PROJECT GOVERNANCE IN NORWEGIAN GOVERNMENT ROAD PROJECTS

O. Jermstad, SINTEF Technology and Society, Trondheim, Norway
(ole.jermstad@sintef.no)

T. Aass, NTNU, Dept. of Civil and Transport Engineering, Trondheim, Norway
(torbjorn.aass@ntnu.no)
O.J. Klakegg, NTNU, Dept. of Civil and Transport Engineering, Trondheim, Norway
(ole.jonny.klakegg@ntnu.no)

ABSTRACT

Researchers at SINTEF Technology and Society and the Norwegian University of Science- and Technology (NTNU) have studied 23 major public projects executed in the period 2000–2009. The projects were among the first to go through the process of Quality Assurance 2 (QA2), which is a mandatory scheme for Norwegian governmental projects, with cost frames higher than NOK 500 million ($ 84 million). QA2 is completed before parliamentary resolution on the financing and execution of the project. This paper presents results that illustrate how the project owners influence the project performance through governance arrangements. The 12 road projects studied were successful: 9 delivered on time, 11 were within cost frame, and 11 had adequate quality and capacity. It is therefore reasonable to assume that the governance and management effort has been fairly successful in these projects. Many of our observations indicate that the project governance still has a big potential for improvement. The conclusion identifies the factors that allowed the successful execution of the projects in the study, and points out important improvement areas for project governance in general and specifically for road projects.

1. INTRODUCTION

It is of key importance for all organizations in the public sector to make the most of scarce resources and create maximum value for money. In Norway, the State, represented by the Ministry of Finance, has taken the lead in developing improved project governance to secure more successful public investments. The quality assurance scheme (QA Scheme) installed by the Ministry of Finance year 2000 includes critical scrutiny of all major State-financed projects in Norway (with the exception of the oil and gas sector) on two different stages of project development. The two stages are quality assurance 1 (QA1), an early quality assurance measure to ensure the chosen concepts are relevant and sustainable, and quality assurance 2 (QA2), a late quality control measure to ensure that a project is well planned and ready for execution. This study looks only at the late scrutiny before final approval in Parliament; the quality assurance 2 (QA2). More information about the QA scheme can be found in Samset, Berg and Klakegg (2006)

The projects in the study were chosen because these projects had previously been subject to external quality assurance (QA2) and had finished. The group of researchers gathered comprehensive documentation from these projects and analyzed the data in a project execution perspective.

The research study covered project governance, front-end planning and project execution. This paper reports on a limited part of that work. Here, we look at the road projects from the perspective of the project managers, and focus on the project owners' governance of the projects. The purpose is to learn more about project governance and what it takes from the owners' side to ensure that project execution is successful. Do the project owners in Norwegian Road Government projects seem to understand and sufficiently master the art of project governance? The study only covers Norwegian road projects, but, we believe our findings are of interest also for an international audience.

2. GOVERNANCE OF PROJECT

2.1 Project governance: Different aspects

The Concept Research Program (www.concept.ntnu.no) uses the following statement as a simple explanation of project governance: "Processes that need to exist for a successful project". Such processes include both enabling measures (supporting the project) and regulatory measures to avoid adverse effects (Klakegg 2010). In this section we include a résumé of governance literature to familiarize readers with the basic concepts used in this paper.

Governance is a concept with many meanings and is relevant in all sectors; private, public, and non-governmental. It contains functions of strategy development and policy making, as well as establishing a governance framework for an organization. Governance is basically about prioritization, making decisions, and securing a successful future for a given organization's business. We choose to define governance as a combination of both hierarchical "multi-level" and network-based "multi-actor" governance, as others have done (Lynn, Heinrich and Hill 2000, Abbott and Snidal 2001). This makes governance a multifaceted and complex issue.

A complete overview and summary of terms and concepts has been given by Müller (2009) in his book *Project Governance*, in which he shows how different aspects of the concept combine to form a basic set of definitions or governance functions in an organization related to projects. This paper relates to the following concepts described in Müller's book:

- Governance of project management: the development of a professional project-based organization (e.g., education, experience transfer, project management office, standards).

- Governance of programs and portfolios: the organization-wide governing of all or groups of ongoing projects to secure effectiveness (doing the right projects) and efficiency (doing the projects right).

- Governance of projects: the decision-making function assigned to a specific project (steering committee, project boards) and owners' representatives (sponsors) providing risk minimization, value maximizing , transparency, division of ownership, and control at project level.

The focus in this paper is primarily on governance of projects. In Norway there is currently no separate focus on programs as significantly different from projects. Normally, large complex projects are considered to be main projects with subprojects, but in international project management terms they would be regarded as programs.

2.2 Decision making: Promote effective decision making

The front-end phase of projects is dominated by decisions. Examples of governance functions to support the decision making are: design of the decision making process (for clarity, transparency and participation), clarity in prioritizing issues, making resources for planning available, and quality control of documents. Klakegg (2010, p. 80) concludes that the most important governance functions in the front-end of a project are defining a clear decision making process and controlling the quality of documents used as basis for decisions. The execution phase is dominated by planning and follow-up of project tasks and activities. Examples of vital governance functions in this phase are: making decisions on project definition (objectives), approval of project design (measures to reach objectives), decisions on financing the project, issuing a project mandate, monitoring progress, being prepared to make changes, and ensuring the realization of benefits. Klakegg (2010, p. 78) concludes that the initial decisions and issuing of mandates are the most important governance functions for the execution phase. Our study looked into these issues and considered whether they were well taken care of in the projects examined.

Are project owners and their representatives, the sponsors, in general successful in their efforts to control and support their projects? Some indications are found in the literature and have been summarized by Klakegg (2009). A large number of published studies identify a long list of potential reasons for things to go wrong within projects, for example studies by the Standish Group (2000), Delisle and Thomas (2002), and Hopkinson (2007). The reasons include common problems such as bad performance in the planning and execution of activities, as well as not handling external relations well. Some studies, including those by Samset and Haavaldsen (1999), Youker and Brown (2001), and Stahl-Le Cardinal and Merle (2006), clearly indicate that the really important problems lie in processes up-stream from the project. Bad decisions in the front-end potentially have bigger consequences than errors made in execution. This leads to the conclusion, supported also by authors such as Shenhar, Levy and Dvir (1997), Atkinson (1999), and Dinsmore and Cooke-Davies (2006), that we need to look at what goes wrong with projects or, as Atkinson says, from "doing it right" to "getting it right".

3. METHOD

3.1 Selection of projects – the sample

This study attempt to draw lessons from the first 23 projects completed after previously having been subject to Quality Assurance 2 (QA2). QA2 is completed before parliamentary resolution on the financing and execution of the project. The project sample included 12 road projects. The sample contains all projects currently finished after being subject for QA2. The project owner was the Norwegian Ministry of Transportation and communication. The responsible agency was the Norwegian Public Roads Administration (NPRA).

3.2 Obtaining information

The main sources of data relating to the projects were:
- Copies of Quality Assurance (QA) reports in accordance with the framework agreement made with the Ministry of Finance.

- Information about the projects in public documents collected systematically by the researchers, in particular propositions and reports prepared for Parliament.
- Collected copies of the projects' original documents (such as termination reports, final financial reports, final technical reports, and change lists).
- Final report prepared by the agency in accordance with a prior agreement.
- Interviews, telephone calls and email exchanges with key personnel in specific projects (e.g., project manager, project control manager).

Considerable effort was put into collecting information and the researchers had the challenge of being both advocates and investigators in this process. Some of the projects analyzed and included in this paper were completed several years ago. Because some key people no longer had the sources available and their memories might not have been completely reliable, there is a risk of some inaccuracy in the information and its interpretation. However, the researchers did everything they could to check the details relating to several sources. This made triangulation possible and should have secured adequate accuracy in the data. Still, some risk remains that the researchers' interpretations might not be accurate due to lack of detailed knowledge of internal agency procedures.

3.3 Method of analysis of individual projects

One researcher was assigned to the collection, quality assurance and processing of information for all projects in the sample. This ensured consistency in communication and created a single point of contact. The analysis, on the other hand, was performed by the whole research team.

The main issue in the study was to compare the information on performance provided by the project (results and process) with what was recommended in QA2 and adopted in Parliament's approval. First we analyzed each project individually, without looking at how the other projects had performed. The executing party's perspective is used in this study. The degree of attainment of societal policy goals and the delivered effects were not covered in this study.

The following wide range of topics was considered in the study:
- Governance of the projects
- The agencies' planning and cost estimation in the early phase
- Goal achievement in the project
- Management and organization in the project
- Project control in the project
- Contract Management in the project
- Uncertainty Management in the project.

In this paper we will focus on the project owners' governance of the projects in the study. Governance is mainly the responsibility of the Ministry of Transport and communication which acts as the project owner on behalf of society, but some governance functions are delegated to a subordinate agency: The Norwegian Public Roads Administration (NPRA).

Our analysis is qualitative. The analysis was limited to reviews based on the researchers' professional judgment. We made simple comparisons of the project data before and after

execution, counting occurrences and making summations of incidences without the use of any statistical or other quantitative methods. The quantity of the data material was too small and the research issues too wide for statistical comparisons to be meaningful. We considered the internal consistency of the studied projects over time and how they adhered to the general, technical and management guidelines of NPRA. Individual's statements in interviews were supplemented with facts and comparisons from multiple sources in cases where these were available (triangulation).

3.4 Method for analysis across the individual projects

When the analysis of individual projects was compiled, we looked for patterns indicating areas that should be prioritized in terms of improvement. This was not a profound analysis, but a summary and systematization of information about individual projects.
We considered the performance of the projects within broad themes as shown above. In doing this, we acknowledged that there are several ways to solve the tasks and that several of these ways may represent good practice. We used the agency control system and other state guidelines and regulations as references where we found them relevant to our assessment.

We have observed that agencies have changed some guidelines and practices after the projects in this sample were completed. Therefore, parts of the analysis should not be interpreted as criticism of current practice, but as a contribution to documented progress over time.

4. FINDINGS

The investigation showed that the 12 road projects in this sample have been quite successful in terms of delivery on time (9 of 12), within cost frame (11 of 12), in accordance with approved expected cost (7 of 12), and with quality according to specification (11 of 12). These findings are better than those of previously published investigations into the performance of public road projects.

All projects in our project sample were subject to QA2. This means that they had all been planned and executed under the same governance framework and were subject to the same sort of scrutiny before approval. We observed that the projects were successful, rather despite the project governance than because of it. From an execution perspective we found indications that the project owners' representatives (the project sponsors) did not have a good understanding of either their role or the consequence of their decisions relating to their projects. In the following we will give some indications of findings and observations made in the 12 road projects.

When considering the governance of the projects investigated in the study, 8 projects were criticized, and this indicates that there is potential for improvement in future projects. Some projects received more than one remark from the researchers. Each of the remarks represented different underlying observations. Even projects that were not criticized for shortcoming project governance cannot be interpreted as flawless. Rather we found that such projects were good compared to other projects in the sample. The category of projects that not was criticized the researchers found the project governance was acceptable as a basis for further development and not a threat to project success. The projects that were criticized demonstrated inadequate project governance that could

threaten project success in given situations. The project governance should therefore be improved for future projects.

4.1 More detailed observations

Before starting up a project it is important that the project owner has a clear and well-defined mandate and scope. If the concept is not sufficiently mature when planning the execution, a number of problems can occur, and we observed several problems in different projects: The investigation revealed that two of the road projects were not sufficiently mature when they were started.

In one of the projects investigated the mandate were found to be unclear. An unclear scope and mandate made it difficult for the executing party to plan and estimate costs, and consequently for the owner to decide on the optimal frames for the project. This led to unclear communication and resulted in less information sent to the owner, who consequently lost control over the project scope and progress.

In some projects we found that late decision making from the project owner created problems for the project. We observed that the owners frequently changed the requirements or premises for the project during execution. We would expect to find changes in goals, fundamental concept or scope of the project to take place in order to increase value of the project, due to new emerging opportunities or new knowledge. We were surprised to find that in three of the road projects such changes were made apparently without consideration of the impact of the changes on cost and time. These changes were triggered by new safety regulations. This was actually found to be the main reason for some projects not succeeding in delivering on time as expected or at expected cost. In the projects investigated these changes were made arbitrarily by the owner without consulting the project organization. From a project execution perspective, it is important that changes in requirements or premises should be followed by considerations of consequences'. In these cases we would expect additional time and money to follow from the decision.

Project owners should strive to give the project organization as good as possible opportunities to succeed, and avoid redefining the project unless this can increase the value of the investment. The premises are not only set at the beginning of the project, but also during execution. Owners need to provide clarification and make decisions when needed, usually as soon as possible after the need is identified. In five road projects we found that the owners should have provided the project with clarification and made decisions much earlier than they did, as early decisions prevent unnecessary postponements and expensive waiting time which in turn reduce productivity. In some of the investigated cases, it can be interpreted as if the owner did not understand the consequences of the waiting time for the project. The owner seemed to believe that their project could be put on hold without incurring any extra costs.

We also observed that the owners did not succeed in managing the project portfolio in a way that gave maximum value for money. When the project cost is approved, a plan for financing also follows. This plan is defined as "optimal". However, six road projects experienced that the financing was not based on the optimal financing plan. Information about the financing plan was also vague in most of the projects investigated. It is interesting that sometimes the financing was not followed up according to needs during the project. We observed that both too much and too little money was made available for projects, rather than according to plan. When there is shortage of money it may have time

and cost consuming consequences. Too much money increases the risk of overspending and reduces the funds available for other important purposes. In a project execution perspective, financing according to an optimized plan is the explicitly stated intention and the preferred premise, but often this is not followed up by the owner.

Political interferences were sometimes allowed to obstruct the projects. There were two different reasons for this phenomenon. One reason is that some project concepts were not sufficiently mature at the time of approval and financing as mentioned above. This gave room for stakeholder groups to raise doubts about the project and start new decision-making processes that took time to conclude and may have resulted in significant changes to the project. It is also revealed adverse pressure from the ministry and agency to effect changes in projects.

A theme that was analyzed was the system of risk management. A formalized system is usually necessary to implement good risk management in projects. Such a system should include the identification and assessment of uncertainties, scheduling and monitoring of measures and assessment of the need for and use of uncertainty provisions. Observations made in the study are that half of the projects had no system, or approximately inappropriate system of risk management (8 of 12 road projects). Some projects with well developed systematic has yet surprises, and in project uncertainties were not addressed, even if uncertainty were identifiable in QA2. It must be pointed out that the agency had not implemented the systems of risk management at the time these projects were started. In absence of agency system the projects in varying degrees, made their own systems.

Another important issue that was analyzed was how uncertainty allocation was handled. For large public project there should be clear procedures for release and use of uncertainty allocation. Release of funds from deposits at all levels shall be justified by a legitimate trigger, traceable to specific incidents. Furthermore, the project warn of the need to use the contingency reserve as soon as they see the danger of going over the cost frame, or it identified a material uncertainty which was not included in the base estimate. This requires that the projects at any given time, an updated final prognosis, including the expected cost of uncertainty. All the projects had a lack of system and procedure for the release of uncertainty allocations.

A disappointment from the authors' perspective is that not much had been done to learn by evaluating terminated projects in the agencies. We found that knowledge sharing from and across projects is an area that is mainly neglected or forgotten. The study revealed that for most projects some sort of termination report had been written (which is a formal requirement) but that the quality of the report is not satisfactory. Some reports focus on economy while others are technical reports. Some projects did not deliver a written report at all. Such reports are seldom used by other projects afterwards, and the authors only write them because they have to, not because they see the value of doing so. Thus, the "wheel is reinvented" every time a new project is started. This prevents learning from earlier mistakes and successes in projects.

5. DISCUSSION

Despite the short comings of project governance, we have seen that overall the projects investigated in our study had a high degree of success in an execution perspective. This does not mean that project governance is irrelevant, but shows that the subject is complex. The study was performed independently of findings in similar studies. We observed that our projects had ambiguous mandates, indicating that the links between the project and the organization's key strategic priorities were not clear. In addition, success criteria were unclear.

5.1 The effect of insufficient governance of the projects in our study

Even though the execution of the projects in our sample is considered to have turned out quite well in an execution perspective, we have seen that improper project governance has had a negative impact. In the following discussion we will examine more closely the findings indicated above.

Our study shows that although most of the projects were supported by senior management, the ownership and leadership that the latter performed were not clear. Our findings revealed that the projects were subject to political interferences, and the project managers' report on the implications of this for the projects was not well understood. Another observation was that the projects had to cope with late clarifications from the owners, which indicates that the ownership and senior management leadership towards the projects were not optimal.

We found some indications that the projects were not organized in order to obtain the most value for money. In many projects the financing plan was not based on cost optimal progress and terms, and neither did the financing of the project always follow the approved plan. This indicates that long-term value for money was not always in focus. Instead, there seemed to be a strong cost focus. We observed that the project owners did not always have a clear understanding of the roles of the different parties involved.

Scope control is a key to success, and a project owner has a responsibility to ensure that the scope is well defined, anchored in the permanent organization, and followed up by the project organization. With immature concepts subject to changes during the execution phase and formal mandates being absent, we found this to be insufficient in many of the projects we examined. We also found indications that the lack of a mature concept, a project definition and/or a clear mandate resulted in the project owner and the project management having a weaker ability to manage the scope in the project. A similar situation occurs in cases where the project owner changes the requirements or premises for the project without imposing the necessary changes in goals, budgets or schedules. In such cases the need for a defined project scope is violated by the project owner. However, the impact on time and cost will often appear later in the process, which makes the consequences harder to understand for the owner.

Just as the project owner needs to ensure a proper project definition in the initial phase, he or she also has an obligation to make the necessary decisions and provide clarification during the project execution. We have stated above that the lack of a clear project definition renders a project vulnerable to random changes of scope. We also indicated that the change were not by chance (random) but imposed by the owner. Similarly, the absence of decisions or clarification from higher administrative levels can force projects to

act on their own. When the project enters the execution phase, the need for swift and clear decisions is often critical for project management. To the project owner, the negative consequences might not be as obvious, and there might, of course, be other aspects of the situation that make the delay necessary and worthwhile. In the perspective of this analysis, however, the consequences are clearly negative.

In cases of absence of a critical decision by the owner, the project will be forced to "do something," and thus might act beyond its authority or make sub-optimal decisions. Often, the decision is reversed, things have to reprioritize, redesigned or rebuilt. This adds extra costs and loss of opportunity for additional value. Such situations could negatively affect the respect and trust between the parties involved. The project owner might lose confidence in the management system and have less control over his or her own project. Conversely, the project management might lose confidence in the decision makers and respect for governance measures.

5.2 Financing and the value of projects

One finding related to governance of programs and portfolios is the lack of optimal financing. We observed that some projects received too little funding while others received too much funding during the period of execution. The consequences of not receiving enough funds are slower progress, higher overall project costs and delayed benefits to society. The consequence of one project receiving too much funding is that other projects might receive too little or are put on hold. Being in a situation where it is expected to use the money granted can also cause "over-funded" projects to force a higher rate of progress than is rational or is a "gold-plate" solution. This in turn may result in less efficient use of the funds and thus lead to a higher total project cost.

The project owner has the right to cut the funding to his or her projects, and if there are better ways to use scarce financial resources, or in case this might be the best right action to take to meet superior objectives. However, given that funds are a central condition for the project execution, any change, cut or increase in scope must be followed by the required change in budget and schedule. This is equivalent to a situation where an increase in the requirements must be followed by an increase in the budget, as discussed above. As we have seen, this is not always the case.

Implementing and managing a financing system with the necessary dynamics to handle the changing needs of the projects is a matter of portfolio management. As we have also seen, inadequate or missing governance of the portfolio did not necessarily affect all of the projects in a negative way, but it certainly reduced the collective output of the projects.
As discussed above, insufficient project governance has a negative impact on the probability of achieving successful execution of projects. We have also seen that governance matters on the project level and also on the program and portfolio level. We have seen that the direct consequence of inadequate governance in many cases is unnecessary increases in costs and the use of time. As a secondary effect, it may lead to a situation where the project owners' control over the project is weakened. The next question is therefore: Why do not the project owners focus more on fulfilling their role and function related to their projects?

5.3 Risk management

Uncertainty management is important in relation to the professional execution of projects. However, it is one of the subjects that give discouraging results of this study, and where we have several serious objections to the observed practice. In a few projects detects a lack of understanding of the phenomenon. In such cases we have also noted a lack of understanding of what uncertainty is and why it must be followed up.

Particularly it is lack of clear procedures for the release of allocation when the relevant circumstances appear. We see a positive direction that it's a development and implementation of the system in some of these projects and that this is further developed in subsequent projects within the agency. The study shows that the road projects during the period of external quality assurance have had a big improvement on the system for project management, particularly risk management.

5.4 Why has the governance been insufficient?

The study revealed that the project owner's role and responsibility in public investment projects is not well understood. Neither the role of the project owner' nor the concept of project governance seemed to be perceived as important features in the ministries. Consequently, there is also a lack of proper management systems to support project governance, which in turn contributes to the role of owner being practiced in an unfavorably random way.

One reason for what we have observed might be ascribed to the fact that project governance as a concept is new and unknown. On the agency and project level, project management has been subject to a great deal of focus and development for many years. There are numerous courses and seminars and also a large body of literature focusing on how to become a good project manager and lead a project professionally. Proper project ownership, however, is a vaguer and less noted subject.

During our fieldwork we observed that the understanding of the different concepts and definitions concerning project and portfolio management differed considerably among the actors involved. The basic concepts were obviously grasped differently in the projects, agencies and the ministries. The lack of a mutual understanding of basic concepts and guidelines will weaken the ability of a project owner to govern. Ministry of Transport and Communication stated that they did not want to be an active portfolio managing party. They considered this to be delegated to NPRA. Nevertheless, it is the responsibility of the project owner to ensure that an adequate governance framework is implemented. The problems and observations we have discussed here reveal the need to strengthen the project governance in Norwegian public road projects.

5.5 How have the projects compensated for insufficient governance?

As we have seen, insufficient governance had negative impacts on the projects in our study. However, most of them turned out quite well in an overall perspective. This raises the question of how they could have turned out successful from an execution perspective despite having deficient governance.

Firstly, the projects in the sample had a special focus on cost control. In the period when the projects in our study were initiated and executed a lot of attention among the agencies

and ministries was focused on avoiding overspending and improving cost control. In this period the system of quality assurance by external consultants, the QA2 procedure, was implemented by the Ministry of Finance.

Secondly, the projects had the advantage of having good management. The presence of professional project managers and skilled staff in addition to good project management systems seems to have played a central role in the successful results we have seen. As stated above, the absence of critical decisions and clarifications will often force projects to act on their own. To us, it seemed that the project managers had implemented good ad-hoc solutions and made well-considered decisions based on scant information. Among some of the projects we investigated, late decisions seem to have been the main reason why they were able to meet their objectives.

A third contributory factor to success in the projects studied we ascribe to the fact that most of the projects had a comprehensive and well worked through basis for execution. All of the projects had been subject to a lot of attention and extensive scrutiny through QA2 and the prior planning process was important in preparing for the external review. The demand for a QA2 review was new at the time when most of the projects were initiated, and the agenciy probably found this to be a tough requirement which had to be taken seriously.

A fifth factor is that even though the project scope in some cases was not as well defined as desired, the planning process had given the projects a good basis for steering. The base plans, and also procedures, routines and tools for the project management where in place. The projects were therefore well prepared for upcoming eventualities, and well supported by robust management systems. We have observed over the almost ten years covered from the start of the first project in the sample to the end of the last one that there was significant increase in professionalism among both project managers and the project management system implemented in the agency. A specific area where improvement was observed is risk management. On the other hand, there was still a lot to be improved in terms of realistic cost estimation in the front-end.

The sixth and final reason for success observed in our sample of projects is one that serves to modify the degree of success. At the beginning of the period, when the new quality assurance scheme was introduced, there was a tendency that the external QA consultants added a lot of uncertainty and cost to the estimates. The reason might have been lack of relevant reference costs in their databases or perhaps that they feared that the projects might spend over their cost frame even after QA2. Regardless, in the beginning there was significant difference between the cost estimated by QA consultants and the agencies. The decision makers made their decisions based on the QA report, with the result that the projects in this period seem to have had quite generous budgets. We also note that these (all except one) projects actually were completed well below their cost frame. There was a period in which several road projects experienced that the development in the construction market was favourable, resulting in a series of positive surprises in the form of low bids on major contracts. This contributes to explaining why some of the projects appeared successful in the execution perspective despite the lack of adequate project governance.

6. CONCLUSIONS

We conclude that insufficient governance had a negative impact on the execution of the projects we investigated, even though they were successful overall. There is significant potential for improvement in current project governance in Norwegian government projects.

Our conclusion is that the basic principles for capital budgeting in this sample were not well implemented by the agencies or the ministries. There also seems to have been a lack of understanding among the project owners regarding the execution of the projects. Reduced funding in the middle of the execution phase is not the same as putting the project temporarily on hold; it often entails an increase in costs and slows down the rate of progress. There is undoubtedly also a danger of postponing the benefits that are supposed to make the investment profitable.

We observed that the studied projects had strong and professional project organization, staffed with persons' with a high level of project management competence and skills. We therefore partly ascribe their success to these factors. Some projects were also fortunate to hit the market at a good point in time and some projects had generous budgets. In some cases this might explain why they did not go wrong in terms of cost, but this seems to be a minor explanation when it comes to the overall success.

The projects were planned and executed under the regime of a strong and control-oriented governance framework. This was partly a consequence of the introduction of the QA2 arrangement, but also due to the fact that government projects in general were subject to much attention concerning cost control in the period they were initiated and executed. Thus, we find that these projects had a higher degree of support and attention from the agencies than is usually the case, and that a lot of effort was made to ensure proper and mature plans for the execution phase in most of the cases. These are probably the most important reasons for the success of these projects in the execution perspective.

Uncertainty management in this sample of road projects was overall not good. However, it has been verified that there has been a high degree of method development and improvement of the formalities and the practice is improved, but it is still challenging. The procedures for the release of uncertainty allocation should be designed so that at special events, or changes initiated by the owner, the funds are released from the uncertainty when the relevant provision causes exist

We also wish to point out that project governance is not only a question of governance of projects. The governance of programs and portfolios as well as the governance of project management contribute to the success of the agencies and organizations that undertake projects. This analysis has documented problems in all of these aspects of project governance related to Norwegian government road projects. The results also indicate that good management to some degree can compensate for the lack of adequate project governance.

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