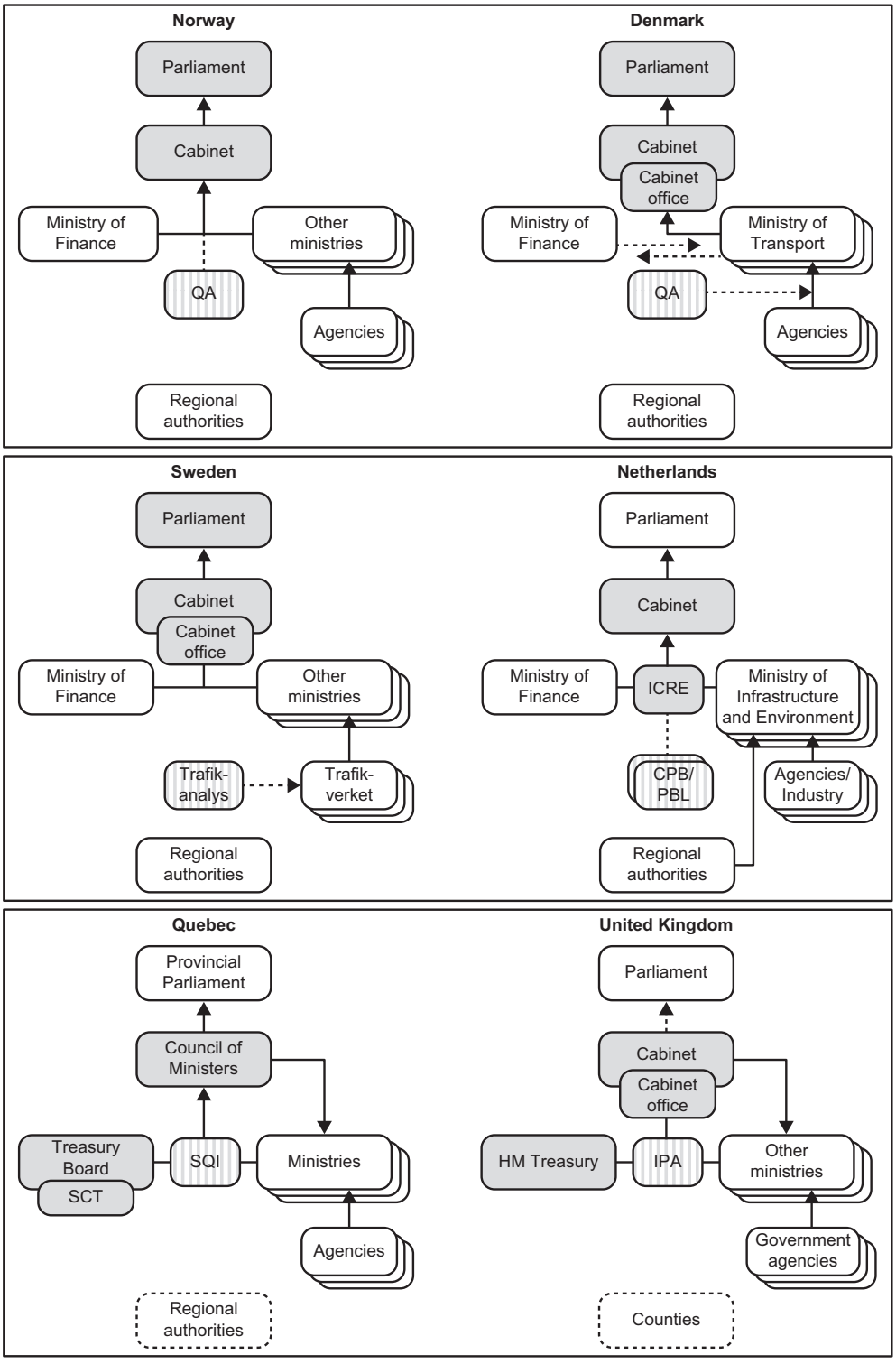

Figure 5: Responsibility for appraisal/quality assurance and decisions under the various governance schemes in six countries.[7]

[7]ICRE, inter-ministerial commission for improvement of the structure of the economy in the Netherlands; CPB, Netherlands Bureau for Economic Policy Analysis; PBL, Netherlands Environmental Assessment Agency; SCT, Secretariat du Conseil du trésor; SQI, Société Québécoise des Infrastructures; IPA, Infrastructure and Projects Authority.

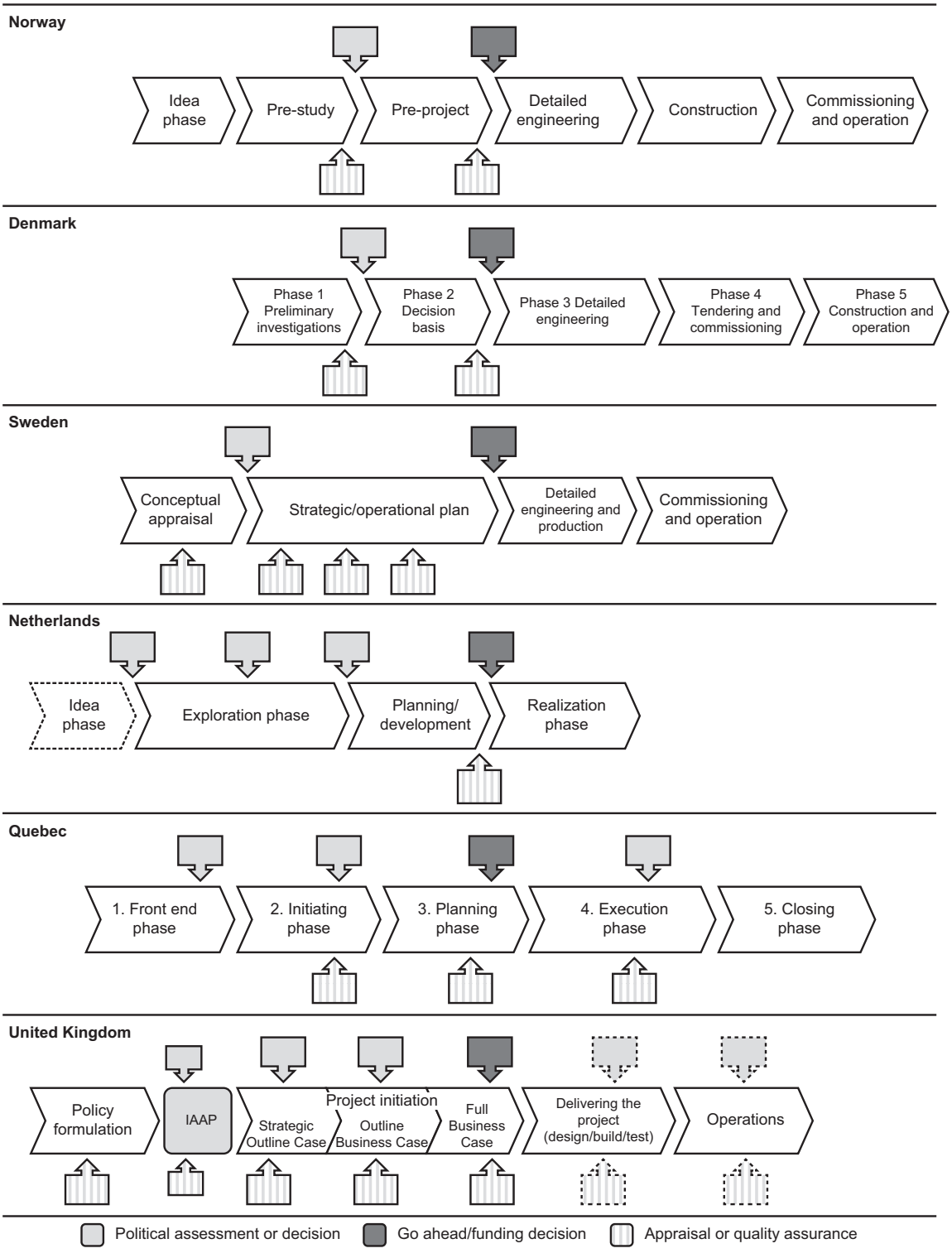

Figure 6: Summarized versions of the six stage-gate models.[8]

[8]IAAP is an integrated assurance and approval plan.

and independent reviews required at the various stages. The number and names of the phases are more or less the same in all countries, but we find larger variation in the number and locations of reviews and decision points, as shown in Figure 6. The Scandinavian countries are distinguished by formal decision points and quality assurance being limited to the front-end phase, whereas the other three countries have follow-up points during project implementation and closure, and in the United Kingdom, for some projects all the way into the operational phase.

As far as the number of decision points is concerned, Denmark and Norway have the simplest schemes, with only two decision points. With regard to quality assurance, the Netherlands have the simplest arrangement, with only one review. Quebec and the United Kingdom have the largest number of decision gates. The UK scheme is the most comprehensive, involving the most detailed control measures and requiring the preparation of a separate plan for the subsequent follow-up and quality assurance of each project. However, the UK model is also flexible in the sense that the number of intervention points and their scopes are decided on a project-by-project basis and may be changed throughout the project.

It should also be noted that the scope of a review varies. The reviews in the Norwegian scheme are rather time consuming, inasmuch as the quality assurer is required to perform his or her own independent analyses, and not only oversee the work that has been done. By contrast, in the UK scheme, the number of checkpoints is large, but each quality assurance exercise is slightly simpler.

In Norway, the first decision point concerns the choice of concept, after the pre-study phase. In recent years, some of the other countries have introduced a formal decision gate at an even earlier stage. In the United Kingdom, for example, the Starting Gate review process was introduced in 2011, clarifying the strategic premises underpinning the choice of alternative concepts, but not involving technical analyses of specified alternatives at this stage. The first stage of the business case is not a detailed appraisal of alternatives, but rather a rough analysis, with the purpose of reducing the opportunity space from a long list to three or four alternatives. Similarly, the Dutch scheme is strongly focused on early assessment of solutions to a problem and broad involvement of stakeholders. This is an interesting observation, as it is generally appreciated that premises laid down at this stage may have a decisive impact on the actual choice of concept. In Norway, early experiences indicate that at the QA1 stage many premises are already laid down and some stakeholders have high expectations related to a specific solution. In such cases, we may see that the pre-study includes alternatives that are variants of the same concept rather than truly different solutions.

Cost Estimation

As far as cost control is concerned, a key element of the Norwegian governance scheme has been the introduction of a *budgeted cost* and a distinct, lower *target cost* for the agency. The difference between the two figures is the contingency reserve, which is normally controlled by the line ministry. The figures are based on probability-based cost estimation (using the "successive principle") and are reviewed by external consultants who will normally recommend a budgeted cost at or close to P85, and a target cost at P50. Parliament's decision normally follows the recommended figures.

Norway and, recently, Sweden too are apparently alone in using probability-based estimation in each project. Denmark has an advanced system and methods for cost estimation, including an extensive cost database, but a basic cost estimate is applied, to which is added a general supplement of 10% for the agency and 20% for the ministry. The 20% supplement is thus available at the portfolio level, and is transferable from one year to the next. Hence, the latter provides the ministry with somewhat more freedom of action than under the Norwegian scheme. In the United Kingdom, there does not seem to be a distinction made between target cost and budgeted cost, but an uncertainty level is chosen for each case (e.g., P50 if central government is willing to assume a high risk of cost overruns or if the project forms part of a large portfolio) and optimism bias correction factors are used, based on rules of thumb tailored to the chosen uncertainty level. The other countries apply a budget that has to be adhered to, but may add a notional supplement that is not to be exceeded; however, if this does happen, the government must be informed.

We have not been able to address specifically the experiences of individual countries with the various budget estimation principles in this study, but this would be an interesting issue for potential follow-up. Lessons from the Norwegian model thus far indicate that projects under the scheme are now largely completed within their cost frames (Volden & Samset, 2017). The deviation between the final cost and the target cost is almost symmetrically distributed around the median. Hence, at the portfolio level, the government is able to control the cost of major investment projects more effectively. Whether this can be explained by the use of stochastic estimation, thorough external quality assurance, or the practice of establishing a lower target cost for the agency, or a combination of these, remains to be proved.

Co-Funding Requirement

In all six countries, the governance schemes are applicable to projects with central government funding; however, they are often initiated locally and benefit specific groups or regions, thus giving rise to perverse incentives (Volden & Samset, 2015). The conditions attached to such funding differ between the countries. The Scandinavian countries

stand out in that generally they do not require co-funding from those who will benefit from the projects. The exception is the road sector in Norway, where a significant element of user charges has been introduced in recent years. The Netherlands is distinguished by *requiring* co-funding from local authorities who come forward with a project proposal. The rationale is that this signals commitment and a willingness to pay, which increases the likelihood that the project idea is feasible. There is also a requirement that all investment initiatives in excess of EUR 60 million (approximately US$64 million) have private co-funding. The rationale is that this will result in more weight being attached to long-term revenue flows (in the form of user fees) as well as efficient project implementation. In the United Kingdom and Quebec, the central government has signaled a desire for co-funding from local authorities and the private sector in certain areas, although there is no requirement.

Transparency

Transparency is a key criterion for defining good governance. As noted by Klakegg and Volden (2016), the public sector depends on transparency as a means of strengthening accountability, where the private sector has competition. In major public projects, it is a question of ensuring that the decision-making processes and administrative processes are well documented. There is also a prerequisite for another governance principle—participation—in order to give stakeholders and the general public an opportunity to express their views in the process.

The Norwegian scheme attaches great importance to transparency. The Ministry of Finance currently funds a research program to follow the scheme closely and collect information about the projects. All QA reports are published on the program's website.[9] This has undoubtedly made all the actors involved, including the reviewers, put a lot of effort into their work and has resulted in high-quality plans and estimates. Furthermore, as the projects are finalized and enter their operational phases, cost figures and other project results are made available to the public.

None of the other countries seems to practice the same level of transparency as Norway, although several of them have expressed a concern for this matter. In the United Kingdom, the IPA publishes valuable information about major projects in its annual reports, although most of the data are on the group level and published with a considerable time lag. Preliminary evaluations of the UK scheme recommend that more data be published earlier and at the project level. In other countries, there is hardly any publicly available information about the projects.

The Portfolio Perspective

The Norwegian governance scheme focuses on requirements applicable to individual projects, and does not impose explicit portfolio evaluation requirements. The same is essentially the case for the schemes in all other Scandinavian countries. Nonetheless, it must be expected that the high level of transparency will make it easier for the line ministries to make decisions from a portfolio perspective. It must also be expected that overall project risk and the need for a contingency reserve will be influenced by whether or not the project forms part of a larger portfolio.

In the Netherlands, the MIRT program was introduced along with the requirements applying to the individual projects. The intention was to ensure coherence and synergy and to facilitate portfolio management within the Ministry of Infrastructure and the Environment. The UK and Quebecian schemes are also intended to include a portfolio perspective, inasmuch as a central government unit is responsible for compiling data on all infrastructure projects in the portfolio, thus making it possible to analyze and manage them collectively. These units are also responsible for training and facilitating learning across sectors; thus, both the IPA (United Kingdom) and, to some extent, the SQI (Quebec) have similarities with an organization's strategic PMO, although in this case working on the central government level. It should also be noted that in the United Kingdom, quality assurance is to be performed not only on individual projects but also at the program and portfolio levels at regular intervals. However, there is much to suggest that this potential has not yet been realized.

Assessments and Conclusions

A number of international studies have highlighted the problems of managing public investment projects with respect to operational, tactical, and strategic aspects. Special measures are therefore required to ensure successful implementation and outcomes. Norway was a pioneer and, in the year 2000, introduced an overarching governance framework for major public projects. The framework and its effects, some of which are very encouraging, have already been presented in earlier literature. In recent years, a number of countries have introduced similar frameworks in which independent quality assurance is duly coordinated with the decision points. Six schemes are presented and compared in this study.

We found that the six governance schemes have many characteristics in common. They were all established for project governance by central government, and they apply to large projects that involve particularly high costs, risk, and complexity, or that are highly innovative. They all apply a stage-gate model at the project level, with clearly defined roles and responsibilities, including independent quality assurance reviews of project documentation at specified decision points. They also have measures to avoid optimism bias in the cost estimates, and they place key decisions, as well as responsibility, for managing the scheme at a high level in the system.

[9]Retrieved from http://www.ntnu.no/concept/ks-rapporter

Overall, the schemes seem to be fairly consistent with the recommendations from the literature; some exceptions are that only the Netherlands requires co-funding from beneficiaries to obtain state funding, and only Norway highlights transparency at the project level. Furthermore, there is potential for improvement in several countries when it comes to integrating the portfolio perspective. The various schemes' emphases vary somewhat, but we have observed a general development over time toward more focus on the front-end and the choice of concept. This is in line with general development within the project management community (Morris, 2013). All six countries now require needs assessments and the evaluation of alternative conceptual solutions, which demonstrates that their importance is duly acknowledged.

At the same time, we know that the final project choice is not only the result of systematic investigation of alternatives by professionals and experts. In many cases, the politicians' priorities carry more weight, and this needs to be tolerated within a democratic political system. It is nevertheless essential in a project governance scheme to bring in technical and economic expertise at an early stage in order to identify and, if possible, eliminate the worst alternatives or conceptual solutions. Within a political reality, there is no guarantee that the best alternative will be chosen, but we can possibly avoid the worst ones. To quote Herbert Simon (1976), in many cases the realistic scenario would be not to aim for "maximizing," but to put the bar at "satisficing."

There are a number of significant differences between the six schemes, such as in the use of internal or external experts, in the demarcation between the political and technical spheres, and in the comprehensiveness of the schemes, the organization of the schemes, and the extent to which projects are assessed individually or as part of a public project portfolio. Some of the differences can probably be explained by historical and cultural differences, such as the Scandinavian countries' involvement of Parliament in the approval of individual projects. However, both Norway's and Denmark's use of private consultants as opposed to the United Kingdom's and Quebec's use of a government unit, is not what might be expected (cf., the Nordic "strong state" tradition versus the Anglo/American market orientation). All in all, we are faced with two main types of project governance schemes: the schemes in the Scandinavian countries and the other schemes. The former are relatively simple in terms of the number of intervention points, although these may be comprehensive in terms of which analyses are to be performed. The schemes do not intervene significantly in existing processes and practices, but impose new qualitative requirements with regard to appraisal and documentation. The schemes in the three other countries are more ambitious and extensive, with more follow-up points, also during the implementation phase. With regard to Williams et al.'s (2010) distinction between governance of and governance through projects, it might be claimed that whereas the Scandinavian schemes are only about governance *through* projects, the other schemes are also about governance *of* projects. The United Kingdom and Quebec have altered the organization of their schemes several times, and now have centrally placed units with a clear mandate to managing the quality assurance function, as well as responsibility for the support and development of expertise, and compiling and publishing data on the portfolio level. In Quebec, a central organization is even mandated to serve as project manager for all major infrastructure projects.

The Norwegian scheme currently aims to achieve control over costs and progress, and also to ensure that investments deliver economic benefits. The scheme is intended to have a disciplining effect, both on the agents responsible for the projects and on their sponsoring ministries. The impact on cost control seems quite satisfactory (Volden & Samset, 2017). However, we need more knowledge about the effects of the various measures, such as the use of probability-based estimation, the role of private sector reviewers, the use of a lower target cost for the agency, and the focus on increased transparency. There are also objections relating to, for example, time and resource use, how the use of private consultants prevents the development of central government expertise, and the scheme being rigid and inflexible. It has also been argued that QA1 takes place too late and that the analysis of alternatives may turn into more of a ritual exercise than a forceful tool used to identify the best conceptual solution. In this regard, it would be useful to learn more about the experiences obtained with interventions at an earlier stage in other countries, such as Starting Gate reviews in the United Kingdom.

The schemes described in this article were all introduced in recent years and have not been in operation sufficiently long for any conclusions to be drawn as to their effects. The ultimate question is whether some schemes are more effective than others in improving project delivery as well as outcome, and to what extent an effective scheme can be applied also in other countries. This will be a topic for future research. The fact that there are several different governance schemes in operation is positive, and they might inspire alternative ways of organizing and implementing such schemes in the future. It should be noted that we have focused only on the top layer of project governance introduced by central government, assuming that the governance arrangements at the level below (e.g., line ministry, department, and agency) are in place to ensure tactical and operational project success. A topic for future research could be to address the question of whether the rather simple schemes in the Scandinavian countries are matched by the necessary requirements, guidelines, and training on the lower levels. Furthermore, we have only looked at the structural elements of a project governance scheme. Future research should

also seek to determine how these work together with the relationship-based elements on different levels of government.

A further hypothesis, which is perhaps too difficult to test, relates to the trickle-down effects, if any. This concerns whether improvements in project governance and governmentality on other levels and for smaller projects can be attributed to the overarching schemes discussed in this article. To date, the indications from the Norwegian scheme are that the spinoffs may be considerable, not only in the public sector but also among the external quality assurers, project management consultants, contractors, and suppliers, and in the research community.

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