Governance of Public Projects

Missing Out on Learning Opportunities

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Abstract

In this article, the authors draw on longitudinal research of the Norwegian governance framework for major public projects. The framework was introduced in the year 2000 and has developed from a hierarchical control regime toward a more holistic and relationship-based governance model. We show how this development relates to the evolving field of governance of projects. Although the impact of the framework is promising overall, we observe one area with considerable room for improvement: the ability to learn from previous projects. We discuss how to move on from here and implement effective learning cycles that draw on ex-post evaluations of completed projects.

Keywords

governance of projects, governance frameworks, public projects, evaluation, learning

Introduction

Project governance research took off two decades ago and has become a separate branch of the project management literature, inspired by numerous sciences and perspectives (Ahola et al., 2013). Ralf Müller has been one of the main contributors to the field of project governance and it can be argued that his many contributions, such as Müller (2009), Aubry et al. (2012), and Müller (2017), constitute a storyline that clearly explains how the field has developed over these two decades.

In the same period, project governance has also gained popularity among practitioners, including project owners and financing parties. One of the main aspects is the use of governance frameworks implemented to ensure successful investment projects (Samset & Volden, 2016). Governance frameworks for projects should be useful for project-based organization in the private and public sectors alike, but we will argue that they are particularly vital in the public sector. There are many challenges facing public investment projects that must be overcome to achieve project success, such as a lack of competence among planners, hidden agendas during planning, underestimation of costs and overestimation of benefits, unrealistic and inconsistent assumptions, and how to ensure essential planning data and adequate contract regimes (Samset & Volden, 2016).

Norway was one of the countries that introduced a mandatory governance scheme for its largest public projects at an early stage (in the year 2000). This has since been developed, inspired by the academic literature as well as experience. The authors of this article have followed the Norwegian scheme though its 20-year journey and have seen how it has developed and improved over time—from a hierarchical control regime that focused mainly on getting the budget right, toward a scheme that focuses on project success in a broader perspective that seeks to balance the needs of various stakeholders. The current version of the

scheme is close to Ralf Müller's concept of an effective project governance model, where governmentality is also addressed (Müller, 2017). The governance regime studied in this article focuses on governance of projects and not governance of project-based organizations (PBOs), even though the governance of agencies could have been viewed as such (Volden & Andersen, 2018). Governance of agencies is not part of the Norwegian regime.

The results of the model are promising. Most important, the scheme has given the government greater control of the total cost of its investment project portfolio (Welde & Klakegg, 2022). Furthermore, the scheme ensures that project selection is based on a broad assessment of overall needs and goals, as well as alternative ways of achieving these goals (Volden & Samset, 2017a). Some other countries have established similar formal, cross-sectorial project models for public investment projects in recent years, with similar good results (Klakegg et al., 2016; Volden & Samset, 2017b).

However, in one area we believe there is still considerable room for improvement: The ability of project managers, project owners, and other actors to learn from previous successes and failures to improve future practices is still weak. It seems that the lack of learning is a shortcoming of an otherwise well-functioning model, and it also demonstrates a gap in the project governance literature. This is the topic of our article.

Learning and knowledge management have long been a key topic in organization theory (Senge, 1990) and have also been studied in relation to projects over the last two decades. Organizations tend to struggle with learning, and Fillion et al. (2015) noted that "very few organizations until now can praise themselves to be on the road of becoming 'true' learning organizations" (p. 87). This is especially true for project-based organizations where effective sharing of knowledge *across* projects has proved to be challenging (Principe & Tell, 2001; Wiewiora et al., 2009). Therefore, projects tend to repeat the same mistakes over and over,

instead of learning from previous projects. Project governance frameworks should aim to facilitate knowledge transfer and learning, but do they? This topic has not yet been the subject of research, but our impression from practice is that project governance frameworks have not succeeded in implementing effective learning cycles in and across the organizations they include. Thus, we ask: How can project governance frameworks be improved through an increased focus on learning?

We will use the Norwegian project governance framework as our case. The research is qualitative and not based on one particular study but rather a wide spectrum of research findings from the Concept Research Programme that has followed the scheme for more than 20 years, as well as the authors' own knowledge of the framework during the same period. We will pay particular attention to the use of ex-post evaluations, which have been conducted systematically since 2012 but seem to have had a limited effect on learning (Welde & Volden, 2024).

We start by reviewing the literature in the next section. We draw on the literature on project governance, learning organizations and knowledge management, and evaluation. Furthermore, we present the research approach and data, and thereafter the case, the Norwegian governance framework, and its development over 20 years. Next, we discuss how and to what extent knowledge is transferred between projects and learning loops implemented in the scheme, and we discuss how the project governance framework can be further developed and improved by introducing systematic learning mechanisms. We conclude by proposing a governance model that uses evaluation and other mechanisms to achieve effective learning and, ultimately, more successful projects.

Extant Literature

In this section we present and discuss the three main strands of literature we have found relevant for our study. These concern project governance, learning in project-based organizations, and evaluation.

Project Governance

In general terms, *governance* relates to "all 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). Governance can thus be studied at different levels and in different fields, including public governance, corporate governance, global governance and project governance.

The literature on governance in relation to projects has expanded over the last two decades. It seems to have started with Reve and Levitt (1984) in relation to construction and was followed up by Morris and Hough (1987), sparking the studies of major projects. Later, Winch (2001) proposed a framework for governing project success, and Turner and Keegan (2001) pointed at the roles of the broker and the steward as two fundamental mechanisms of governance in the project-based organization. A much-cited textbook by Ralf Müller (2009) defined project governance as a subset of corporate governance, where project governance is introduced to allow projects to achieve organizational objectives and foster implementation that is in the best interests of all stakeholders and the corporation itself. This corresponds well with Morris and Geraldi (2011), who defined project governance as the institutional level of managing projects, which focuses on shaping the context and conditions to support and foster projects. Project Management Institute (PMI) defined project governance 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" (PMI, 2013).

Governance *regimes* for major investment projects comprise the often-formal processes and systems that the financing party must implement to ensure a successful investment (Volden & Samset, 2017a). The concept of a governance regime may be associated with a rather authoritarian form of governance. This points back to the origins of the term government (Klakegg, 2010). Narayanan and DeFillippi (2012) suggested that project governance incorporates five elements: (1) stage-gate approval processes; (2) formal roles and responsibilities; (3) stakeholder representation; (4) quality assurance; and (5) contracts and sign-offs.

Certain project phases are more critical and in need of governance arrangements than others. Several authors have highlighted the crucial role of the front-end phase (Shenhar, 2004; Williams & Samset, 2010; Morris, 2013; Samset & Volden, 2016). Flyvbjerg (2017) discussed challenges in megaprojects and argued that biased appraisals and early lock-in to an inferior concept is a major problem. Similarly, Müller (2009) emphasized that the selection and prioritization of projects is a key issue in a project governance model and that it is closely related to the organization's portfolio management.

Several standards and guidelines have been developed to address project governance models further. Such standards and guidelines vary in their levels of detail. Some models are behavior oriented (i.e., require that certain detailed rules are followed such as common project management methodology), whereas others are outcome oriented and thus give more autonomy to the project manager. These two paradigms were denoted as bottom-up and top-down by Müller (2009).

Some organizations have established project management offices (PMOs) that often play a central role in a project governance framework (Hobbs & Aubry, 2008; Morris & Geraldi, 2011; Müller et al., 2014). Other institutions commonly used in the governance of individual projects are the project sponsor, the project board, and various advisory groups and quality committees (Müller et al., 2016). Aubry et al. (2012) studied PMOs from a knowledge management perspective. The fundamental ideas were that innovation is essential for organizations, learning is essential to innovate, and communities of practice are a good approach for organizational learning. Aubry et al. found that PMOs most frequently have controlling and supporting roles, and that knowledge is more likely to be shared when PMOs are in a partnering role in a community.

There is also a human side of governance. The term *governmentality* was first introduced in sociology by Foucault (1978) as a broad concept including both the structural and human sides and as a neoliberal concept assuming that people are free to choose, rather than subordinates. Clegg et al. (2002) were the first to bring it into the context of projects, as they studied alliancing and collaboration. Müller et al. (2015) further developed the governmentality term in the project context, as a combination of *governance* and *mentality*, and addressed such aspects as top management's attitudes and ambitions regarding project work, support, and confidence in the project manager; and, more generally, the cultural values that members of an organization share and respect. Similarly, Klakegg and Meistad (2014) referred to the distinction between structure-based governance and relational governance. The former typically involves what is referred to as project governance regimes, whereas the latter includes non-hierarchical elements such as leadership, motivation, trust and ethics, alliances and involvement of stakeholders, and informal relations.

Most of the project governance literature has its origins in the private sector, but the findings and recommendations are also relevant to the public sector. Some studies focus on

governance of state-funded projects at the country level in relation to political processes and policy forming. Their perspective is on overarching institutional arrangements established by central governments to ensure that projects succeed across different public organizations (Williams et al., 2010; Klakegg et al., 2016; Volden and Samset, 2017b). Volden and Andersen (2018) suggested that public project governance should be seen as a hierarchical system, with the government's overall requirements at the top, followed by ministries and agencies' project governance frameworks that apply to their respective subportfolios of projects.

Müller (2017) edited an anthology that expanded on the governance and governmentality aspects of projects. Here, the relevant governance theories, models and paradigms, as well as the institutions implementing the governance of and in projects, were gathered. The book gave an overview of the consequences of governance and governmentality as exemplified for private and public sectors. The underlying ambition was to address the gap between governance in projects and the organization in which it is incorporated. Müller's own contributions in the anthology pointed to the organizational characteristics that make up the prerequisites for project-related governance—the tactical level of project governance and governmentality and the strategic enablers.

Later works by Müller led into the realm of network governance (Wang et al., 2023) in interorganizational temporary organizations, rethinking project governance (Song et al., 2022), and who the legitimate agents of social change are in times of crisis and grand challenges (Konstantinou & Müller, 2023). This points more toward current trends in society and new perspectives of governance. In 2023, Müller edited a research handbook on the governance of projects, which provides a comprehensive overview of research in the field as of today (Müller et al., 2023).

Learning and Project-Based Organizations

Learning and knowledge management have been key topics in organization theory for decades. Argyris and Schön (1978, 1996) were influential in developing the theory of action and defining the two learning loops: Single-loop learning is often associated with "doing it right," and double-loop learning is associated with "doing the right thing." In relation to projects, we could say that the former concerns project implementation and the iron triangle, whereas the latter concerns project selection and wider strategic success. Both levels may be associated with governance.

Several authors have tried to understand *learning in organizations*. A seminal contribution was made by Senge (1990), who defined five disciplines that learning organizations need to apply: (1) building a shared vision; (2) systems thinking; (3) mental models; (4) team learning; and (5) personal mastery. Similarly, Garvin (1993) identified five main activities that learning organizations must be skilled at. Nonaka (1991) distinguished between *explicit* and *tacit* knowledge and highlighted the importance of developing an organizational culture that supports both. However, it turns out that becoming a learning organization is not easy in practice, and Fillion et al. (2015) noted that few organizations have succeeded in becoming learning organizations.

Argyris (1991) argued that well-educated and high-powered people may have specific problems with achieving double-loop learning. Ironically, this is because they are so successful at what they do and rarely experience failure; therefore, whenever their single-loop learning strategies go wrong, they become defensive and place the blame elsewhere (defensive reasoning). To overcome this learning dilemma, professionals must learn to critically examine their own behavior. They must be willing to discuss what has been

"undiscussable." This view is supported by Sidani and Reese (2020), who maintained that learning organizations are more egalitarian and move away from a fixed hierarchy.

It has been noted that project-based organizations face specific challenges when seeking to learn from experience. There is no doubt that a lot of knowledge is created in and through projects. In fact, one of the reasons for using projects as a way of organizing work, is that it allows for a flexible and innovative response to the problem at hand (Swan et al., 2010). However, learning is not naturally transferred to the organizational level (Ayas & Zeniuk, 2001). The temporary nature of projects is one obstacle, which may lead people to think that projects are too different to compare (Cooper et al., 2002; Williams, 2008; Zhao et al. (2022). Another obstacle is time constraints (Wiewiora et al., 2009). A third obstacle is the complexity of projects: Gann and Salter (1998) noted that projects as a way of organizing work is often used for complex products and systems and highlighted the need for understanding management practices to link projects and business processes.

Ralf Müller has contributed not only to the governance literature, but also to the literature on project-based learning. Müller and colleagues noted that in most project-based organizations, resources are intangible and knowledge based, and that their competitive advantage is the ability to rapidly deploy this knowledge in new contexts. This implies that there is a built-in conflict between intraproject learning and cross-project learning (Pemsel et al., 2016). Other researchers have made similar assertions. Scarbrough et al. (2004) found that the conditions that promote high intraproject learning (such as autonomy) also creates learning boundaries that result in low cross-project learning. The authors suggested that a distinction should be made between (1) projects in need of an innovative approach where intraproject learning is crucial and (2) repetitive projects that are in need of interproject learning.

The potential for learning across projects is great, however. Kerzner (2000) placed continuous learning and improvement as the highest level of project management maturity.

For a recent literature review on learning in project-based organizations, see the work by Söderlund (2024). Key contributors in this area have focused on the need for project-based firms to develop comparative advantages in the forms of competence and capabilities that can be reproduced in new projects (Gann & Salter, 1998; Brady & Davies, 2004; Söderlund, 2008). In doing so, they need to combine bottom-up learning that occurs when exploring a new market or technology, and top-down learning that occurs when firms exploit their capabilities required to perform more predictable project activities (Brady & Davies, 2004). These two types of learning are also referred to as exploration (or feedforward learning) and exploitation (feedback learning) (Wiewiora et al., 2019). Söderlund (2008) took a step further and defined three learning processes, which probably work in parallel: (1) shifting,, which revolves around major shifts; (2) adapting, which is related to continuous learning; and (3) leveraging, which focuses specifically on knowledge transfer across projects.

Knowledge transfer can take place in formal and structured ways, for example, through training courses, standards and templates, and benchmarking or in more informal ways (Beste, 2022). Prencipe and Tell (2001) identified mechanisms that project-based organizations use to promote interproject learning and categorized them into so-called learning landscapes. The authors noted that some firms focus merely on *codification*—the process of transforming knowledge into information that can be stored in databases and end up in manuals and guidelines. Others focus more on the sharing of *tacit knowledge*, through person-to-person contact, knowing that learning is situated in social practice and that not all knowledge can be codified. The authors argued that different strategies will be best for different firms.

Swan et al. (2010) argued that project-based firms generally only learn from projects via sharing of tacit knowledge, whereas attempts to codify the knowledge are likely to be ineffective, given the time-structuring and temporary nature of project work. Additionally,

the sharing of tacit knowledge is most effective in organizations that are truly project-based and where project management capabilities are well-developed.

Wiewiora et al. (2019) noted that while *feedforward learning* is facilitated by fostering experimentation, risk taking, and a decentralized structure, *feedback learning* may benefit from a stricter focus on routines and efficiency. Similarly, Whyte et al. (2008) studied how visual practices were used to manage knowledge in two case firms. They found that one firm used it for joint sensemaking around an unstructured problem (i.e., feedforward learning), whereas the other used it for efficient planning and delivery when solving a structured problem (i.e., feedback learning).

Project management offices are often given special responsibility for facilitating knowledge transfer in project-based organizations, as discussed by Kerzner (2003). The PMO becomes a "guardian of project management intellectual property" by establishing systems for information collection and sharing such as a performance failure information system identifying the causes of failure, a risk management information system, or postmortem documentation of lessons learned (ibid.).

Another relevant article on learning in project-based organizations is Eltigani et al. (2019). Through a series of case studies, the authors identified 13 learning modes and argued that mature organizations (with higher learning capability) tend to exhibit a greater number of learning modes. The 13 modes were categorized into four sets of learning modes:

- Codification of knowledge;
- Contextual learning, which includes understanding context and research;
- Organization-wide practices beyond project management, including learning from external sources, use of benchmarking, and training and education; and

- Promoting the culture of the organization by fostering innovative thinking and face-to-face and leadership-led learning.

Pemsel et al. (2016) made an empirical study of how knowledge governance strategies differ between firms and developed a typology of such strategies. The strategies differed in several dimensions, such as their focus on routines and procedures, the extent to which they encourage an atmosphere of openness, and whether they have R&D units and so forth. For example, while some firms focus on developing talents, others focus on hiring competent people. The authors found that the choice of strategy is typically driven by attitudes toward humans, on knowledge and on knowledge control. They also suggested that managers' attitudes have a significant effect on organizational culture.

When learning in project-based organizations is discussed in the literature, the perspective taken is normally that of a traditional organization (e.g., a firm or a public agency). Thus, learning across projects means learning across projects *within that particular organization*. However, for the purpose of this article, it is interesting to note that some authors also discuss the wider context that organizations are part of. It is argued that the projectification trend seen over the last 30 years has created a "project society" in which projects dominate economic activity even in the public sector (Lundin, 2016: Winch, 2024). Grabher and Ibert (2011) used the term "project ecology" and noted that different ecologies may have different logics and learning practices (e.g., the software ecology has learning processes that differ from the advertising ecology). Similarly, Davies (2017) described "London's megaproject ecology" where many large projects have been planned and implemented in London over the last decades, in parallel and consecutively, involving many of the same organizations that collaborate on various levels and learn from one another over time.

Evaluation as a Source of Learning

Evaluation is the systematic investigation of the feasibility of projects or other interventions (Rossi et al., 2004). The purpose of evaluation is threefold: accountability, management, and learning. Evaluation with a learning purpose should not just provide a "yes" or "no" answer to whether a project succeeded. Instead, an open-ended mandate is required, to focus on and gain a deeper understanding of causes and effects. Furthermore, in a learning perspective, it is often more useful to study groups of several projects than only one project (Samset, 2003).

Ex-ante evaluation, in the form of project appraisal, is common in public as well as private projects and is used to ensure that the right projects are selected and implemented efficiently. Ex-post evaluation, on the other hand, is rare, especially in a strategic perspective. Many project owners do not know whether the intended effects were achieved and whether assessments and forecasts were realistic or not (Samset & Christensen, 2015). Worsley (2014) referred to ex-post evaluations as "the weak link" in the assessment process for transport projects in OECD (Organisation for Economic Co-operation and Development) countries.

Evaluation can be an important source of learning from previous projects to use in future cases; however, it is a general challenge that evaluations are not always used to improve practices as intended (Dahler-Larsen, 2012). Wrong use, as well as non-use, of evaluations have been topics within the evaluation literature for decades (ibid.). Many evaluations are more ritual and symbolic than truth-seeking. In a project-based setting, Swan et al. (2010) indicated that post-project reviews were often not used effectively and sometimes simply ignored.

Possible explanations can be related to the quality of evaluations, low perceived relevance for the target group, lack of standardization (making it difficult to compare results across

projects), and explanations related to power and politics (i.e., unwillingness to use the results) (Welde & Volden, 2024).

More than 20 years ago, Williams et al. (2001) observed that "even when post-project reviews are performed, there are no standard, structured, routine ways of analysing projects to ensure that the organization can draw lessons and learn for future projects." Later, several methods have been suggested, for example Williams (2004, p. 273), who stated that "what are needed are simple, practical analysis methods that can be used routinely in post-project reviews to explicate how the project out-turn resulted and to identify the lessons which need to be learned." Samset and Christensen (2015) argued that ex-ante and ex-post evaluations should essentially use the same evaluation criteria. This is said to be "particularly important in constructing learning loops that function over time" (p. 14).

Bourne et al. (2020) focused on learning through project reviews and other performance data. The authors discussed the use of this data in the public project governance scheme in the United Kingdom. They defined three levels of systems in government projects: the project, the department, and the Infrastructure and Projects Authority (IPA) as administrator of the scheme. Each actor should interpret the performance data and learn from it at their respective level, for example to improve ongoing activities (project team), to improve playbooks for the wider processes (department), and to improve the entire system (IPA). A key task for the IPA is to facilitate learning. Many of the activities undertaken by the IPA, such as education, standard-setting and development of the profession, are appropriate system-level activities. However, the authors argued that reviews and performance data could be put to better use with the involvement of the lower levels in the analytical process to interpret and act on the data. The authors also argued that the IPA should focus more on the broader project cycle (front-end phase and after handover), which will contribute to more learning and better insights.

Generally, it is important to plan for how to integrate evaluations in the organization's learning cycles, along with other sources of learning (Welde & Volden, 2024).

Our Study in Relation to the Literature

Our study is rooted in the project governance literature, and our focus is on *governance of projects* from an organization-wide (in this case system-wide) perspective, rather than *project governance*, which in Müller's (2009) terminology refers to the governance of a single project. Our aim is to extend previous knowledge of public project governance frameworks and how such frameworks may facilitate learning across projects and organizations. As part of the research, we also draw on the literature on learning and knowledge management, as well as the literature on evaluation, seeking to integrate the three strands of literature.

While previous studies of the Norwegian and other similar schemes have focused mostly on the formal aspects of governance, such as the effect of external reviews on cost control, we will take a broader perspective, in line with Müller (2017). Good governance requires a balance of control and support measures. Similarly, we expect that this is the case for learning. Project managers and owners should face hard incentives to acquire and share knowledge and they also need arenas and tools that support these efforts. PMOs and similar units may play important roles, for example in ensuring that standards and tools are based on best practice and in providing training, as noted by Müller (2009) and others. However, the literature has clearly demonstrated that project-based organizations struggle with learning and that few can call themselves "learning organizations." We expect the challenges to be even greater in a system that involves both ministries and their subordinate agencies. It should be noted that our study object is the whole system of government investment projects across ministries and sectors. This could be referred to as a "public project ecology" but we also find

it interesting to interpret it as a particular type of project-based organization—with loose authority but still with a common project governance regime that applies to the whole system.

The Norwegian scheme provides an opportunity to investigate various aspects of interproject learning within this type of system. This is a case the authors know well, with access to rich data. It involves several organizations, different types of projects, and varying levels of project management maturity. It also involves a research program that collects data and experience for all involved parties to use. We apply and reflect on all this data and discuss the extent to which the scheme and its actors are actually learning, and which types of learning are involved, using key terms from the literature such as single- and double-loop learning, feed-forward and feedback learning, and formal and informal learning.

To understand how the scheme can affect learning, we need to look broadly at mechanisms that are in use, which may encourage the sharing of tacit knowledge, as well as codification. We will pay special attention to ex-post evaluations and their learning potential. A well-established problem in the evaluation literature is that projects are rarely evaluated ex-post, whereas another problem is that when evaluations are conducted, their use in learning and improvement processes is often limited. Since ex-post evaluation is currently a systematic element of the Norwegian scheme, this provides us with an opportunity to study their role in the schemes' learning cycles.

Research Approach and Data

The research approach for this article is unconventional in that it is not based on one specific study, but rather draws on a large number of empirical studies and research findings from the Concept Research Programme over the last 20 years, in which the authors have been involved.

Research Context—The Concept Research Programme

Since 2002, with funding from the Ministry of Finance, the Concept Research Programme has systematically followed the projects and processes involved in the scheme and provided feedback to the involved parties in order to improve the scheme continuously.

Concept is often referred to as a trailing research program. The term trailing research was first introduced by Finne et al. (1995) as a model for program evaluation. Based on action research thinking, the idea was to have a team of scientists trailing a program in real time and providing feedback to the owner of the program. However, Concept is more independent of its owner than suggested by Finne et al.'s definition (Finne et al., 1995). Concept researchers try their best to take an outside view on their research object. Furthermore, the research object is very wide in terms of the sectors and organizations involved.

Concept is based at the Norwegian University of Science and Technology (NTNU) and cooperates widely with other R&D institutions. During its 22 years in operation, a small and relatively stable research group has collected data on more than 300 projects that have undergone the scheme, including transport, construction, defense, and major ICT projects. All the project-specific data is stored in a database, which includes documents from the front-end phase (planning and appraisal documents, quality assurance [QA] reports, etc.), media reports, termination reports, and other performance documentation. There is ex-post data from approximately 100 projects that have been completed to date, and comprehensive ex-post evaluations of 40 projects. Under the program, more than 80 separate studies have been completed in such areas as planning, decision-making, quality assurance, cost control, contract management, the use of incentives, benefits management, and portfolio management. Each study is based on a review of documents (cf. database) as well as interviews and other

data collected and analyzed for that particular study.[1] The program and its' data and research activities are described in more detail elsewhere (Volden, 2019; Young et al., 2020).

This Article

This article presents a qualitative case study using an exploratory and descriptive approach (Yin, 2014) with a specific country, Norway, as the case. The authors draw on all the material mentioned above as well as their own experiences and reflections. The authors have been part of the Concept research group for most of the period it has existed and involved in numerous studies. They have wide knowledge of the projects, processes, and actors involved in the Norwegian governance scheme for public projects.

The authors started by developing a detailed description of the governance scheme, its chronological development, and the actors involved (Ministry of Finance as scheme owner, ministries, agencies, quality assurers, research program, and others). They then defined the scheme as a project ecology or special type of project-based organization and looked at the type and extent of learning going on within it, with special focus on learning from past projects to future projects. Based on previous studies and our own knowledge of the system, we discussed how knowledge is created, stored, and transferred among projects in the Norwegian scheme, both within and across individual organisations, and the success factors and barriers for this to happen. The analysis was built around key concepts and categorizations identified in the literature on project governance, learning, and evaluation (e.g., formal versus. relational governance, single versus double-loop learning, and feedforward versus feedback learning). Data analysis consisted of rather simple qualitative coding, categorization, and summarizing of findings.

[1] https://www.ntnu.edu/concept/publications

We finally discussed how the Norwegian scheme can be improved so that more learning takes place.

Quality of the Research

This research approach has two potential weaknesses, which we have sought to mitigate. The first is related to the research being part of a trailing research program assigned to monitor, assess, and contribute to improving the scheme in question (i.e., the object of research). As warned by Finne et al. (1995), there is a risk that trailing research may not be accepted as credible by all stakeholders. As with all research that is primarily qualitative, validity strategies must be incorporated to ensure trustworthiness of the findings (Lincoln & Guba, 1985; Creswell, 2014). In this study, we have extensively triangulated different data sources and perspectives as a way to control bias and build a coherent justification for the propositions. The authors have cross-checked their coding and interpretations of findings with each other and with colleagues and key stakeholders. We have also reflected on our roles, backgrounds, and potential biases. Hopefully, our long-term involvement and close relationships with actors in the scheme have been more beneficial than detrimental to the quality of the article.

The second potential weakness is that we have studied a single case (Norway), thus the findings may be less relevant to other countries. Although this is true, it can be argued that Norway is a "critical case," being in the forefront of developing and managing a project governance framework on a national level. Flyvbjerg (2006) argued that with a strategic choice of cases, it is in fact possible to generalize from very few cases or even from a single case. Critical cases permit logical deduction of the type "if valid for this case, it should be valid for all (most) cases" (ibid.). Here, the logic would be: If a country with an otherwise well-functioning governance scheme (Norway) faces challenges with obtaining efficient

learning loops, then we may assume that these challenges are relevant in countries with less developed schemes too. However, countries may organize their governance arrangements and learning processes differently, depending on cultural and other differences; the fact that Norway has a well-functioning governance system does not imply that it is the only or best system.

Presentation of the Case

In this section we present the Norwegian project governance scheme, its origin, historic evolution over time, and the scheme today.

Norway is often considered a pioneer in the structure-based governance of public projects, having introduced a scheme that applies to all the largest state-funded investment projects across sectors, with external quality assurance (QA) of the decision-making documents as the essential element (Samset et al., 2006; Klakegg & Volden, 2017).

The scheme was introduced against the backdrop of severe problems with cost overruns and benefit shortfalls in major public projects in the 1990s. A systematic review of the systems for planning, implementation, and monitoring of large public investment projects concluded that the projects were presented to Parliament at a premature level of investigation, with inadequate analyses or analyses based on false assumptions (Berg et al., 1999).

A further challenge with public projects in Norway has been that planning processes are sectorial and locally based. The front-end phase has typically been a bottom-up process where ideas are generated locally by those who benefit from the project, and there may be strong incentives to overestimate benefits and underestimate costs. This situation, referred to as perverse incentives in a study by Samset and Volden (2016), creates a classic principal–

agent problem. Thorough appraisal is typically conducted at a later stage when the conceptual solution has already been selected (Volden and Samset, 2017a).

Review of the Cost Estimate Came First

In 2000, the Norwegian Ministry of Finance introduced a governance framework applying to all public projects that exceeded a certain threshold level. The main content was the requirement that major projects' cost estimates and management base should undergo external quality assurance before the project was submitted to Parliament for approval and funding. This is currently known as QA2.

The control aspect is essential in the QA2 review to ascertain that the basis for the cost framework proposed to Parliament is sufficient. But it also has a forward-looking perspective—to ascertain that key challenges in the implementation of the project are identified. It is important that project needs, objectives, and scope are clearly defined, as well as the key requirements, timeframe, and budgets, and the project's uncertainty.

Framework agreements were signed with five groups of consultants—all with extensive expertise in project management and project cost estimation—to perform the QAs.

Two Control Points Since 2005

In 2005, the scheme was extended to include a mandatory conceptual appraisal and quality assurance of the choice of concept (QA1) prior to Cabinet's decision on whether or not to proceed to the preproject phase. The term "concept" refers to the conceptual solution that is chosen to meet a specific societal need. For example, the need to connect an island to the mainland can be solved by constructing a bridge, a subsea road tunnel, or ferry transport. Rather than start with a project of choice, the idea is to clarify the underlying problem that needs to be resolved, then identify solutions and assess their feasibility against these

conditions and requirements. The ultimate aim is that the concept chosen is the one considered to be the best use of public funds as measured by the cost-benefit analysis. The competence requirements for quality assurers were correspondingly extended to include economics and social sciences.

There was now a system with two consecutive control points, QA1 and QA2, preceding two different types of decisions: QA1 is meant to secure tactical and strategic success, and QA2 is meant to secure operational success. Since 2005, the content of the scheme has been largely unchanged. However, the threshold level has been raised, and there is increasing focus on the benefit side at the QA2 stage as well, with requirements to perform an updated cost-benefit analysis of the chosen concept and to present a benefits realization plan.

The Scheme Today

The content of the scheme is illustrated in Figure 1. The input to the QA reviews is produced by the respective ministries and government agencies, which in turn are responsible for following up the resulting recommendations. The quality assurers must review the documentation, undertake their own independent analyses and, finally, give their recommendations. The decisions are made at the political level without any obligation for the quality assurers to follow the recommendations.

In 2019, the scheme was formalized through a government circular, and at the same time its name was changed from “QA Scheme” to “The State Project Model.”

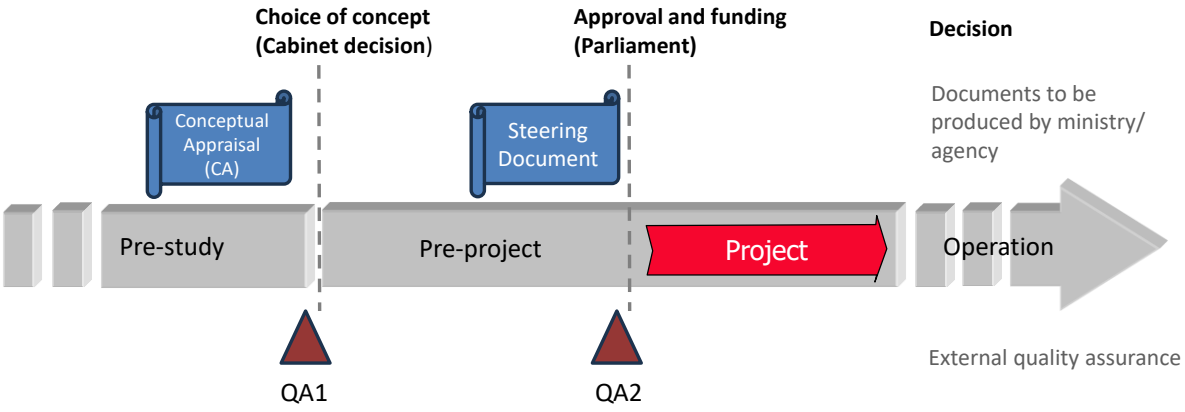

Figure 1. Content of the Norwegian governance framework for major public projects.

As part of the model, the Ministry of Finance holds a biennial QA Forum where different aspects of the scheme are discussed, including the need for guidance concerning the various elements of the analyses. Thus far, the Ministry of Finance has been very reluctant to issue instructions and guidelines. Short guides have been developed for specific topics such as needs analysis, goal hierarchies, cost estimation, and contract strategy, and the Ministry is now preparing to launch a more comprehensive guide to conceptual appraisals. There has also been discussion of the need to educate project managers and project owners, but this is not part of the framework today.

Trailing Research Over 20 Years

In parallel with the governance framework, a research program was established to accumulate information about the projects over time, develop improved analysis methods, and study the effect of quality assurance and other measures taken during the front-end phase (see also the section, "Research Approach and Data").

The Concept Research Programme's key activities include:

- Collecting written material produced by the projects and/or QA consultants from all the projects in the scheme (about 20–30 new projects each year). The material includes conceptual appraisals, steering documents, QA reports, and final cost. It is mandatory for projects to deliver this data to Concept.
- In 2012, Concept introduced a scheme of systematic ex-post evaluation of projects that were completed and had been in operation for several years. Each year, two to four projects that are completed and in their operational phase are evaluated (40 projects in total thus far). A standardized evaluation framework is applied, with six broad evaluation criteria: efficiency, effectiveness, other impacts, relevance, sustainability, and benefit–cost–efficiency.
- Thematic studies are conducted on various topics using qualitative and quantitative methods.
- Extensive dissemination and networking activities toward the Norwegian target group take place, including brief summaries and recommendations based on the research, and holding seminars, webinars, workshops, and other types of dialogue with ministries, agencies, and QA consultants.
- Giving advice to the Ministry of Finance regarding improvement points in the scheme itself and need for guidelines, templates, training, and so forth.
- Collaboration with international researchers and dissemination of results in peer-reviewed journals and conferences.

Analysis and Discussion

From Control Regime Toward Governmentality

In principle, the Norwegian scheme is rather simple in the sense that it has only two interventions, no detailed requirements, and it applies only to the largest state-funded

projects. The first version of the scheme included only one intervention and simply had a control focus on cost. Even with the broader two-intervention scheme in place in 2005, the main element was the external QA. There were no detailed guidelines or templates, or requirements concerning processes and organization of the work. This left a lot of flexibility to the ministries and agencies.

This is consistent with how the Norwegian government is organized and the egalitarian Norwegian culture (Klakegg & Volden, 2017). The scheme assumes that the agencies have appropriate procedures for project implementation, including good leadership, tools and techniques, competence and capacity, culture and ethics, and project management practices more generally. However, it should also be expected that the independent reviews have a disciplining effect and that agencies will take action to improve their practices.

There has been an evolution of the scheme over time, with increasing attention (from the Ministry as well as other parties) on the exchange of experience, developing guidelines, and other efforts to help actors succeed, and to harmonize appraisals and quality assurance. Müller (2009) pointed out the need for education, benchmarking of projects, and the use of maturity measurements to improve performance. This confirmed that the development we had seen in Norway was supported by theory.

In addition to the biennial Ministry of Finance's biennial QA Forum, the Concept Research Programme established arenas for communication and exchange of experience on the issues that were important for the QA scheme and the Ministry of Finance. The international Concept symposium has been held every two years since 2003 to learn from other countries and top international researchers. These initiatives were viewed as communities of practice.

The focus of the scheme has later developed into a maximation system for useability and business value—the 'agile pragmatist' paradigm, cf. Aubry et al. (2012). This is where we

see the framework today, under its new name (from 2019)—*The State Project Model*. With this new name and a stronger formal position as a requirement from the government, to a certain extent it even resembles the concept of a PMO in itself (taken as a whole, including the framework contracts and the Concept Research Programme).

Müller (2017) described three streams of definitions of governance: governance as a system of controls, governance as processes, and governance as relationships. These can also be used to describe shifts in the Norwegian scheme from only using hierarchical means at the outset (system of controls), via focus on decision-making (processes), toward more relationship-based approaches (relationships) in later stakeholder-focused periods. Obviously, all three governance perspectives are present in the framework today.

Improved Practices—An Indication of Learning

We clearly observe that learning and improvement have taken place over these 20 years. The current State Project Model is mature in several respects, and there is much evidence that major public projects in Norway are more successful today than they were in the 1990s. Most projects are delivered within time and budget, much to the credit of QA2 (Welde & Klakegg, 2022). Furthermore, QA1 ensures that project selection is based on a broad assessment of societal goals and alternative ways of achieving them. The mandatory conceptual appraisal increases the likelihood that the most effective option will be included in the analysis. Even though political decision makers are not mandated to follow the recommendations from the QA reports (and sometimes do not), at least they are now provided with broader, better, and earlier project appraisals (Volden & Samset, 2017a).

It seems that knowledge has improved at all levels: agencies, ministries, quality assurers, and the system itself. Analyses and reviews have become more harmonized and more in line with best practice. The Ministry of Finance has developed and improved the scheme itself over

time, with increasing focus on the very early stage and the strategic perspective. There is much to suggest that the largest public projects now constitute a *public project ecology* (cf. Grabher & Ibert, 2011) where experience is shared as project owners, managers, consultants, and academics take part in various project constellations, networks, and training and they change jobs.

We can even observe that similar schemes are being introduced for smaller projects and in other sectors, implying that learning has taken place far beyond the Ministry of Finance's scheme and those directly involved in it. Several regions and the largest municipalities in Norway have introduced similar schemes for their biggest projects. The same is the case for investment projects run by health authorities and high-voltage electricity transmission and distribution projects, which are not included in the model since they are not part of government directly but state-owned enterprises. There is also diffusion to other countries, as discussed in Klakegg and Volden (2017).

Finally, the Concept Research Programme has developed knowledge not only targeted at the actors currently involved in the model, but also for future project managers and project owners through the education system.

More Single-Loop Learning Than Double-Loop Learning

Although learning has clearly materialized at many levels, it is our impression that more single-loop learning than double-loop learning has taken place thus far.

Single-loop learning is associated with doing the project right, which is exactly what QA2 aims to ensure. By requiring external reviews of cost estimates and planning documents, the scheme provides project managers with incentives to acquire the necessary skills, data, and methodological tools to deliver realistic estimates and plans. The Concept Research Programme has contributed by publishing a series of reports with knowledge supporting the

development of robust budgets. The themes in the first 16 research reports focused on aspects of cost estimation subject to uncertainty and the basis for initial planning. These fundamentals are still valid today.

On the other hand, double-loop learning, involves reflecting more profoundly on the solutions that are chosen. When QA1 was introduced, the aim was to avoid jumping straight to discussing technical solutions, and rather to allow broader perspectives and the stimulation of creativity. Indeed, there have been improvements in these processes. However, research has also revealed numerous weaknesses and improvement points, primarily related to the earliest phase before the final choice of conceptual solution is made (Samset & Volden, 2016). For example, there is much to suggest that conceptual appraisals are still too narrow in terms of the project alternatives being assessed. A recurrent problem is that the solution has de facto been selected in advance, either because of path dependency in the agencies or political constraints and limitations (ibid.). A related problem is that low-cost alternatives are systematically ignored. Some of the studied appraisals of ICT projects only considered alternatives that involved the development of new, complex solutions, although simpler, off-the-shelf systems were available. Furthermore, although the agencies have become better at managing their projects over time, the same improvements have not been seen in the ministries in their role as project owners (Volden & Andersen, 2018).

More Feedforward Than Feedback Learning

We see examples of both feedback and feedforward learning (cf. Wiewiora et al., 2019). The scheme was introduced without detailed instructions for project management. This neoliberal top-down approach to governance was seen as the best (or the only) way to gain acceptance for the scheme from autonomous agencies. A positive side-effect of this lack of detailed instructions was that it led to a wide search for and testing of specific tools and methods, and

thus *feedforward learning*. This was particularly relevant for the prestudy phase and the conceptual appraisal, where both agencies and quality assurers were forced onto a steep learning curve, with a lot of trial and error (in relation to, inter alia, problem analysis, analysis of the opportunity space and assessment of public benefits). Only now, after 20 years, the Ministry of Finance is about to publish an official guide on how to conduct the conceptual appraisal. We have also seen new methods being piloted in the preproject phase and even during project implementation, related to, inter alia, relational contracts, and value-based implementation models. In several cases, researchers from Concept have followed these projects closely and documented the experiences.

We also see examples of *feedback learning*, in the forms of diffusion of tools and methods with documented effect, such as stochastic cost estimation, which was used mainly by the quality assurers at first, but is now used by the agencies themselves, even for smaller projects below the threshold level. Several agencies involved in the scheme have by now developed their own cost-benefit guides, which only existed in the transport sector before. That said, we believe there is potential for greater harmonization of methods and systems within and across sectors.

The Concept Research Programme in a Key Role

Eltigani et al. (2019) identified research as one of the 13 learning modes in project-based organizations. In the Norwegian case, the Concept Research Programme has played a key role in the development and diffusion of knowledge by collecting data on what works and what does not, and by providing recommendations. These recommendations have, at least to some extent, been followed by agencies in all sectors.

Concept takes a broad perspective in its research and evaluation activities and focuses not only on project implementation, but also the wider societal perspective by asking questions

like: Did the projects achieve their goals for major user groups? Were they good value for money? Were they sustainable? If not, what needs to be changed in future projects? The researchers thus promote double-loop learning and not only single-loop learning. The critique raised by Bourne et al. (2020) against the system in the United Kingdom for facilitating learning only in the narrow project implementation perspective is therefore less relevant in the Norwegian case. Double-loop learning is nevertheless difficult to achieve.

The Concept Research Programme has a good reputation among stakeholders who share their data openly and willingly, whether it be documents, internal statistics, or allowing researchers to conduct interviews and make observations. The program has a very open approach toward idea generation by inviting and receiving ideas for new research projects from all its stakeholders. Concept also participates in dissemination and networking activities and generally maintains a good dialogue with the same stakeholders. In fact, some activities that Concept undertakes, such as creating arenas for sharing and being a mentor for projects, go beyond what a research program typically does and are more reminiscent of PMO activities.

A study by the Association for Project Management (APM) and Project X in the United Kingdom (Young et al., 2020) investigated project research centers worldwide to study their profiles and role in relation to government and industry. This study highlighted the Concept Research Programme in Norway as one of the seemingly successful cases "encapsulating the 'triple helix' of research, education, and engagement priorities" (p. 9). Concept has not only created learning cycles in Norway but also contributed to the international literature on governance of projects since the early 2000s. Young et al. (2020) noted that the long-term funding, the close collaboration with ministries and agencies, the networking activities, and the balancing of short-term and long-term outputs had been beneficial.

It should be noted, however, that researchers who are close to their study object, risk being less critical than they otherwise would have been (cf. Finne et al., 1995). We do not consider this to be a serious problem in this case, but it cannot be ignored. Over the years, Concept has addressed weaknesses of the scheme itself and its' efficiency and effectiveness. However, in terms of research topics, is seems that Concept has focused more on how to improve an existing model than on assessing it against fundamentally different governance arrangements. During the first years, when the QA model was somewhat controversial, there were some incidents where external stakeholders questioned the independence of the research.

Moreover, a research program cannot and should not be responsible for the *use* of research results. Research findings must be picked up by the framework owner and by each organisation involved, in their updating of various elements of the governance system over time. There are still several shortcomings that have not been properly addressed, despite being pointed out by researchers.

Not All Actors Are Involved in Learning Cycles

We think it is right to say that learning has been somewhat arbitrary and unevenly distributed among the actors involved. Concept has produced new knowledge and documented effects, but there is variation in the extent to which the results have been taken up, understood, and used to improve project work.

Agencies with many projects have their own PMOs that undertake certain activities to promote organizational learning. For example, the Norwegian public building commissioner, Statsbygg, initiated an internal development project to reduce construction project costs (Beste, 2022). The project was concerned with (1) exploring actions that could enhance cost efficiency in projects; and (2) finding ways to transfer knowledge about "what works" between projects. Beste (2022) described several activities that were used such as

standardization and user involvement. She also described the testing of microlearning as a method for knowledge transfer within the organization. It is not yet known whether there has been any lasting effect of this initiative. Another example to be mentioned is the newly established state-owned enterprise, Nye Veier AS (English translaton, “New Roads Ltd.”) that has been very eager to use innovative measures to systematically promote efficiency and that has an ambition to systematically evaluate all their projects ex post.

In general, however, the amount of knowledge management activities related to projects in the agencies is rather low. Agencies with few projects have hardly any such activities; in the line ministries they are typically absent too. Unfortunately, over the last years it seems that even the truly project-based agencies have chosen to *reduce* focus on gathering, analyzing, and sharing experiences, maybe due to more restrictive budgets. A concern for Concept has been that the data they receive from completed projects especially data that is not mandatory, such as termination reports, is of varying quality and often missing.

The Ministry of Finance as system owner did two important things that have indirectly contributed to learning loops. First, the introduction of the scheme as such, which generated incentives for ministries and agencies to improve their projects’ quality-at-entry. Second, the establishment of a research program to follow the scheme. In addition, the ministry itself has applied knowledge generated from research when updating the framework agreements every four to five years. The ministry also holds a biennial conference, which is typically very well-attended by all stakeholders.

In regard to the quality assurers, they offer advice to projects as part of the review process. In addition, some of them have started to offer training courses, which is another mechanism for knowledge transfer from consultants to ministries and agencies. On the other hand, they are often reluctant to share too much, especially with other consultancies. Fortunately, there are

other mechanisms for sharing knowledge between them, not least through employees changing jobs. There are often high staff turnover rates in these companies. In practice, we see clearly that the QA reports have become better and more harmonized over time.

More Explicit (Codified) Knowledge is Welcome

Thus far, much of the knowledge transfer and learning has been uncoordinated and informal. This is in line with previous studies, which demonstrated that learning is situated in social practices and may be difficult to codify (Prencipe & Tell, 2001).

However, we believe that ministries (including the Ministry of Finance as framework owner) and agencies could have done more, both in terms of creating meeting places and through more formalized measures such as guides, instructions, training, and so forth, which would particularly benefit those ministries and agencies with few projects and low maturity in project management. There is still a tendency to repeat the same mistakes, even in areas where best practice is well-documented.

All these organizations should have a strategy for learning, whether they focus more on the sharing of tacit knowledge or codification. We believe there is room for more of both types of mechanisms, and we particularly welcome codification as part of the strategy. Project data should be collected, stored, and used systematically to develop guides, templates, and training courses. Formalization and written information are important aspects of the culture and tradition in the public sector, and the need to hide knowledge from competitors should not be an issue here. Furthermore, in a system that involves many different organizations and sectors, there are limits to how much knowledge can be shared through person-to-person channels.

More to Learn Through Ex-Post Evaluation

Ex-post evaluation stands out as a particularly interesting and relevant source of learning that is far from fully exploited. The literature has demonstrated that evaluation tends to play a limited role in learning processes. Lack of standardization has been mentioned in the evaluation literature as a common explanation for non-use of evaluations (Welde & Volden, 2024). However, a main feature of the Concept evaluations is precisely that they all apply the same format. In fact, they apply essentially the same evaluation criteria as those used ex-ante (that is, in conceptual appraisals and QA reports), in line with recommendations by Samset and Christensen (2015). This makes it possible to draw lessons from many projects and compare results across projects and sectors. What are common explanations for cost overruns? What types of unexpected impacts are experienced? What characterizes the projects that are best at realizing benefits? The lessons can be used to point to specific improvements that should be made in the front-end phase.

The results are openly available to all from the Concept website and constitute a rich database of lessons learned. Efforts are being made to involve the affected parties (ministries and agencies) during evaluations, and the findings are presented and discussed with them afterwards. However, experience thus far indicates that the lessons are only sometimes used to support planning and decision-making in future projects. Welde and Volden (2024) interviewed senior project owners and managers in ministries and agencies about their use of ex-post evaluation in the planning of new projects. The findings were discouraging. Many were often not even aware of the existence of the evaluations, despite extensive dissemination activities, and had used them even less in the planning of new projects. The exception was those stakeholders who had been directly involved in the evaluation process (as informants or in other ways), who often showed considerable interest in the results. Ministries and agencies

also admitted that they hardly ever initiated ex-post evaluations themselves. If they did, this would be a one-off case in response to a specific problem such as a cost overrun.

There are many lessons recorded, and great potential for learning from Concept's ex-post evaluations. Hopefully, in the years to come, there will be even more lessons learned. The Concept Research Programme should publish more meta-evaluations based on groups of projects to make the results more accessible and relevant. In addition, one could consider more formal requirements for projects to identify and use lessons from previous evaluations in the planning phase.

Conclusion

The Government is Missing Out on Learning Opportunities

We find that much learning at the system level has already taken place in the Norwegian governance model. Considerable improvements in cost control clearly demonstrate that single-loop learning has taken place. We also see signs of double-loop learning but, unsurprisingly, this has proved more difficult to achieve.

The incentives for learning inherent in the scheme should not be underestimated. As soon as the requirement for external QA was introduced, ministries and agencies did not want to risk a negative QA report, which could potentially terminate or delay their project. This sparked a lot of improvement efforts in the agencies, supported by researchers who demonstrated the effectiveness of estimation methods, and other topics.

Later, the model developed from a control-based scheme to include communities of practice and efforts to harmonize practice, which led to further improvements. Nevertheless, our impression is that the system has not realized its potential. Path dependency is still an issue, and social benefits are not always realized as estimated. A research program plays a key role

in collecting data and generating knowledge that is made available to ministries, agencies, and quality assurers. However, there is variation in the extent to which these actors pick up and use the lessons recorded. In particular, the ex-post evaluations that are systematically conducted by researchers have no formal role in the governance system. There is also a limited focus in government agencies themselves on gathering, analyzing, and sharing their own project data and experience, and the ministries as project owners rarely ask for this information. The line ministries (seen as a group) are those that have learned the least. The explanation is probably related not only to learning challenges but also to aspects, such as ambiguity concerning the project owner role and to power and politics, as noted by Welde and Volden (2024).

Extended Project Governance Framework

We do believe that there is considerable learning potential in the Norwegian governance system. Among the conditions for learning cited in the literature, many are present in the Norwegian context such as an egalitarian culture (Sidani & Reese, 2020) and a willingness to share experiences (Nonaka, 1991). However, we need to recognize that learning across projects and sectors is challenging and will rarely happen by itself or by contracting this task out to a research program. The organizations need to be involved, take ownership of the data, and take part in the reflections and critical questions that need to be asked in these processes. Learning requires active knowledge management on the part of each organization involved, using various learning modes (cf. Eltigani et al., 2019) adapted to the organization's characteristics and role in the system (cf. Bourne et al., 2020). This should typically also include more formal modes such as standardized processes, instructions, and guides. It seems that the largely uncoordinated approach chosen to ensure learning thus far has its limitations in a cross-sectoral system and should be supplemented with some formality. This would be in

line with Wiewiora et al. (2019), who suggested that feedback learning requires a stricter focus on routines and efficiency.

Figure 2 illustrates what an extended governance model could look like. In addition to the documentation and external reviews that are already part of the system ex-ante, we think that agencies should have to produce a termination report. This should refer back to the steering document and account for project delivery and short-term goals (time, cost, and quality). An external review of this termination report (QA3) could have a disciplining effect in ensuring both quality-in-operations and quality-at-exit. Then, some years into the operational phase, a broader evaluation that focuses on tactical and strategic success should be conducted, as is the case today. This could be referred to as "QA4"—it is already produced by an external party (a research program), but more should be done to formally involve ministries and agencies in the process.

All this material then goes into a database used for benchmarking, analysis, and research. Unlike today, this database should be used actively for learning and improvement by all parties in the system to improve efficiency and effectiveness, and to update and improve the framework itself with its instructions for future analyses, QA, and other elements.

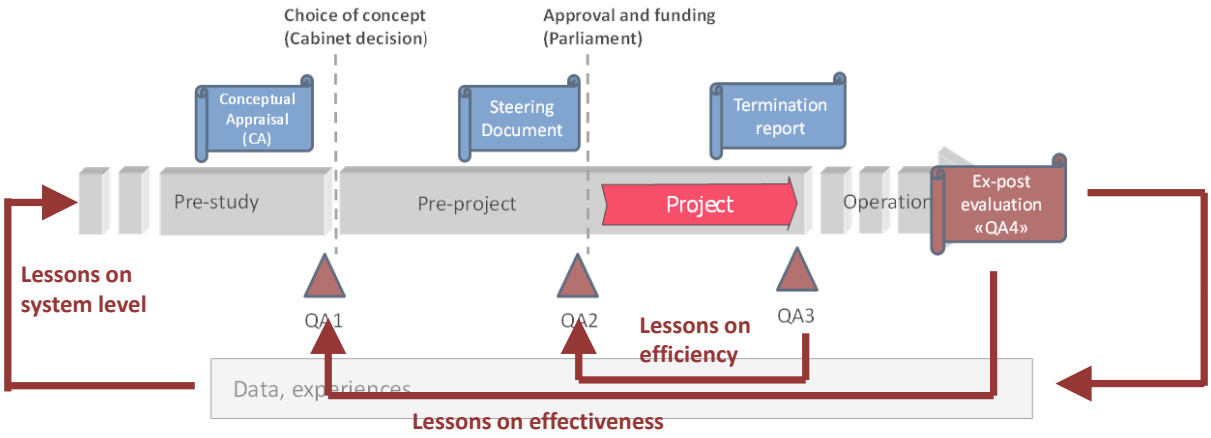

Figure 2. Extended project governance framework that focuses on quality-at-entry and quality-at-exit.

Figure 2 focuses mostly on the structural elements of the framework. In addition to this are efforts made to strengthen the culture for continuous learning and improvement.

Contributions, Limitations, and Further Research

This article contributes to practice as discussed above. Hopefully, the Norwegian scheme owners will find the suggested extended governance framework in Figure 2 useful.

Furthermore, the article contributes to the project governance literature by offering a case study of how learning unfolds in a governance system for public projects. The system as level of analysis has proven useful for the purpose of the study. Volden and Andersen (2018) referred to governance of public projects as a hierarchical system where governance arrangements can be introduced on three levels: cabinet, ministry, and agency. We have now combined this perspective with those from the literature on learning and project ecology and argue that the system as a whole can be considered a "public project ecology" and even a project-based organization, although with loose authority. Experience is shared when key people in various roles travel across projects and take part in networks and training.

Particularly, the system has a type of PMO that combines a controlling and supporting role: the Ministry of Finance manages a rather strict QA regime combined with offering trailing research and systematic ex-post evaluation of completed projects. Experience indicates that this is a potentially fruitful way to ensure that tacit and explicit knowledge is captured, codified, and disseminated within this "organization." Knowledge needs to be transferred vertically (across levels in the hierarchy), horizontally (across sectors and organizations), and between public and private actors. We have not studied all these dimensions in detail, which is a task for future research.

We have studied a scheme that was an early mover and that has already gone a long way to record lessons and document effects but has not yet managed to systematically integrate learning loops as part of the system. It can be argued that Norway is a *critical case*, implying that challenges with knowledge transfer and learning in this case, should be similarly relevant (or even more relevant) to a country without this type of governance regime (Flyvbjerg, 2006). Several other countries have already introduced similar schemes in recent years and, although countries differ and no two schemes are identical, there is much to learn across countries (Volden & Samset, 2017b). An interesting topic for a follow-up study could be to conduct a cross-case comparison of the ability to implement effective learning cycles in countries that have organized their governance of public projects in different ways.

The article is written by researchers from the Concept Research Programme who, to some extent, have evaluated the impact of their own research. This is a general characteristic of trailing research, which obviously has its good and bad sides. On the one hand, the authors were directly involved from the very beginning and thus have first-hand insight into the history up until now. On the other hand, the authors are also part of this story. We have sought to be as objective as possible and followed strategies to improve validity, but readers must take this into consideration.

A governance framework will change over time as society and technology develop and must continuously develop to stay relevant and effective (Klakegg et al., 2016). Therefore, the image of the Norwegian governance framework given here, will need updating at some point. It will not least be interesting to see whether the future brings effective learning measures into the framework and whether it can be classified as an "agile artist" (Aubry et al., 2012) at some point in the future. If the Norwegian scheme were to be changed in line with our suggested model in Figure 2, it would be very interesting to follow up and perform an empirical study of any effects this would have on learning.

References

Ahola, T., Ruuska, I., Artto, K., & Kujala, J. (2013). What is project governance and what are its origins? *International Journal of Project Management, 32*(8), 1321–1332.

Argyris, C. (1991). Teaching smart people how to learn. *Harvard Business Review*, 69(3), 99-109.

Argyris, C., & Schön, D. A. (1978). *Organizational learning: A theory of action perspective.* Addison-Wesley.

Argyris, C., & Schön, D. A. (1996). *Organizational learning II: Theory, method and practice.* Addison-Wesley.

Aubry, M., Müller, R., & Glückler, J. (2012). *Governance and communities of PMOs.* Project Management Institute.

Ayas, K., & Zeniuk, N. (2001). Project-based learning: Building communities of reflective practitioners. *Management Learning*, *21*(1), 61–76.

Berg, P., Andersen, K., Østby, L.-E., Lilleby, S., Styrvold, S., Holand, K., Korsnes, U., Rønning, K. and Johansen, F. (1999). *Styring av statlige investeringer. [Management of State*

investments] Sluttrapport fra styringsgruppen for prosjektet for styring av statlige investeringer. Ministry of Finance [Finansdepartementet], Government of Norway, Oslo.

Beste, T. (2022). *Strategic change towards cost-efficient public construction projects*. Doctoral thesis at NTNU, 2022:348. Norwegian University of Science and Technology

Bevir, M. (2013). *A theory of governance.* University of California

Bourne, M., Anker, D., Chambers, G., & Torjai, L. (2020). How to measure and manage the UK Government's major project portfolio. *Measuring Business Excellence, 24*(4), 461–474.

Brady, T., & Davies, A. (2004). Building project capabilities: From exploratory to exploitative learning*, Organizational Studies 25*(9), 1601-1621.

Clegg, S. R., Pitsis, T. S., Rura-Polley, T., & Marosszeky, M. (2002). Governmentality matters: Designing an alliance culture of inter-organizational collaboration for managing projects. *Organization Studies*, *23*(3), 317–337. https://doi.org/10.1177/0170840602233001

Cooper, K. G., Lyneis, J. M., & Bryant, B. J. (2002). Learning to learn from past to future. *International Journal of Project Management*, 20(3), 213–219.

Creswell, J. W. (2014). *Research design: Qualitative, quantitative and mixed methods approaches* (4th ed.) SAGE Publications.

Dahler-Larsen, P. (2012). *The evaluation society.* Stanford Business Books.

Davies, A. (2017). *Projects: A very short introduction.* Oxford University Press.

Eltigani, A., Gardiner, P., Kirkham, K., Williams, T., Ou, L., & Calabrese, A. (2019). Learning in and from projects: The learning modes and a learning capability model. *Production Planning & Control, 31(10),* 786-798

Fillion, G., Koffi, V., & Ekionea, J.-P. (2015). Peter Senge's learning organization: A critical view and the addition of some new concepts to actualize theory and practice. *Education – Journal of Organizational Culture, Communications and Conflict, 19(3),* 73-102

Finne, H., Levin, M., & Nilssen, T. (1995). Trailing research: A model for useful program evaluation. *Evaluation, 1*(1), 11–31.

Flyvbjerg, B. (2006). Five misunderstandings about case-study research. *Qualitative Inquiry, 12*(2), 219–245.

Flyvbjerg, B. (Ed.). (2017). *The Oxford handbook on megaproject management.* Oxford University Press.

Foucault, M. (1978). Governmentality. In G. Burcell, C. Gordon, & P. Miller (Eds.), The Foucault effect (pp. 87–104). *Studies in governmentality*, The University of Chicago Press.

Gann, D., & Salter, A. (1998). Learning and innovation management in project-based, service-enhanced firms. *International Journal of Innovation Management, 2*(4), 431–454.

Garvin, D. (1993). *Building a learning organization*. Harvard Business Review (July-August 1993).

Grabher, G., & Ibert, O. (2011). Project ecologies: A contextual view on temporary organizations)pp. 175-199). In P. Morris, J. Pinto, & J. Söderlund, J. (Eds.), *The Oxford handbook of project management*. Oxford University Press.

Hobbs, B., & Aubry, M. (2008). An empirically grounded search for a typology of project management offices. *Project Management Journal, 39*(1), 569–582.

Kerzner, H. (2000). *Applied project management: Best practices on implementation*. Wiley.

Kerzner, H. (2003). Strategic planning for a project office. *Project Management Journal*, *34* (2), 13–25.

Klakegg, O. J., Williams, T., & Schiferaw, A. T. (2016). Taming the 'trolls': Major public projects in the making. *International Journal of Project Management, 34*(2), 282–296.

Klakegg, O. J. (2010). *Governance of major public investment projects: In pursuit of relevance and sustainability*. Doctoral thesis at NTNU, 2010:15. Norwegian University of Science and Technology.

Klakegg, O. J., & Meistad, T. (2014). *Individual relations—The core line in project-based organizations*. Paper presented at International Research Society for Public Management [IRSPM] Conference, Ottawa, Canada, 9–11 April 2014.

Klakegg, O. J., & Volden, G. H. (2017). Governance in public projects: The Norwegian case. In R. Müller (Ed.), *Governance and governability for projects: Enablers, practices and consequences* (Chapter 9, pp. 129–156). . Routledge.

Konstantinou, E., & Müller, R. (2023). More than a list: The grand challenges approach and legitimate agents of social change. *Advance*. Preprint. https://doi.org/10.31124/advance.21707228.v1

Lincoln, Y., & Guba, E. (1985). *Naturalistic inquiry.* Sage.

Lundin, R. A. (2016). Project society: Paths and challenges. *Project Management Journal 47*(4), 7–15

Morris, P. W. (2013). *Reconstructing project management*. John Wiley & Sons.

Morris, P. W. G., & Geraldi, J. (2011). Managing the institutional context for projects. *Project Management Journal, 42*(6), 20–32.

Morris, P. W. G., & Hough, G.H. (1987). *The anatomy of major projects: A study of the reality of project management*. John Wiley and Sons.

Müller, R. (2009). *Project governance*. *Fundamentals of project management series*. Gower Publishing Ltd.

Müller, R., Pemsel, S., & Shao, J. (2014). Organizational enablers for governance and governmentality of projects: A literature review. *International Journal of Project Management,* 32(8), 1309–1320.

Müller, R. (Ed.) (2017). *Governance and governability for projects: Enablers, practices and consequences*. Routledge.

Müller, R., Sankaran, S., & Drouin, N. (Eds.) (2023). *Research handbook on the governance of projects*. Edward Elgar.

Narayanan, V. K., & DeFillippi, R. (2012). The influence of strategic context on project management systems: A senior management perspective. In T. Williams, & K. Samset (Eds.), *Project governance: Getting investments right* (pp. 3–45). Palgrave Macmillan.

Nonaka, I. (1991). The knowledge-creating company. *Harvard Business Review*, November–December 1991.

Pemsel, S., Müller, R., & Söderlund, J. (2016). Knowledge governance strategies in project-based organizations. *Long Range Planning*, *49*(6), 648–660.

Prencipe, A., & Tell, F. (2001). Inter-project learning: Processes and outcomes of knowledge codification in project-based firms. *Research Policy*, 30(9), 1373–1394.

Project Management Institute (PMI). (2013). *A guide to the project management body of knowledge (PMBOK® guide)*—Fifth edition. PMI.

Reve, T., & Levitt, R. E. (1984). Organization and governance in construction. *International Journal of Project Management*, *2*(1), 17–25.

Rossi, P. H., Lipsey, M. W., & Freeman, H. E. (2004). *Evaluation: A systematic approach* (7th ed.). SAGE.

Samset, K. (2003). *Project evaluation: Making projects succeed.* Tapir Academic Press.

Samset, K., Berg, P., & Klakegg, O. J. (2006). *Front end governance of major public projects*. Paper presented at the EURAM 06 conference in Oslo, 18 May 2006.

Samset, K., & Christensen, T. (2015). Ex ante project evaluation and the complexity of early decision-making. *Public Organization Review, (17),* 1–17.

Samset, K., Volden, G.H. (2016). Front-end definition of projects: Ten paradoxes and some reflections regarding project management and project governance. *International Journal of Project Management, 34(2)*, 297–313.

Scarbrough, H., Swan, J., Laurent, S., Bresnen, M., Edelman, L., & Newell, S. (2004). Project-based learning and the role of learning boundaries. *Organization Studies, 25*(9), 1579–600.

Senge, P. M. (1990). *The fifth discipline: The art and practice of the learning organization*. Doubleday.

Shenhar, A. J. (2004). Strategic project leadership®: Toward a strategic approach to project management. *R&D Management,* 34(5), 569–578.

Sidani, Y. and Reese, S. (2020). Nancy Dixon: empowering the learning organization through psychological safety, *The Learning Organization* 27(3), 259-266.

Song, J., Song, L., Liu, H., Feng, Z., & Müller, R. (2022). Rethinking project governance: Incorporating contextual and practice-based view. *International Journal of Project Management*, *40*(4), 332–346.

Söderlund, J. (2008). Competence dynamics and learning processes in project-based firms: Shifting, adapting and leveraging. *International Journal of Innovation Management, 12*(1), 51–67

Söderlund, J. (2024). Project-based organisations: An overview of an emerging field of research (pp. 172-182). In G. Winch, M, Brunet, & C. Dongping. *Research handbook on complex project organizing.* Edward Elgar.

Swan, J., Scarbrough, H., & Newell, S. (2010). Why don't (or do) organizations learn from projects? *Management Learning, 41*(3).

Turner, J. R., & Keegan, A. (2001). Mechanisms of governance in the project-based organization: Roles of the broker and steward, *European Management Journal*, *19*(3), 254–267.

Volden, G. H., & Samset, K. (2017a). Quality assurance in megaproject management, the Norwegian way. In B. Flyvbjerg (Ed.), *The Oxford handbook of megaproject management* (pp. 406–428). Oxford University Press.

Volden, G. H., & Samset, K. (2017b). Governance frameworks for major public investment projects: Principles and practices in six countries. *Project Management Journal, 48*(3), 90–108.

Volden, G. H., & Andersen, B. S. (2018). The hierarchy of public project governance schemes. *International Journal of Managing Projects in Business, 11*(1), 174–197.

Volden, G. H. (2019). *Up-front governance of major public investment projects*, doctoral thesis at NTNU, 2019:236

Volden, G. H. (2018). Public project success as seen in a broad perspective: Lessons from a meta-evaluation of 20 infrastructure projects in Norway, *Evaluation and Program Planning 69*, 109–117.

Wang, L., Müller, R., & Zhu, F. (2023). Network governance for interorganizational temporary organizations: A systematic literature review and research agenda. *Project Management Journal*, *54*(1), 35–51. https://doi.org/10.1177/87569728221125924

Welde, M., & Klakegg, O. J. (2022). Avoiding cost overrun through stochastic cost estimation and external quality assurance. *IEEE Transactions on Engineering Management*, 71, pp. 1984-1997

Welde, M., & Volden, G.H. (2024). *Lessons from ex-post evaluation of government investment projects*. Paper presented at the Nordic Conference on Construction Economics and Organisation [CREON], Trondheim, 30–31 May 2024.

Winch, G. (2024). Projectivity (pp. 36-45). In G. Winch, M., Brunet, & D. Cao (Eds.). *Research handbook on complex project organizing.* Edward Elgar Publishing

Whyte, J., Ewenstein, B., Hales, M., & Tidd, J. (2008). Visualizing knowledge in project-based organizations. *Long Range Planning*, *41*(1), 74–92.

Wiewiora, A., Trigunarsyah, B., Murphy, G. D., & Liang, C. (2009). Barriers to effective knowledge transfer in project-based organisations. In *Proceedings of the 2009 International Conference on Global Innovation in Construction*, 13–16 September 2009, Loughborough University.

Wiewiora, A., Smidt, M., & Chang, A. (2019). The 'how' of multilevel learning dynamics: A systematic literature review exploring how mechanisms bridge learning between individuals, teams/projects and the organization. *European Management Review, 16*(1), 93–115.

Williams, T. M., Ackermann, F., Eden, C., & Howick, S. (2001). *The use of project post-mortems,* presented at the Project Management Institute Annual Symposium, Nashville, TN, November 2001.

Williams, T. M. (2004). Identifying the hard lessons from projects—Easily. *International Journal of Project Management*, *22*(4), 273–279.

Williams, T. M. (2008). How do organizations learn lessons from projects—And do they? *IEEE Transactions on Engineering Management*, *55*(2), May 2008.

Williams, T., & Samset, K. (2010). Issues in front-end decision making on projects. *Project Management Journal, 41*, 38–49.

Williams, T., Klakegg, O. J., Magnussen, O. M., & Glasspool, H. (2010). An investigation of governance frameworks for public projects in Norway and the UK. *International Journal of Project Management, 28,* 40–59.

Winch, G. M. (2001). Governing the project process: A conceptual framework. *Construction Management and Economics, 19,* 799–808.

Worsley, T. (2014). *Ex post assessment of transport investments and policy interventions: Prerequisites for ex-post assessments and methodological challenges*. ITS Roundtable summary and conclusions. International Transport Forum Discussion Paper 2014-19, OECD.

Yin, R. K. (2014). *Case study research: Design and methods* (5th ed.). SAGE.

Young, P., Msulwa, R., Lewis, M., & Bloomfield, K. (2020). *Project and programme research centres: Lessons for scholarship, policy and practice*. Association for Project Management.

Zhao, D., Jiang, Y., Lin, C., & Wu, Y. (2022). Impacts of knowledge expectations on recipients' continuous cross-project learning intention. *International Journal of Project Management, 40*(2), 120–131.

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