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Do Nothing, *Do Minimum*, or *Do Something*? Why public project appraisals 'always' recommend large projects

Abstract

Purpose

In the project initiation phase, an appraisal is needed to clarify the strategic problem and alternative solutions. Full-scale construction projects and simple solutions (*do-minimum* alternatives) should be assessed. The *do-nothing* alternative is the baseline for the appraisal and an option in itself. The paper explores the role of *do-nothing* and *do-minimum* alternatives in public project appraisal, which may significantly impact the attractiveness of a construction project.

Methodology

The paper presents an empirical study from Norway, which requires external quality assurance (QA) of early project appraisals. The data include an extensive document review of 112 projects and interviews with 41 experts involved in the appraisal processes.

Findings

Of 112 appraisals, 110 recommended a major construction project, including cases where the benefits and value were low or uncertain. The *do-nothing* alternative was generally included as a reference but not treated as a viable option. *Do-minimum* alternatives were often not explored. By contrast, the external QA reports recommended *do-nothing* or *do-minimum* in 28 cases. Interestingly, although political decision-makers rarely reject projects, they may put them on hold indefinitely, implying that the actual outcome in many cases is still *do-nothing*.

Originality

The paper addresses a topic which has been understudied in the literature. The findings contribute to the broader literature on project initiation processes and project appraisal and how to reduce the risk of bias and manipulation in appraisals.

Keywords

initiation phase, public project appraisal, cost-benefit analysis, do-nothing, do-minimum, do-something, baseline, reference alternative, government investment projects, optimism bias

1. Introduction

The *do-nothing* alternative is essential for the outcome of economic appraisal of projects (Tveter, 2013). It acts as a baseline that potential construction projects are compared against, and it should ideally be a viable option in itself. Simple and low-cost solutions to the problem at hand, so-called *do-minimum* alternatives, should also be assessed. The design of *do-nothing* and *do-minimum* alternatives is thus crucial. Despite this, little research on this topic has been published.

More knowledge about the *do-nothing* and *do-minimum* alternatives will contribute to the literature on the project initiation phase and early project appraisal. The appropriate treatment of the two alternatives in the project appraisal has many technical aspects – the baseline scenario may be complex, where forecasts are needed for numerous variables, often with little data. However, the risk of bias may also be an issue. The appraisal is usually carried out by a public agency, often in close cooperation with stakeholders with strong preferences for a specific project. Project promoters may be incentivised to hide or diminish relevant *do-nothing* and *do-minimum* alternatives that would otherwise score better than their preferred alternative in the appraisal. Principal agent problems may be particularly prominent when there is an asymmetry between who pays for a project and who receives the benefits. This may result in conflicting goals and is further exasperated by information asymmetries (Miller, 2005; Volden, 2018).

This paper looks empirically at the *do-nothing* and *do-minimum* alternatives, taking an open and explorative approach. We examine the role of these alternatives in the appraisal, and how they are designed, presented and if they are ever recommended. We also look briefly at the extent to which *do-nothing* and *do-minimum* alternatives are selected by decision-makers. We use the terms *do-nothing* and *do-minimum* as they are commonly applied in project appraisal guides and in the literature (e.g., Mackie and Preston, 1998). However, the terminology in this area is not consistent, and other terms are also in use such as 'the counterfactual' (Burress and Oslund, 2004) and 'the base case' (Tveter, 2013) as synonyms for *do-nothing*, and 'zero plus' (Cantarelli *et al.*, 2010) and 'viable do-minimum option' (HM Treasury, 2022) as variants of *do-minimum*.

We use empirical data from the planning phase of major government projects in Norway. Since 2005, early project appraisal has been compulsory for the country's largest projects under the Ministry of Finance's state project model. This ensures the consistency of project appraisals and that data from the appraisals are openly available for research.

Norway tends not to select projects according to the cost-benefit analysis (CBA), particularly in the transport sector. Eliasson *et al.* (2015) found no relationship between project selection and a positive net present value. Volden (2019) demonstrated that 75% of early project appraisals recommended alternatives with a negative net present value. From an economic perspective, society would often have been better off with the *do-nothing* alternative. Poor selection efficiency may potentially be explained by the design of the do-nothing or do-minimum alternatives, thereby promoting extensive investment options as the only viable choice.

The paper proceeds as follows. Section 2 presents existing literature about the issue investigated. Section 3 describes the data and methodology used in the study. In Section 4, we present and discuss the results. Finally, in Section 5, we conclude by offering ten recommendations for how *do-nothing* and *do-minimum* alternatives should be dealt with in project appraisal.

2. What the literature says about early project appraisal and the do-nothing and do-minimum alternatives

This section sets the context for the study and provides an overview of the central topics. The first part explains the front-end phase of projects and the process of project appraisal, while the second part delves deeper into the concept of the *do-nothing* and *do-minimum* alternatives and their understanding in the literature.

2.1. The project front-end phase and the decision to fund a project

The front-end phase of a project, also referred to as the conceptual phase or the initiation phase, is critical to the strategic success of a project (Williams *et al.*, 2019). Even if the understanding of this initial phase is increasing, it is still poorly understood (ibid.). In particular, the role of the *do-nothing* and *do-minimum* alternatives in the appraisal and decision-making process has received limited attention in the literature.

The need for governance in the project initiation phase

Project governance involves the processes and systems that the financing party must implement to ensure a successful investment (Volden and Samset, 2017a). The literature on project governance has grown over the last two decades (Winch, 2001; Müller, 2009; Ahola *et al.,* 2013; Too and Weaver, 2014). Narayanan and DeFillippi (2012) suggested that project governance should incorporate five elements: (1) stage-gate approval processes, (2) formal roles and responsibilities, (3) stakeholder representation, (4) quality assurance, and (5) contracts and sign-offs. These elements are intended to bring relatively more rationality into the process and to ensure the quality of processes and products.

Certain project phases are more critical and need governance arrangements more than others. Müller (2009) emphasised that the selection and prioritisation of projects is a critical issue in a project governance model, which is closely related to the organisation's portfolio management. Volden and Samset (2017b) discussed project governance frameworks in six countries that had introduced requirements to ensure the quality of decision documents and the early go/no-go decision. The governance schemes exhibited common characteristics, such as employing a stage-gate model with defined roles and responsibilities. They included independent quality assurance reviews at specific decision points and incorporated strategies to mitigate optimism bias in cost estimations, a common challenge in project planning. Furthermore, they placed key decisions and responsibility for managing the scheme at a high level within the system (Volden and Samset, 2017b). Several countries such as the UK, Netherlands, Canada and the Scandinavian countries, have introduced stage-gate models, including requirements for documents to be produced at specific points in the process (Williams *et al.*, 2010; Klakegg *et al.*, 2016; Volden and Samset, 2017b).

It has been noted that although the formal decision to fund a project is made at a later stage, it is important that the initial choice of a conceptual solution is well-founded. If it turns out later that the solution was inefficient, it might be difficult to stop the process due to expectations created among stakeholders (Cantarelli *et al.*, 2010; Drummond, 2014).

Strategic justification for a project

Major projects are measures to realise higher-order goals and strategies at the organisational level (Zwikael and Smyrk, 2012; Morris, 2013; Lehtonen *et al.*, 2017). In the public sector, government projects are means to realise political goals and solve critical public tasks, such as security, housing and other merit goods, economic development, and even national pride and prestige (Volden, 2019). In some cases, projects are means to obtain transformative change; in others, they are needed to upgrade the facilities of an existing activity. Ideally, the benefits, whether they can be assessed in monetary terms or not, should outweigh the investment cost.

There is no consensus within the literature regarding which activities should be accomplished during the front end and how they should be ordered (Williams *et al.*, 2019). Mintzberg *et al.*

(1976) suggested a three-phase decision-making process, including (1) identification of problem or opportunity, (2) solution development, and (3) selection. Smith and Jackson (2000) and Smith *et al.* (2006) suggested a method referred to as Strategic Needs Analysis, which can be used to analyse and review clients' objectives, propose alternatives, and confront participants with making choices.

Value for money, as measured by cost-benefit analysis (CBA) is often a crucial part of the business case and a key selection criterion in government projects (Volden, 2019). Various techniques have been developed to elicit the willingness to pay for non-market goods to make the CBA as comprehensive as possible. Impacts that cannot be monetised must be described and presented in other ways to complete the picture (Boardman *et al.*, 2018).

Decision-making in the front-end of projects is complex

A neat decision-process that starts with a problem, explores solutions, and selects the best one should be considered an ideal rather than a description of reality. Samset and Volden (2016, p. 7) stated that 'decisions are made at the intersection between the professional and political'. For example, the stakeholders involved may have their preferences for a specific project solution. In many cases, the solution seems to be 'selected' without systematically scrutinising the opportunity space. This is evidenced in a case study by Samset *et al.* (2014), who found that 11 out of 17 projects had already decided on the solution before the appraisal started. This will be an example of strategic misrepresentation where political bias, strategic bias, or power bias comes into play and affects the decision-process (Flyvbjerg, 2021).

Several studies have highlighted the complexity of decision-making in the early stages of major public projects, revealing that such decisions are influenced by the complex dynamics of group politics and social contexts. Additionally, these studies highlight how political biases and pressures can negatively impact the accuracy of cost and benefit estimates in project planning (Williams and Samset, 2010; Samset and Volden, 2016; Williams, *et al.*, 2019).

Decision making refers to the act of evaluating (i.e., forming opinions of) several alternatives and choosing the one most likely to achieve one or more goals (Baumeister and Vohs, 2007). Selecting the right project in the front-end phase is crucial and these decisions often require consideration of multiple, sometimes subjective, criteria. Furthermore, the relative importance of specific criteria varies depending on the decision-maker's perception of the situation and the organisational boundaries (Mian and Dai, 1999).

Adverse incentives and bias

Agency theory has a central play within project governance and decision-making. The theory identifies an agency relationship of two parties (the principal and the agent) where both are perceived as rational economic actors that act in a self-interested manner (Ross, 1973). As principals need to provide agents with some level of decision-making authority, issues related to conflict of interest and moral hazard, due to asymmetric information, may arise (Williamson, 1988).

Bias and even manipulation can be a problem in appraisal and decision-making (Flyvbjerg *et al.*, 2003; van Wee, 2022). Flyvbjerg (2021) outlined ten behavioural biases in project management: (1) strategic misrepresentation, (2) optimism bias, (3) uniqueness bias, (4) the planning fallacy, (5) overconfidence bias, (6) hindsight bias, (7) availability bias, (8) the base rate fallacy, (9) anchoring, and (10) escalation of commitment. Of particular importance to the do-nothing

alternative in public project appraisal is strategic misrepresentation. This tendency to distort information for strategic purposes (Jones and Euske, 1991; Flyvbjerg, 2021) is relevant as the agents responsible for the appraisal might favour alternatives other than the *do-nothing* option, potentially conflicting with the principals' interests (the government).

Flyvbjerg (2009) argued that the cost and risk of the preferred alternative are often deliberately underestimated, while benefits are overestimated in project appraisals. Volden (2018) referred to this problem as perverse incentives and claimed that the risk is greatest when projects are fully funded by the government, with concentrated benefits and no liabilities for the recipients. Others have argued that over-optimism in appraisals can best be explained by a combination of deliberate bias and unintentional error, where the latter also has a crucial role (Ika *et al.*, 2023).

Different conceptual models have been suggested in the literature to explain decision-making in public administration, including value maximisation models, organisational process models, political bargaining models, and symbolic frameworks (Woodhead and Smith, 2002). Thus, decision-making is not only a result of rational analysis, but is also affected by politics, power, and bounded rationality. Studies of decision logic in public projects have tended to conclude that the front-end phase is often long and 'messy' and that the justification for the project may change over time (Whist and Christensen, 2011; Woodhead and Smith, 2002).

While the insights from decision-making science and agency theory, particularly as they relate to project governance, provide a valuable context for our study, these are not the central topics of this article. Instead, our focus is more specifically on exploring the role of *do-nothing* and *do-minimum* alternatives in public project appraisal.

2.2. Do-nothing and do-minimum

Most countries and funding institutions have guidelines for their appraisal of publicly-funded projects (see, e.g., European Commission, 2014; Transport Infrastructure Ireland, 2016; Finansministeriet, 2017; HM Treasury, 2022; Trafikverket, 2023). In many of these guidelines, value for money and alignment with strategic goals are given a central place. For example, in the UK, the Five Case Model is applied in public projects, which aim is to establish a case for investment by preparing five key cases: strategic, economic, commercial, financial, and management (HM Treasury, 2022).

Project appraisal needs a baseline

A potential investment project must be compared with a baseline or reference alternative, typically defined as the *do-nothing* alternative. This would normally be the continuation of the existing situation, where either a problem is not solved or an opportunity is not taken. Most guidelines are, however, vague regarding the design of the baseline for appraisal. Typically, the guidelines state that the baseline should represent a 'continuation of the current situation with necessary maintenance at a minimum level', but what this means is unclear. Most countries specify that only committed policy should be included in the baseline. Some guidelines distinguish between *do-nothing* and *do-minimum*, with a general recommendation to use *do-nothing* as the baseline and to include *do-minimum* among the alternatives. However, numerous decisions and considerations are left to those performing the appraisal.

The Dutch transport CBA guidelines stand out, as they *require* investigating the possibility of partially solving or mitigating the identified problems with minor interventions (Wangsness *et al.*, 2022). The guidelines mention that examples could be road pricing, spatial planning, improved

information to travellers, and incentives for bicycle use. Other guidelines, such as those used by the Swedish transport authorities, do not have requirements but generally *encourage* the inclusion of small-scale alternatives.

The baseline has not received much attention in the academic literature either. We searched the literature for different terms, like 'do-nothing', 'baseline', 'base case', 'counterfactual', 'reference scenario', 'business as usual' and 'status quo' and hardly found any studies relating to project management or economic appraisal.

From a rational economic perspective, project alternatives should be ranked according to their value for money, and the alternative with the highest benefit-cost ratio should be recommended. If the benefits do not outweigh the cost of any alternatives, the *do-nothing* alternative should be selected, implying that the appraisal process should be terminated. In cases when benefits either cannot or should not be measured in monetary terms, the appraisal process and ranking will have to be qualitative, but the principle should be the same.

The importance of the *do-nothing* alternative to the appraisal results should not be underestimated. For example, assume that the problem is congestion, and the benefits of building a new motorway can be measured by the time savings obtained over its life cycle, which in turn will depend heavily on current and future traffic situation, in the absence of a new road. If we assume that the current situation will gradually worsen, the benefits of a new road will increase. If, on the other hand, we believe that the situation will improve 'by itself' (e.g., due to new technology, reduced travel demand), the benefits of a new road will decrease. Similarly, the baseline can affect project costs.

Defining the baseline is complex and potentially prone to bias

The design and analysis of an appropriate *do-nothing* alternative may seem straightforward. However, as indicated above, it can rarely be described as a simple continuation of the status quo. Instead, it should be described as the expected path throughout the analysis period (i.e., the life cycle of the *do-something* alternatives). Typically, this includes assumptions about development in demographic and macroeconomic variables, technology, other trends and contextual factors, and public policy. Another complicating factor is that the benefits of a project may be impacted by other projects implemented during the analysis period. For example, the benefits of a new road will depend on whether parallel roads or train services are being built in the same period.

Most guidelines on project appraisal state that the baseline should only include 'committed policy', such as projects that are approved and have received funding and taxes that are already implemented. However, policy evolves, especially concerning climate change, which can significantly impact the accuracy of forecasts. Therefore, analysts must assess how society will adapt to these measures and their consequences throughout the analysis period.

In addition to the external factors, which should be the same with and without a new construction project, certain fundamental choices must be made for the baseline concerning, for example, how much upgrading of the existing infrastructure should be included. Although we use the term *do-nothing*, the baseline may involve some ordinary maintenance of the existing infrastructure. It could even involve some minor reinvestment activities to maintain the service in the longer term.

According to Tveter (2013), an ideal reference alternative for a CBA should satisfy two criteria: (1) it should provide a continuation of the current service level, implying that users should not be

worse off, and (2) should not involve new investments apart from committed projects. Although these two criteria may appear reasonable, they may conflict in practice. The first criterion may indicate a need for considerable upgrading in the coming years, while the second suggests accepting declining needs satisfaction.

Burress and Oslund (2004) argued that describing a realistic baseline is one of the most demanding parts of a CBA. Similarly, Nash (1992) considered that much of the uncertainty in project appraisals is related to difficulties defining the correct base case. Also, he argued that the baseline could take many forms, and in many cases, there will not be just one baseline but many. For a railway project, one alternative could be to close down the service, another could be to increase prices, and a third could be business as usual.

Given that the baseline often receives little attention, we realise that it may be particularly prone to bias. Theoretically, the baseline could be deliberately designed to be so unattractive that an otherwise poor *do-something* alternative would appear to be good value for money. Hultkrantz and Svensson (2012) warned that the discretionary element in this part of the appraisal might leave room for manipulation in that the analyst or their client may wish to promote a particular project alternative.

Næss (2011) claimed that incorrect (pessimistic) traffic forecasts in the no-investment scenario could be an important source of bias. He observed that traffic growth was often assumed to be at the level of the national average, even on congested roads. This assumption, he argued, would lead to an exaggeration of travel time in the no-investment case. In reality, road users will adapt to increased congestion by travelling less or choosing other means of transport. Næss argued that this form of pessimism bias often serves to influence decision-makers to sanction new road projects.

Nicolaisen and Næss (2015) empirically studied pessimism bias for the counterfactual scenario. They found that when a planned road was *not* built, the results showed that travel demand had been systematically overestimated for Danish and British road projects. However, they did not prove that this was done deliberately.

The landscape between do-nothing and full investment

The *do-minimum* alternative is a related element in the appraisal and has received even less attention in the literature than *do-nothing*. By *do-minimum*, we mean a solution that is less ambitious and cheaper than a full-scale investment project but includes more than *do-nothing*. It contributes to solving the problem, but only to some extent.

A *do-minimum* alternative may have two roles in project appraisal. First, as indicated above, it may sometimes be used as a baseline instead of doing *nothing*. As *do-nothing* implies very little (if any) upgrading, the implication is that the existing infrastructure would stop working properly. In such a case, a *do-minimum* alternative would be more appropriate as a baseline (Mackie and Preston, 1998).

Second, when exploring the opportunity space and defining relevant solutions, analysts should always search broadly for alternatives, not only in the form of large construction projects but also as low-cost solutions. For example, if the problem is a traffic jam, *do-minimum* could involve either improvements in the bus services or road pricing at peak hours. In many cases, a construction project is only one of many ways to solve a problem. All relevant alternatives should be identified and assessed against the baseline.

Mackie and Preston (1998) noted that a critical pitfall in project appraisal would be omitting *do-minimum* options when analysing alternatives. Cantarelli *et al.* (2010) discussed the lock-in phenomenon (i.e., decision-makers' escalating commitment to a less favourable project proposal). They argued that the lack of good *do-minimum* alternatives might be one of the reasons why lock-in occurs. They also stated that decision-makers might deliberately exclude low-cost options to create lock-in for their preferred projects or decisions.

3. Data and methodology

3.1. Research design

The overall research design of this study (building on Bryman, 2016) is a mixed-method approach, combining qualitative and quantitative methods and data, and inductive in that the study motivation and research problem was empirically driven. In addition, as for any empirical research investigation, a review of existing literature was undertaken. The purpose of this was partly to understand theories underlying the area of study and partly to obtain an updated insight into current issues and best practices within the topic.

Public investment projects are subject to more or less formalised appraisal processes in many countries around the world. To study such appraisal processes and their outcomes in terms of recommendations, an empirical context was required that would allow gathering data from a large number of such processes. Using definitions by authors such as Yin (2017) and Stake (1995), we use the term 'case' to describe one country's appraisal scheme.

There are different strategies for selecting case study(ies) for research projects, and Flyvbjerg (2006) has outlined some of these. He distinguished first between random selection and information-oriented selection, where the former normally involves selecting a sample of some size. This would be infeasible in our case, so we had to pursue a selection which could produce real insights from a small sample or a single case. Flyvbjerg divided this type of selection into choosing extreme/deviant cases, maximum variation cases, critical cases, or paradigmatic cases. Being researchers within the Concept research programme in Norway, we had ready access to the Norwegian Quality Assurance scheme for large governmental investment projects. There is some overlap between these, and according to Flyvbjerg's categorisation, we believe the Norwegian scheme can be defined as either an extreme case (since this scheme is arguably the oldest in existence), a critical case (allowing deductions that the mechanisms in play in this scheme are likely also in play in other countries), or even a paradigmatic case (since this original scheme has served as a model for many other schemes and thus would allow findings and recommendations developed from it to be applied elsewhere). In any case, we feel confident that the Norwegian scheme represents a very suitable case to study appraisal processes and their outcomes. We must also clarify that the individual appraisal processes that we studied were not considered case projects, but rather data points within the one case represented by the Norwegian scheme.

3.2. The Norwegian case – project appraisal in the front-end of government projects

In Norway, large government projects (> EUR 85 million) are subjected to mandatory review through the application of a stage-gate model for project governance (Finansdepartementet, 2023). The model was introduced in 2000 after a government report concluded that most projects were presented to parliament based on immature and often over-optimistic plans and estimates. It was recommended that plans should be subjected to external quality assurance. This

first applied to cost estimates and detailed project plans (QA2) and was later expanded in 2005 to include the project appraisal or business case (QA1).

The model and its main stages that all large government projects must follow to receive funding are shown in Figure 1. It applies to government projects in all sectors, the largest categories being transport projects, buildings, defence acquisitions, and ICT projects. The Ministry of Finance is responsible for the model and has issued guidelines and instructions that all ministries and government agencies must follow.

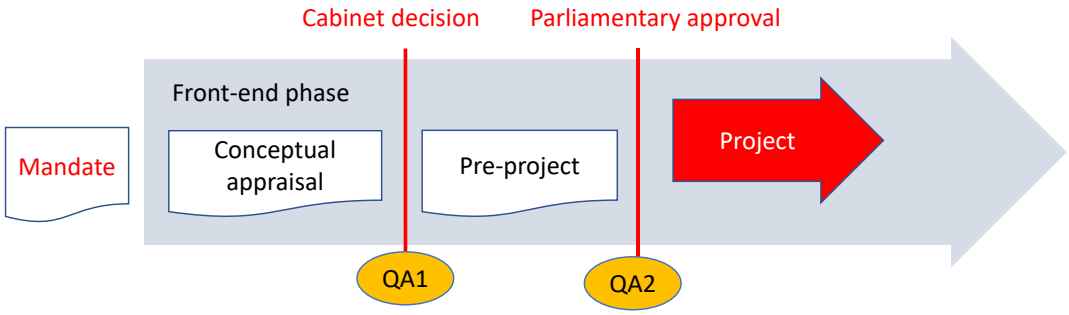

Figure 1. The main stages in the development of government projects in Norway

The process starts with a ministerial decision to instruct a subordinate agency to conduct a conceptual appraisal (business case). This is often in response to lobbying and pressure from interest groups, in cases where initiating a conceptual appraisal might be seen as a way of 'doing something'.

The appraisal includes the following three main steps, in line with the three-phase decision-making process suggested by Mintzberg *et al.* (1976):

1. Assessment of the triggering problem or need.
2. Exploration of the opportunity space for solutions to the problem. A broad initial search should provide the basis for coarse screening of alternatives, resulting in at least three conceptually different alternatives. The *do-nothing* alternative should be included among the three alternatives.
3. Ranking of the shortlisted alternatives based on assessment of costs, benefits, and risks.

The conceptual appraisal must be scrutinised by external consultants through the QA1 procedure. The QA1 report should include a recommendation that may or may not align with the agency's recommendation.

If the Cabinet decides to proceed with planning, the selected project alternative will move on to the pre-project stage. Still, the cost estimate must be scrutinised through a new round of external quality assurance (QA2) before Parliament may take a formal investment decision and allocate a budget for project implementation.

Thus far, research has shown that QA2 has successfully ensured that the final budgets are realistic and that the Government has obtained good cost control on a portfolio basis (Welde and Klakegg, 2022). There are also indications that QA1 has contributed to a more systematic approach to early project appraisal and potentially more efficient conceptual solutions (Volden and Samset, 2017a). However, only 11 projects that have undergone QA1 have been completed yet, and their actual success remains to be seen (Volden, 2019).

3.3. Data collection and analysis

Our research design was primarily descriptive, aiming to understand investment appraisal processes and their outcomes better. We used quantitative and qualitative data from early appraisals of Norwegian government projects. Such a research design, often called a 'mixed methods' design, provides a rich data set and the opportunity to triangulate findings. The data collection and analysis took place in three steps. The first step was a review of project documents (secondary data). The second step consisted of interviews with experts who represented ministries, agencies and QA consultants (primary data). The third step was a combined analysis of the primary and secondary data findings. What we did in each step is explained as follows.

Step 1. Document review

The document review included 112 projects, which, in their early phases, had undergone the structured front-end process shown in Figure 1.

The selected 112 projects constituted almost the entire population of projects that had undergone conceptual appraisal and QA1 from when it was introduced (2005) until 2022. Eight projects, primarily from the defence sector, had to be omitted due to missing data. About one-third (33%) of the projects were from the road sector, followed by buildings in the civil government sector (27%) and railway projects (13%). The remaining projects concerned ICT projects, military acquisitions, and facilities in the defence sector.

The data consisted primarily of conceptual appraisals and quality assurance reports (QA1) for all the studied projects. Each report typically has a length of 90–120 pages. We also had access to the mandates for the appraisals for 46 projects and various supplementary analyses (e.g., updated and extended appraisals due to a critical QA1 report). To determine the projects' current status, we also used government websites and the media.

The studied projects were in different phases, although it was not always straightforward to determine which phase in each case. Only 11 projects were completed, but most were somewhere in the planning or implementation process or had most likely been terminated, though not formally; but rather 'put on hold'.

When going through the documents, we applied a comprehensive checklist, consisting of about 40 data fields, to ensure the same information was registered for all projects. The checklist items were based on issues identified in the literature review. A first version of the checklist was tested on a few projects per sector, with four researchers reviewing each project's data. Then, the checklist was updated and used to review the remaining projects. Four researchers divided the projects between them and regularly discussed challenges and interpretations.

The main categories of information included in the checklist were the following:

- background data
- mention of *do-nothing* and *do-minimum* alternatives in the mandate
- conceptual appraisal: inclusion/non-inclusion of *do-nothing* and/or *do-minimum* alternatives, their content and scope, duration/sustainability, realism, key assumptions, transparency, how they were presented, uncertainties, and recommendations
- QA1: same as for a conceptual appraisal, with a focus on the discrepancy between the two types of reports

- Cabinet's decision and current status of the project. For the 11 projects that had been completed, i.e., implemented and put into operation, we did not collect data about the performance of these projects, as this was not available for all the projects.

Due to space constraints, this paper does not allow including the checklist, but it will be made available upon request.

Step 2. Interviews

The interviews were mainly used to understand what lay behind our findings from the review of the documents and to capture the views and experiences of the practitioners. The interviews were semi-structured. Semi-structured interviews have a strength in their reciprocal exchange between the interviewee and interviewer (Galletta, 2013), which allows the interviewer to formulate questions based on the responses and replies from the interviewees (Rubin and Rubin, 2011).

To develop the interview questions, the undertaken review of previous research was utilised (Kallio *et al.*, 2016; Kelly *et al.*, 2010; Wengraf, 2001), along with the researchers' subject matter knowledge and findings from the document review (there is no room to include the interview guide either, but this is also available on request). We asked the interviewees about general practice, not individual projects. Based on the document review, we focused more on topics that seemed to be challenging or surprising. We also adapted the interview guide to some extent according to sector and type of informant (ministry, agency, or QA consultant). Finally, the interview guide included open questions about 'other aspects' and an invitation to put forward suggestions for improved practices.

We interviewed representatives of ministries, government agencies, and consultancies involved in external quality assurance. These people were selected based on their in-depth knowledge of the use and understanding of the baseline in project appraisal from being involved in various steps of these processes throughout many years. The specific individuals were chosen based on the researchers' overview of people with relevant experience in the different organisations. In addition, the sampling strategy of snowballing (Saunders *et al.*, 2009) was applied to identify individuals in organisations where we either lacked contact persons or potential interviewees declined to participate. The selection effectively spanned all the relevant ministries and agencies represented in the portfolio of 112 projects.

A total of 15 group interviews were conducted with 41 informants. Each interview lasted 1.5–2 hours. Group interviews have their strength in facilitating discussion and debate. They also entail an additional quality check because the informants will balance and moderate each other, make additions, and add details to what is said. The median number of participants in the interviews was three. We used a combination of physical and digital meetings. Between two and four researchers were present during each interview.

Table 1. Data used in the study

Type of data	
Documents	46 project mandates 103 conceptual appraisal reports 109 quality assurance reports (QA1)
Interviews	19 informants from agencies 13 informants from quality assurers 9 informants from ministries

The interviews were recorded and summaries compiled. During the interviews, notes were taken by the participating researchers not primarily responsible for asking questions in order to increase the reliability of the study (Silverman, 2021). After one or two interviews, the researchers compared notes from these and discussed the main findings. This was based on the advice from Sandberg (2005) to achieve communicative, pragmatic, and transgressive validity during data collection and analysis.

Step 3. Combined analysis

As mentioned earlier, the research design was inductive (Fereday and Muir-Cochrane, 2006). The data analysis was conducted in several iterations, using relatively simple qualitative coding, categorisation, and summarising (building on the recommendations by Tjora, 2018). In line with the suggestion by Miles and Huberman (1994), the analysis and coding were started before the data collection was completed to allow some overlap and the analysis to inform the data collection. The analysis was performed manually, as we did not see a need to apply software solutions. This was done by reviewing all interview recordings and summaries and coding the data for so-called first-order themes (Gioia *et al.*, 2013).

First, we structured the project-based data from the document review according to the checklist. For some topics, we could apply either 'yes/no' or other simple coding and aggregate the findings, including performing frequency analysis for relevant practices. For other issues, the data were purely qualitative, and findings had to be extracted from comparing and contrasting statements from reports. Then, we added the interview data, bringing more depth and explanation to the document review findings. This resulted in a new iteration of our qualitative analysis based on both data types, where themes and codes were reviewed and refined again. In the results section, we have included quotations from the interviews. This has been a deliberate choice to illustrate key findings in an effort to improve the transparency of our analyses (Silverman, 2021). With the interviews being conducted in Norwegian, the quotations were translated and lightly edited to capture the main points, but the core message of the quotations remains unchanged.

Reference group quality control

A study reference group, comprising six individuals from different sectors who were particularly experienced in conceptual appraisals, was established to follow the study. As part of step 3, we presented our combined findings and preliminary conclusions to that group. We had a fruitful discussion with the group members, during which we received their views and comments.

We ended up with the following structure for the findings presented in Section 4.

- **The role and content of the *do-nothing* and *do-minimum* analysis in appraisal.** Including how the baseline is defined (scope, content), its role in the analysis, and whether the appraisal includes a *do-minimum* or other low-cost alternatives.
- **Realism and sustainability for the *do-nothing* alternative.** To what extent *do-nothing* is seen as acceptable (i.e., something that society could live with) and for how long.
- **Presentation and analysis.** How the *do-nothing* and *do-minimum* alternatives are presented, and how transparent the analyses are.
- **Decisions.** The extent to which appraisals recommend the *do-nothing* or *do-minimum* alternative and whether decision-makers ever select them.

3.4. Limitations and quality of the research

The study has some limitations. We used a relatively broad selection of projects covering many sectors and project types. The number of projects per sector varied considerably, with few projects for some sectors; and hence, we could not present generalisable results for sectoral variations. The projects also spanned a relatively long time (conceptual appraisals conducted between 2005 and 2022), with appraisal practice changing somewhat during that period. In our presentation of the results, we place somewhat more emphasis on recent practice when relevant.

At the same time, our study was exploratory; it focused on a topic not well-covered in the literature. Therefore, we explored the topic broadly by including all available data. We were also able to exploit triangulation of methods as well as triangulation of data, which increased the validity and reliability of results. Thus, despite limitations, the sum of our data from the document review and the interviews constitutes valuable insights and an explanation of the *do-nothing* and *do-minimum* alternatives as phenomena.

We took specific steps to ensure the validity and reliability of the findings. First, following the recommendation by Creswell (2009), we documented the research procedures to ensure consistency and held regular meetings to assess the process. Moreover, we checked the transcriptions from the interviews to avoid errors. The data were collected through converging sources (different informants) and were cross-checked against the document review and theory, following a triangulation approach to ensure validity. Reliability was increased by applying multiple data collection methods and developing and maintaining the database for the case study (Ellram *et al.*, 2020; Rasmussen *et al.*, 2021). To increase internal validity, we performed pattern matching and explanation building throughout the concept development (Karlsson, 2016). Discussions with experts from multiple sectors increased the study's external validity.

4. Results

4.1. The role and content of the *do-nothing* and *do-minimum* alternatives

Terminology

The document review showed that the vast majority of appraisals use the term *do-nothing* or variants of this term when referring to the baseline for appraisal. Other terms with a similar meaning were also observed, such as 'alternative 0', 'base case' and 'reference'.

Similarly, *do-minimum* is most commonly used to describe a simple and low-cost solution, but variants such as 'alternative 0+' are also observed. In five projects, the minimum alternative is named after the solution (such as 'improvement concept' and 'better bus connection'), but from the content and scope of the alternative we defined it as *do-minimum*.

The *do-nothing* alternative normally implies doing nothing

Of the 112 appraisals, 83 define the baseline as a 'pure' do-nothing alternative (see Figure 2). Most appraisals present the baseline as the current situation where an existing infrastructure will continue to be in operation, with no or very little upgrading over the next years, only ordinary maintenance. Not unexpectedly, this alternative is portrayed as rather unattractive.

The remaining 29 appraisals include reinvestment and upgrading to a greater or lesser extent, the most expensive *do-nothing* alternative is estimated to cost EUR 285 million. The explanations for including more substantial upgrading in these cases, are only sometimes transparent.

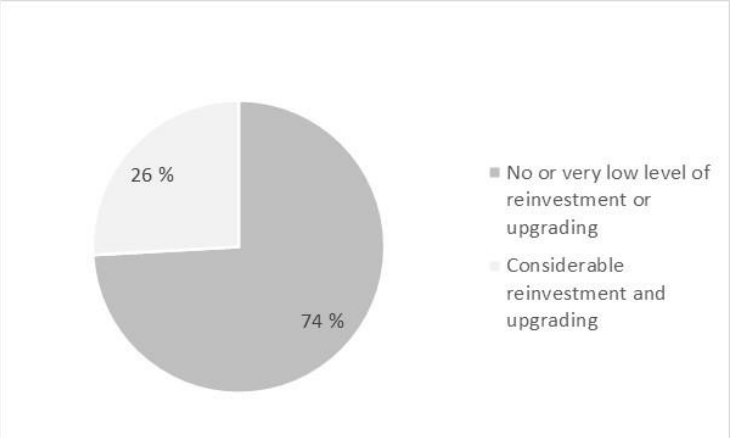

Figure 2. Scope of the do-nothing alternatives (N = 112)

The *do-nothing* alternative is treated as a reference, not as a viable option

It follows from the above that the baseline may serve different functions in the appraisals. The vast majority of appraisals that apply a 'pure' *do-nothing* alternative, seem to treat this alternative as a reference, i.e. a baseline against which the impacts of the *do-something* alternatives are measured. On the other hand, the appraisals that include some reinvestment and upgrading; treat *do-nothing* as a reference and a viable option in itself. The informants confirmed this picture, and some tried to explain why the *do-nothing* alternative is rarely seen as a viable option:

> The *do-nothing* alternative should ideally be both a good baseline, cost nothing, and be viable. Unfortunately, these purposes are impossible to reconcile. (Agency representative)

> I have never encountered anyone who has seen *do-nothing* as a realistic alternative. (Agency representative)

Several informants highlighted an interesting point, namely that if a continuation of the current situation had been acceptable, there would be no need for an appraisal, and vice versa; an appraisal is needed when the current situation is unacceptable.

Do-minimum is only sometimes included, and its content and scope vary considerably

Whereas all 112 appraisals include a baseline, only 34 include a *do-minimum* alternative in addition to the baseline. Of these, four include more than one *do-minimum alternative*, for example, 'alternative 0+' and 'alternative 0++' where the latter includes more upgrading and higher cost than the former.

Sometimes, the *do-minimum* alternative is hard to distinguish from the *do-nothing* alternative. At other times, it is a large construction project, such as extensive renovations or life extensions. It is often unclear what the role of the *do-minimum* alternatives is in the appraisals.

One of our informants suggested the following distinction between *do-nothing* and *do-minimum*:

> A *do-minimum* alternative should satisfy needs at approximately today's level or higher. On the other hand, *do-nothing* can provide significantly poorer needs satisfaction. (Quality assurer)

Informants see the need for better *do-minimum* alternatives

Several informants acknowledged the importance of good *do-minimum* investment alternatives for efficient public policy and argued that this is a topic that needs more work:

> *Do-minimum* is a crucial concept. By contrast, *do-nothing* is often not an option because the existing infrastructure is worn out. (Agency representative)

> We need to do better at designing good *do-minimum* options. (Ministry representative)

There is no agreed upon method to identify relevant *do-minimum* alternatives. Many conceptual appraisals across sectors refer to the 'four-step principle', a method adopted from the Swedish transport sector (e.g., Riksrevisjonen, 2018) to identify alternative solutions in four steps: (1) measures that reduce demand (such as, peak pricing, information and regulation), (2) minor upgrading of existing infrastructure, (3) more comprehensive upgrading, and (4) new infrastructure. We observed that solutions on the lower steps are rarely worked out properly in the studied documents. If mentioned at all, they are typically given a low score in the preliminary screening and therefore rejected early on. Our informants confirmed that this was often the case:

> We never get good discussions about small measures, although we try sometimes (Agency representative)

> The four-step principle is often used to argue that measures at the lower levels should be discarded, instead of using it to identify and develop such alternatives. (Ministry representative)

Our assessments

There seems to be a misconception in the agencies that the purpose of the appraisal is to 'select the best investment alternative', rather than to decide whether or not to invest. The do-nothing alternative, which involves continued use of existing infrastructure 'as is', should serve as an option in itself and not just as a reference for major investment. Also, more should be done to search for efficient *do-minimum* alternatives using methods like the 'four-step principle'.

4.2. Realism and sustainability of the *do-nothing* alternative

Agencies do not want a viable *do-nothing* alternative

It follows from the preceding section (4.1) that *do-nothing* is rarely perceived as a realistic and viable alternative by the agencies conducting conceptual appraisals. This raises the question of whether more could be done to design a viable *do-nothing* alternative. For example, in many cases, it is argued that the existing infrastructure has already reached (or will soon reach) its end-of-life stage. Still, such claims are only sometimes supported by data and thorough assessments. The appraisals rarely discuss how long it is possible to live with the current situation, nor do they discuss remedial measures that could extend the service life of the infrastructure.

Many conceptual appraisals seem to define the problem too narrowly, the result being that a new building is the only solution. For example, this is the case for some universities, as noted by one informant:

> Many universities set ambitious growth numbers for students and feel they 'need' to increase capacity, but it could be that other universities have capacity. The numbers don't add up when we aggregate numbers to the national level. (Quality assurer)

In this case, an acceptable *do-nothing* alternative could have been to transfer students to other universities, but instead, the informants described the *do-nothing* alternative as 'unacceptably crowded', and the *do-minimum* alternative involved expensive rental space in other buildings.

Status quo as a problem

A distinction should be made between cases where the conceptual appraisal starts from a *problem*, in which case many see the *do-nothing* alternative as unacceptable, and cases where investment is seen as an *opportunity* for growth.

Figure 3 shows the extent to which non-investment was considered a problem in the appraisals. About one-quarter of the appraisals (26%) described a currently untenable situation. Extreme examples are buildings in such poor condition that employees suffer from health problems. At the other end of the scale are appraisals (22%) in which investment is represented as more of an opportunity. An example is the new crossing over the Oslofjord to replace today's ferry service, which would reduce barriers and contribute to developing a joint labour market on both sides. In the remaining 52% of the cases, it is *argued* that the status quo is a problem, but the argumentation backing this varies in credibility (researchers' assessments).

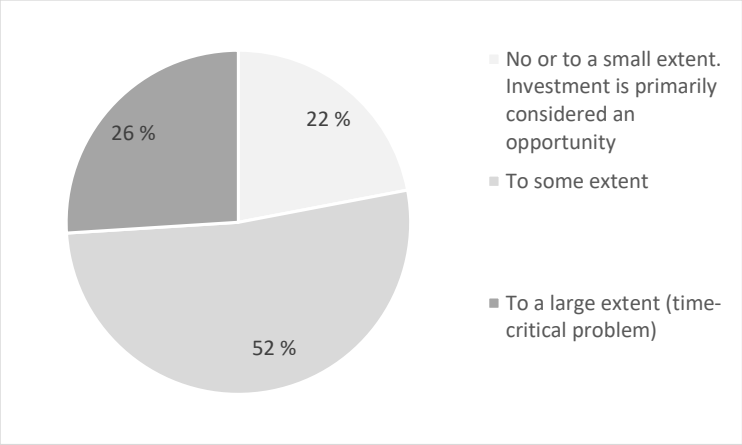

Figure 3. Was non-investment considered a problem in the appraisals? (researchers' assessment) (N = 112)

We found that problems and opportunities are often mixed in the appraisals, which generally refer to all unfulfilled goals as 'problems' and therefore sift out all but full-scale investment alternatives. While some of the problems are well-justified, others are, in our view, dreams and aspirations. In such cases, a *do-minimum* alternative could have been developed to solve the critical problems while accepting that other demands would have been left unanswered.

Some informants argued that, in the case of opportunities, it should be easier to define the *do-nothing* alternative as 'business as usual'. By contrast, in the case of problems, it might be necessary to do 'something', thus indicating that *do-minimum* may be a more relevant baseline.

The requirement to include only sanctioned projects renders the *do-nothing* alternative less realistic

CBA guidelines require that only committed policy be included in the baseline. This is particularly relevant in the appraisal of transport projects, where adjacent or preceding/subsequent projects may affect the new investment's costs and benefits.

The informants considered that, in principle, it is reasonable to include only sanctioned projects in the baseline, and that the appraisal could more easily be manipulated without it. However, the requirement may render the *do-nothing* alternative unrealistic. There are often adjacent projects which are likely to be realised. The analysis period is often long (40 years or more), and it is not a realistic assumption that no more infrastructure will be built during that time.

The solution suggested by some informants was to conduct sensitivity analyses to demonstrate the effect with and without non-committed projects. Hardly any of the studied appraisals do this.

Political goals conflict with demand forecasts in the baseline

Most appraisals build on various demand forecasts, such as forecasts for road traffic over the following decades. These forecasts will apply to both baseline and *do-something* alternatives. However, sometimes political goals and strategies can be at odds with forecasted development without intervention. This is a much-debated issue in the transport sector, where goals for net-zero carbon may require green taxes, investments in public transport, and other interventions yet to be committed. The costs and benefits of infrastructure transport projects may critically depend on what is assumed regarding climate policy. Many appraisals end up using traffic forecasts (and ignoring climate policy), especially in road projects. In railway projects, combined forecasts are sometimes used, corresponding neither to demand forecasts nor political goals. This is an area where uncertainties should be made explicit and sensitivity analysis used more often, according to our informants.

Our assessments

The *do-nothing* alternative should be designed to be as realistic and viable as possible; and should not be rejected as unacceptable without thorough justification. Special attention should be paid to uncertainties about adjacent projects, forecasts, etc.

4.3. Presentation and analysis

The baseline – neither thoroughly treated nor transparently presented

Generally, the appraisals describe and assess the *do-nothing* alternative in less detail than the investment options. In all the appraisals, we considered whether the baseline was assessed with the same thoroughness as the investment alternatives, and in only 19% of the cases the answer was 'yes', as shown in Figure 4. All appraisals present a detailed estimate of investment costs and

operations and maintenance costs of the investment options. By contrast, the cost of *do-nothing* is rough and superficial, and often limited to a column of zeros. The same is true for the assessments of benefits and uncertainties, where the assessment is often more qualitative.

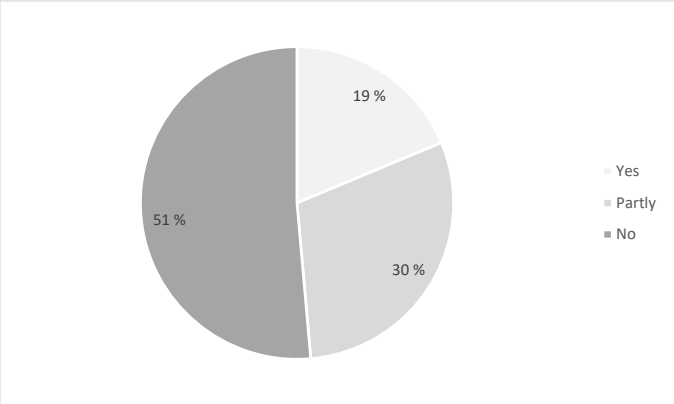

Figure 4. Is the do-nothing alternative assessed with the same thoroughness as the investment alternatives? (researchers' assessments) (N=112)

The informants confirmed that the assessment of costs and benefits in the baseline was not always given proper attention, sometimes simply because this alternative was not seen as relevant and sometimes because it was challenging to capture all the consequences of the existing infrastructure approaching the end of its service life:

> I suspect that agencies find it methodologically challenging to describe how benefits decrease over time in the absence of investment. It is easier to use zero since they have no intention of choosing 'do-nothing' anyway. (Quality assurer)

In 32% of the cases, the baseline's assessments of benefits and costs are not even included in the report, which only presents the costs and benefits of the investment alternatives *net of costs and benefits in the baseline*. There are also a few cases (9%) where it is unclear whether the costs and benefits presented are to be interpreted as gross or net effects.

Uncertainties and real-option values in the *do-nothing* alternative are ignored

In the appraisals, uncertainty is always discussed for the *do-something* alternatives but hardly ever for the *do-nothing* alternative. Likewise, there is a bias in that real option values are often presented (monetised or qualitatively discussed) only for the investment alternatives. For example, suppose a new building is to be constructed with the possibility of adding an extra floor later. The appraisal would typically define this as a real option value that adds to the project's net present value. By contrast, the real option values in the *do-nothing* alternative, which follows from the opportunity to postpone the investment and wait and see, are hardly ever discussed in the appraisals. This is a paradox, since long planning periods often involve fundamental uncertainties about demand and capacity need. If there is a chance that, for example, changing trends or new technology will change the need for a project within the next two decades, this should reduce the attractiveness of investing today and may suggest a wait-and-see strategy.

The lack of consideration of uncertainties and real-option values in the *do-nothing* alternative is often noted in the QA1 reports, and the reviewers we interviewed confirmed this critique:

> It is crucial to highlight the uncertainty about future development, especially if there is a chance that the investment may not be necessary. Identifying critical probabilities should be possible. (Quality assurer)

> We should discuss the optimal timing of investment more often. For example, the project may be a good idea in ten to twenty years, when we know more about future needs. (Quality Assurer)

External reviewers' assessments

The QA reports are, by their nature, critical of the conceptual appraisals. However, our impression is that the criticism regarding *do-nothing* and *do-minimum* is usually quite 'soft'.

As indicated above, many QA reports criticise appraisals for only discussing whether or not to invest, and not *when* to invest or whether the investment can be made stepwise with a possibility to stop and assess between the steps. We also found some examples of reviewers criticising the lack of good minimum alternatives. Still, they usually base their assessments on the alternatives presented to them by the government agencies, and they only sometimes propose new alternatives themselves. It also happens that the reviewers criticise the baseline, but the adjustments made are often insignificant.

Our assessments

There is clearly a need for better data and more transparent presentations of how costs and benefits develop over time in the no-investment case. There is also a need for better analyses of uncertainty and real-option values in the do-nothing alternative. External reviewers should pay more attention to this part of the appraisal and ask more critical questions.

4.4. The decision

The financing party fails to demand serious treatment of *do-nothing* and *do-minimum* alternatives

Behind each appraisal is a mandate issued by the responsible ministry. Only 27% of the mandates explicitly referred to the *do-nothing* and *do-minimum* alternatives, for example, by requiring that they were included and adequately treated. By contrast, 62% did not refer to the baseline or minimum options, and 11% indicated that their interest was attached to the appraisal of a specific investment option, which was *de facto* already selected.

Some agency informants highlighted the importance of the mandate in signalling expectations from the project owner, and said that they would have paid more attention to *do-nothing* and *do-minimum* alternatives if explicitly demanded in the mandate:

> We are currently doing a project appraisal, where the mandate requires investigating a scaled-down alternative. We would not have done it otherwise. (Agency representative)

> I would have liked to see the mandate demand an investigation of regulatory measures such as road pricing, but unfortunately, this is hardly ever mentioned. (Quality assurer)

'All' appraisals end up recommending a construction project

None of the conceptual appraisals recommend the *do-nothing* alternative, and only two out of the 112 recommend *do-minimum* alternatives (see Figure 5). It is surprising that virtually all appraisals recommend an investment project. A conceptual appraisal is a public document commissioned by a ministry to assess *whether to invest,* it is not a funding application..

Interestingly, the quality assurers recommended *do-nothing* and *do-minimum* alternatives far more often than the agencies' appraisal; this was the case in about 26% of the QA1 reports. The main reason is that they emphasise value for money more.

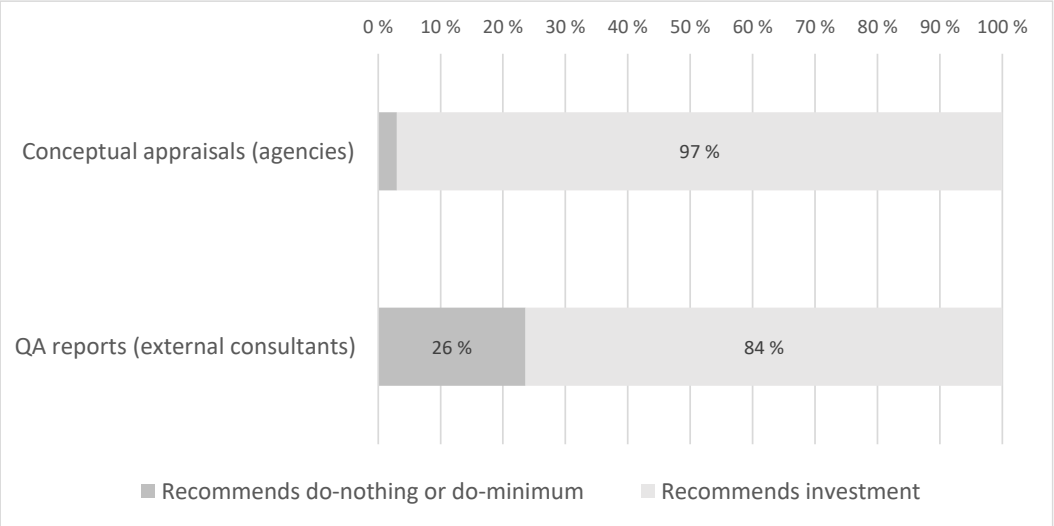

Figure 5. Recommendations from appraisals and from QA reports (N=112)

It should be noted that most appraisals in the dataset (except transport investments) show a negative net present value, implying that the *do-nothing* alternative would be more efficient. Admittedly, some projects have benefits that are not monetised, which can be argued to outweigh the costs. However, generally, the non-monetised impacts are low in the studied appraisals. In such cases, the recommendation to implement a construction project is justified not in terms of 'value for money', but concerning political goals, sustainability, and other considerations:

> There is an eagerness to take action. There is the idea that all problems and needs must be fully resolved. (Quality assurer)

> Once a project appraisal has started, it is too late to recommend the *do-nothing* alternative, even if the analysis shows that all the *do-something* alternatives are poor value for money. (Agency representative)

We also observed that the *do-minimum* alternatives seemed as unattractive as *do-nothing* to those carrying out the appraisals. In other words, *do-minimum* was screened out and discarded early, just like the *do-nothing* alternatives. This is surprising, given that the *do-minimum* alternatives always cost less than the full-scale investment alternatives and solve the problem to some extent at least.

Ultimately, the *do-nothing* alternative is often 'selected'

In 44% of the cases, the Cabinet has agreed with the agency and decided to start a pre-project to implement a large investment project, including in cases where the QA1 report recommended *do-nothing* or *do-minimum*. We did not identify a single case where the Government explicitly chose either *do-nothing* or *do-minimum*. In most of the remaining cases, there is still no formal decision, and today's status is thus unclear. These projects may be put on hold or awaiting resources for further planning.

There is much to suggest that many of the projects lacking a formal decision will never be realised, partly because the government has started too many appraisals in recent years, almost all of them recommending large investments. Furthermore, there has been a tendency towards

scope and cost increase in later project phases, as demonstrated by other researchers (Andersen *et al.*, 2015; Welde and Odeck, 2017). We believe that many of these projects are left *in limbo* partly because they are not affordable. There are also indications that some projects may no longer be needed for various reasons. However, there is no tradition in Norway for the government to actively reject projects that have been planned for a long time and where stakeholders have built up expectations:

> *Do-nothing* is never actively selected. It is easier to postpone a project forever than to actively opt out. There is a political cost to terminate the process. (Agency representative)

This suggests that even though almost all appraisals and most QA reports recommended construction projects, the actual outcome in many cases is still *do-nothing*.

Interestingly, we rarely hear about infrastructure or public services that fall apart. This indicates that *do-nothing* might have been viable after all, at least in the short to medium term:

> Even where *do-nothing* is not implemented, and you get something worse, the business does not collapse. In retrospect, we have seen that the problem was exaggerated. (Ministry representative)

Our assessments

Project owners (the ministries) must always demand serious treatment of the *do-nothing* and *do-minimum* alternatives. Decision-makers should avoid initiating too many appraisals and be willing to turn down investments that are not good value for money.

5. Conclusions and recommendations

In this paper, we have empirically examined different aspects of the *do-nothing* and *do-minimum* alternatives in project appraisal in Norway. This is a complex matter that may be prone to bias. We have investigated the role of these alternatives in the appraisal, how they were designed and presented, and the extent to which they were recommended and selected by decision-makers.

This paper argues that Norway can be regarded as a 'critical case' (Flyvbjerg, 2006) and one that allows for generalisation. The challenges in project appraisal identified in this paper are not likely to be exclusive to Norway, but the transparency and quantity of data allow for in-depth analysis of an important topic across sectors. Most countries have guidelines for cost-benefit appraisal and these guidelines normally require that a do-nothing or do-minimum alternative should be included in the appraisals. Knowledge of actual practice is, however, limited. The findings in this paper should, therefore, be relevant to other countries where cost-benefit analysis is an important part of project appraisal.

Weaknesses in the appraisal of do-nothing and do-minimum

Most of the conceptual appraisals reviewed in the paper are comprehensive and of good quality but the design and treatment of the *do-nothing* and *do-minimum* alternatives have considerable weaknesses. We find the following:

- The *do-nothing* alternative is rarely treated as realistic and viable in the appraisals. Instead, it is only seen as a reference against which investment projects will be compared.
- The development in the absence of investment is not realised. As such, the consequence of doing nothing is not transparent.

- Smaller incremental measures, which could potentially solve the problem at a much lower cost (*do-minimum* alternatives), are rarely given much attention.
- The agencies recommended one of the investment alternatives in almost all cases. There seems to be a common understanding among those who conduct conceptual appraisals across different sectors that the appraisal should give rise to a large project. There is a negative bias towards the *do-nothing* alternative.

Agencies have a favoured project alternative

Agencies and political decision-makers often have a favoured alternative, which is typically one of the investment alternatives. This aligns with previous studies' findings that demonstrate that public project decision-making processes are not based on rationality alone but are also affected by politics, power, and bounded rationality (Whist and Christensen, 2011; Woodhead and Smith, 2002).

Admittedly, we have not proved that the devaluation of the *do-nothing* alternative and that the absence of good *do-minimum* alternatives is deliberate and caused by perverse incentives. Still, the findings should be a cause for concern. Even in a rich country such as Norway, with high oil and gas revenues, funding for public investment projects is not unlimited. Sifting out poor project ideas early is important to avoid lock-in effects. Certainly, in some cases, when the appraisal starts from a critical problem, doing *nothing* may seem unacceptable. Instead, as suggested by Mackie and Preston (1998), a *do-minimum* alternative could be more relevant. However, such alternatives have not been properly explored.

External QA is helpful, but is it critical enough?

Müller (2009) noted that project governance arrangements are crucial for project success. Previous research has indicated that the Norwegian QA scheme has helped to ensure realistic forecasts and estimates (Welde and Klakegg, 2022).

The QA1 reports ask critical questions about conceptual appraisals, thereby contributing to transparency. We find that the reviewers focus more on how to design a realistic and sustainable *do-nothing* alternative than do the agencies. Similarly, they focus more on the search for *do-minimum* alternatives. These findings support those of other studies that demonstrate a positive effect of external QA on appraisal quality. That said, a general impression of the QA reports is that they could have been even more focused on this part of the appraisal. In too many cases, they adopt the same baseline as the conceptual appraisal and limit themselves to noting the absence of low-cost alternatives.

Projects in limbo

Perhaps the most striking finding from our sample of projects is that (1) *do-nothing* or *do-minimum* alternatives are recommended by the agencies only in exceptional cases and (2) despite this, the *do-nothing* option is often the actual outcome. The latter is not by active decision, but by being 'put on hold' because the sum of all proposed projects is becoming unaffordable – the result being that the problem at hand is not being solved, although minimum alternatives that are both feasible and affordable may exist.

The findings demonstrate that even in a country with a strong emphasis on quality at entry through a mandatory governance scheme that aims to promote economic efficiency, the outcome of the appraisal process is not always in line with the intentions. The paper has demonstrated that the quality of a strong theoretical foundation needs to be assessed empirically.

The Norwegian results illustrate that the appraisal process may be vulnerable to asymmetry of information and bias. The effective lifetime of the *do-nothing* alternative is downplayed to favour ambitious investment alternatives. The paper thus demonstrates that the design of the *do-nothing* alternative may be an alternative avenue for bias to creep in. This is an issue that has been largely ignored in the research literature.

Recommendations for practice

Our findings have significant implications for practice and indicate a potential for making better decisions in the initial phase of projects, thus ensuring that problems are solved while avoiding waste of public funds on projects that are oversized or unnecessary.

Challenges related to the baseline in project appraisal are twofold. First, they concern technical aspects – the need for high-quality forecasts for many variables that might affect cost and benefits. This also includes good estimates of benefits (often declining) and maintenance and operational costs (often increasing) without investment. Second, the challenges concern the expectations of various actors in the process and the associated risk of manipulation by those who hope for a large investment project.

We offer a set of ten practical recommendations for those initiating, carrying out and receiving project appraisals.

1. **Limit the number of conceptual appraisals.** This paper has shown that the number of appraisals of potential projects does not match the available resources for investment. The problem is further exacerbated by the escalation of commitment even if the selected course of action is found to be inefficient from an economic perspective. The ministries should, therefore, act as gatekeepers and refrain from initiating too many appraisals.

2. **A portfolio-oriented assessment of public investments.** Following point 1 above, we also recommend a portfolio perspective within and across sectors. A project may be well justified in isolation but should also be compared with other potential projects in other sectors.

3. **The purpose of the appraisal is to decide whether or not to invest.** There are indications that the responsible agencies have misunderstood or ignored the purpose of the appraisals. The *do-nothing* alternative must be treated as a viable alternative. The mandate for appraisal should include an explicit instruction to treat *do-nothing* seriously.

4. **Requirements to include *do-minimum* alternatives.** Including low-cost alternatives in appraisals should not be optional; it should be required.

5. **More focus on the optimal timing of investments.** The appraisal should recommend whether to invest today or to decide later. This is particularly relevant when (1) policy still not committed can affect value for money, and (2) technological development(s) can affect the need for a project.

6. **Better use of the four-step principle.** Good methods for defining alternative solutions are crucial. The four-step principle should be helpful and relevant when applied correctly. Other methods should be explored, and competence and incentives to use such methods must be in place.

7. **Accept that the *do-nothing* alternative may entail diminishing user benefits.** Planners seem confused about on which service level the *do-nothing* alternative should be

based. However, if forecasts indicate declining benefits, that will be the situation that the agency will have to adapt to in the absence of investment.

8. **Systematic collection of data on user benefits and operations and maintenance costs throughout the projects' life cycle.** Data availability is essential to describe and quantify the development of costs and benefits in the absence of investment. These data are often unavailable today, leaving analysts to perform guesswork.

9. **External reviews.** External quality assurance of appraisals was introduced in Norway to counteract tunnel vision and optimism bias. Our findings suggest that it works and should continue, but reviewers should pay more attention to the design of the *do-nothing* alternative, which may constitute a 'back door for manipulation' of the appraisals.

10. **The consequence of selecting the *do-nothing* alternative must be more transparent.** Our study shows that, in most cases, the benefits and costs of various investment options are presented as net calculations against *do-nothing*. However, the consequences of *do-nothing* itself should also be properly described in the reports.

Theoretical contributions

The *do-nothing* or *do-minimum* alternative has been subject to very little empirical research. To our knowledge, this is the only study that has looked at this issue through a large sample of project appraisals from different sectors.

This is a research topic that needs to be explored further. Our paper has demonstrated that a large proportion of projects where an investment alternative has been selected are, effectively, in limbo. In other words, the *do-nothing* alternative has become the actual outcome. This provides an opportunity for researchers to explore the realism in the estimation of the *do-nothing* alternative and possibly in specific sectors such as rail, roads, etc.

Norway is a country which promotes economic efficiency through a stage-gate project model, mandatory to all large government projects, and that requires economic appraisal of all project proposals. However, this economic rationality has not translated into improved selection efficiency. We would, therefore, welcome similar studies from other countries where the link between value for money and project selection is stronger.

Finally, most of the projects included in this study were appraised during a period with plentiful access to public funding. The last few years have demonstrated that this is unlikely to be the case in the future. There is not just a need to treat the *do-nothing* alternative as a realistic option in appraisals but also a need to develop realistic and sustainable *do-minimum* alternatives. How to do this is an issue that should be explored further.

References

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

Andersen, B., Samset, K. and Welde, M. (2015). Low estimates – high stakes: Underestimation of costs at the front-end of projects. *International Journal of Managing Projects in Business*, 9, 171–193.

Baumeister, R. F. and Vohs, K. D. (2007). Decision Making. *In: Encyclopedia of Social Psychology*. Thousand Oaks, CA: SAGE Publications, 225-228.

Boardman, A., Greenberg, D., Vining, A. and Weimer, D. (2018). *Cost-benefit Analysis* (5th ed.). Cambridge: Cambridge University Press.

Bryman, A. (2016). *Social Research Methods*. Oxford: Oxford University Press.

Burress, D. and Oslund, P. (2004). Benefit-cost analysis of state highway program as a whole: Conceptualizing the null alternative. *Transportation Research Record*, 1864, 86–93.

Cantarelli, C.C., Flyvbjerg, B., van Wee, B. and Molin, E.J. (2010). Lock-in and its influence on the project performance of large-scale transportation infrastructure projects: Investigating the way in which lock-in can emerge and affect cost overruns. *Environment and Planning B: Planning and Design*, 37, 792–807.

Creswell, J. W. (2009). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. SAGE.

Drummond, H. (2014). Escalation of commitment: when to stay the course? *Academy of Management Perspectives*, 28(4), 430–446.

Eliasson, J., Börjesson, M., Odeck, J. and Welde, M. (2015). Does benefit-cost efficiency influence transport investment decisions? *Journal of Transport Economics and Policy*, 49, 377–396.

Ellram, L.M., Tate, W.L. and Choi, T.Y. (2020). The conflicted role of purchasing in new product development costing. *Journal of Supply Chain Management*, 56(1), 3–32.

European Commission (2014). *Guide to Cost-Benefit Analysis of Investment Projects: Economic Appraisal Tool for Cohesion Policy 2014–2020*. Brussels: European Commission.

Fereday, J., and Muir-Cochrane, E. (2006). Demonstrating rigor using thematic analysis: A hybrid approach of inductive and deductive coding and theme development. *International journal of qualitative methods*, *5*(1), 80-92.

Finansdepartementet (2023). *Statens prosjektmodell*, rundskriv R108-23. https://www.regjeringen.no/globalassets/upload/fin/vedlegg/okstyring/rundskriv/faste/r_108_2023.pdf (accessed 10 November 2023).

Finansministeriet (2017). *Vejledning i samfundsøkonomiske konsekvensvurderinger*. Copenhagen. https://fm.dk/udgivelser/2017/august/vejledning-i-samfundsoekonomiske-konsekvensvurderinger/ (accessed 10 November 2023).

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

Flyvbjerg, B. (2009). Survival of the unfittest: Why the worst infrastructure gets built—and what we can do about it. *Oxford Review of Economic Policy* 25(3), 344–367.

Flyvbjerg, B., Bruzelius, N. and Rothengatter, W. (2003). *Megaprojects and Risk: An Anatomy of Ambition*. Cambridge, UK: Cambridge University Press.

Flyvbjerg, B., (2021). Top ten behavioral biases in project management: An overview. *Project Management Journal*, 52(6), 531-546.

Galletta, A. (2013). Mastering the Semi-Structured Interview and Beyond: From Research Design to Analysis and Publication. New York: NYU press.

Gioia, D. A., Corley, K. G., and Hamilton, A. L. (2013). Seeking qualitative rigor in inductive research: Notes on the Gioia methodology. *Organizational Research Methods*, *16*(1), 15-31.

HM Treasury (2022). *The Green Book: Central Government Guidance on Appraisal and Evaluation*. London: HM Treasury.

Hultkrantz, L. and Svensson, M. (2012). *A Comparison of Benefit Cost and Cost Utility Analysis in Practice: Divergent Policies in Sweden*. Swedish Business School Working Paper, No. 5/2012. Örebro: Örebro University.

Ika, L., Pinto, J.K., Love, P.E.D. and Pache, G. (2023). Bias versus error: Why projects fall short. *Journal of Business Strategy*, 44(2), 67–75.

Jones, L. R., and Euske, K. J. (1991). Strategic Misrepresentation in Budgeting. *Journal of Public Administration Research and Theory*, 4, 437–60.

Kallio, H., Pietilä, A. M., Johnson, M., and Kangasniemi, M. (2016). *Systematic methodological review: developing a framework for a qualitative semi-structured interview guide*. Journal of Advanced Nursing, 72(12), 2954-2965.

Karlsson, C. (2016). *Research Methods for Operations Management*. London: Taylor and Francis.

Kelly, S. E., Bourgeault, I., and Dingwall, R. (2010). *Qualitative interviewing techniques and styles. The SAGE Handbook of Qualitative Methods in Health Research*, 19, 307-326.

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

Lehtonen, M., Joly, P.-B. and Aparicio, L. (Eds.) (2017). *Socioeconomic Evaluation of Megaprojects. Dealing with uncertainties,* London: Routledge

Mackie, P. and Preston, J. (1998). Twenty-one sources of error and bias in transport project appraisal. *Transport Policy*, 5, 1–7.

Mian, S.A. and Dai, C.X. (1999). Decision-making over the project life cycle: An analytical hierarchy approach. *Project Management Journal*, 30(1), 40-52.

Miles, M. B., and Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook*. Thousand Oaks, CA: Sage Publications.

Miller, G.J. (2005). The Political Evolution of Principal-Agent Models. *Annual Review of Political Science*, 8(1), 203-225.

Mintzberg, H., Raisinghani, D. and Theoret, A., (1976). The structure of "unstructured" decision processes. *Administrative Science Quarterly*. 21(2), 246–275.

Morris, P.W. (2013). *Reconstructing Project Management*. Chichester, UK: John Wiley & Sons.

Müller, R. (2009). *Project Governance*. Fundamentals of Project Management Series. Farnham, UK: Gower.

Narayanan, V.K. and DeFillippi, R. (2012). The Influence of Strategic Context on Project Management Systems: A Senior Management Perspective. In Williams, T. and Samset, K. (Eds.). *Project Governance: Getting Investments Right*, 3–45. Basingstoke, UK: Palgrave Macmillan.

Nash, C. (1992). Appraisal of rail projects. *Project Appraisal*, 7, 211–218.

Nicolaisen, M.S. and Næss, P. (2015). Roads to nowhere: The accuracy of travel demand forecasts for do-nothing alternatives. *Transport Policy*, 37, 57–63.

Næss, P. (2011). The Third Limfjord Crossing: A Case of Pessimism Bias and Knowledge Filtering. *Transport Reviews*, 31, 231–249.

Rasmussen, J.B., Haug, A., Shafiee, S., Hvam, L., Henrik Mortensen, N. and Myrodia, A. (2021). The costs and benefits of multistage configuration: A framework and case study. *Computers & Industrial Engineering*, 153, 107095.

Riksrevisjonen. (2018). Fyrstegsprincipen inom planeringen av transportinfrastruktur – tillämpas den på avsett sätt? RIR 2018:30. https://www.riksrevisionen.se/download/18.72018eee166eda46d0ca9ddb/1542826157452/RiR_2018_30_ANPASSAD.pdf (accessed 10 November 2023).

Ross, S.A., (1973). The Economic Theory of Agency: The Principal's Problem. *The American Economic Review*, 63(2), 134-139.

Rubin, H. J., and Rubin, I. S. (2011). Qualitative Interviewing: The Art of Hearing Data. Thousand Oaks, CA: Sage Publications.

Samset, K. and 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, 297–313.

Samset, K., Andersen, B. and Austeng, K. (2014). To which extent do projects explore the opportunity space? A study of conceptual appraisals and the choice of conceptual solutions. *International Journal of Managing Projects in Business*, 7(3), 473-492.

Sandberg, J. (2005). How Do We Justify Knowledge Produced Within Interpretive Approaches? *Organizational Research Methods*, 8(1), 41-68.

Saunders, M., Lewis, P., and Thornhill, A. (2009). *Research Methods for Business Students*. London: Pearson Education.

Silverman, D. (2021). Doing Qualitative Research. Thousand Oaks, CA: SAGE Publications.

Smith, J. and Jackson, N. (2000). Strategic needs analysis: its role in brief development. *Facilities,* 18(13/14), 502–512.

Smith, J., Love, P.E.D. and Heywood, C. (2006). A method for performance briefing at the project inception stage. *Facilities,* 23(7/8), 319–329.

Stake R.E. (1995). The Art of Case Study Research. Thousand Oaks, CA: Sage Publications.

Tjora, A. (2018). Qualitative Research as Stepwise-Deductive Induction. London: Routledge.

Too, E. and Weaver, P. (2014). The management of project management: A conceptual framework for project governance. *International Journal of Project Management,* 32(8), 1382–1394.

Trafikverket. (2023). *Analysmetod och samhällsekonomiska kalkylvärden för transportsektorn: ASEK 7.1*. Version 2023-04-01.

Transport Infrastructure Ireland. (2016). *Project Appraisal Guidelines for National Roads Unit 4.0 – Consideration of Alternatives and Options*. https://www.tiipublications.ie/library/PE-PAG-02013-01.pdf (accessed 13 April 2023).

Tveter, E. (2013). Dealing with the base-case in cost-benefit analysis. Paper presented at the 41st *European Transport Conference*, 30 September – 2 October 2013, Frankfurt.

Van Wee, B. (2022). Incentives and politics: The perverse incentive paradox: root cause of many other paradoxes; The case of the Dutch Betuweroute. In Williams, T., Samset, K. and Volden, G.H. (Eds.). *The Front-End of Large Public Projects: Paradoxes and Ways Ahead*, 130-157. London: Routledge.

Volden, G.H. (2018). Public funding, perverse incentives, and counterproductive outcomes. *International Journal of Managing Projects in Business*, 12, 466–486.

Volden, G.H. (2019). Assessing public projects' value for money: An empirical study of the usefulness of cost-benefit analyses in decision-making. *International Journal of Project Management*, 37, 549–564.

Volden, G.H. and Samset, K. (2017a). Quality assurance in megaproject management: The Norwegian way. In Flyvbjerg, B. (ed.) *The Oxford Handbook of Megaproject Management*, 406–428. Oxford: Oxford University Press.

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

Wangsness, P.B, Holmen, R.B. and Hansen, W. (2022). *Internasjonal sammenligning av retningslinjer for samfunnsøkonomiske analyser i transportsektoren: 7 land og 21 temaer*. TØI Report 1930/2022. Oslo: Transportøkonomisk institutt. https://www.toi.no/getfile.php?mmfileid=74535 (accessed 13 April 2023).

Welde, M. and Odeck, J. (2017). Cost escalations in the front-end of projects – empirical evidence from Norwegian road projects. *Transport Reviews*, 37, 612–630.

Welde, M. and Klakegg, O.J. (2022). Avoiding cost overrun through stochastic cost estimation and external quality assurance. *IEEE Transactions on Engineering Management*. DOI: 10.1109/TEM.2022.3173175

Wengraf, T. (2001). Qualitative Research Interviewing Biographic Narrative and Semi-Structured Methods. *Qualitative Research Interviewing*, 1-424.

Whist, E. and Christensen, T. (2011). *Politisk styring, lokal rasjonalitet og komplekse koalisjoner,* Concept report no. 26, Trondheim: Ex Ante Academic Publisher.

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

Williams, T., and Samset, K. (2010). Issues in Front-End Decision Making on Projects. *Project Management Journal*, 41(2), 38-49.

Williams, T., Vo, H., Samset, K. and Edkins, A. (2019). The front-end of projects: A systematic literature review and structuring. *Production Planning and Control*, 30, 1137–1169.

Williamson, O.E., (1988). Corporate Finance and Corporate Governance. *The Journal of Finance*, 43(3), 567-591.

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

Woodhead, R. and Smith, J. (2002). The decision to build and the organization. *Structural Survey*, 20(5), 189–198.

Yin, R.K. (2017). *Case Study Research and Applications: Design and Methods*. Thousand Oaks, CA: Sage Publications.

Zwikael, O. and Smyrk, J. (2012). A General Framework for Gauging the Performance of Initiatives to Enhance Organizational Value. *British Journal of Management,* 23, 6–22.