



## Public project success as seen in a broad perspective. Lessons from a meta-evaluation of 20 infrastructure projects in Norway

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### ABSTRACT

Infrastructure projects in developed countries are rarely evaluated ex-post. Despite their number and scope, our knowledge about their various impacts is surprisingly limited. The paper argues that such projects must be assessed in a broad perspective that includes both operational, tactical and strategic aspects, and unintended as well as intended effects. A generic six-criteria evaluation framework is suggested, inspired by a framework frequently used to evaluate development assistance projects. It is tested on 20 Norwegian projects from various sectors (transport, defence, ICT, buildings). The results indicate that the majority of projects were successful, especially in operational terms, possibly because they underwent external quality assurance up-front. It is argued that applying this type of standardized framework provides a good basis for comparison and learning across sectors. It is suggested that evaluations should be conducted with the aim of promoting accountability, building knowledge about infrastructure projects, and continuously improve the tools, methods and governance arrangements used in the front-end of project development.

### 1. Introduction

The purpose of this study is (1) to demonstrate the importance of and need for a broad evaluation approach to measure success in large infrastructure projects, and (2) to test an evaluation methodology that is commonly applied in projects and undertakings in low-income countries, but now on projects in a more complex context in a high-income country.

#### 1.1. Broad evaluation of public projects

Governments in high-income countries invest vast amounts of funds each year in infrastructure and other large public projects, such as roads and railways, public buildings, defence acquisitions and ICT infrastructure. The number and scale of such projects grow over time (Flyvbjerg, 2014). Even in a small country such as Norway, annual investments in large public projects amount to USD 6 billion per year not including petroleum sector investments (Norwegian Ministry of Finance, 2015).

Samset (2003) argues that in order to be truly successful, public investment projects must not only perform well operationally, but also tactically and strategically. Correspondingly, Baccarini (1999) defines two levels of project success, i.e. project management success (which concerns delivery), and product success (which concerns the outcome). However, whereas operational project success is highlighted by

practitioners as well as academics (the problem of cost overruns being particularly well documented in the literature, cf. Morris & Hough, 1991; Flyvbjerg, Skamris Holm, & Buhl, 2003; van Wee, 2007), tactical and strategic success is often ignored, possibly because it challenges the way analysts think and has political aspects to it (Samset & Christensen, 2017).

Although Norway, as many other OECD countries, has been assigned a high level of evaluation maturity in national government (Jacob, Speer, & Furubo, 2015), systematic evaluations of public investment projects with respect to their outcomes are rarely conducted (Samset & Christensen, 2017; Rambøll & Agenda Kaupang, 2016). One exception is the transport sector, where benefit-cost analyses are performed to documents the projects' value-for-money (not so much ex-post, but before projects are submitted for government approval). However, many authors argue that benefit-cost efficiency is too narrow as measure of projects' tactical and strategic success (House, 2000; Heinzerling & Ackerman, 2002). This view is supported by the fact that benefit-cost efficiency rarely affects the priority ranking of road projects in Norway, which implies that decision-makers pursue other goals (Nyborg, 1998; Eliasson, Börjesson, Odeck, & Welde, 2015). Project success is clearly multi-faceted, and an evaluation can only be relevant to various stakeholders if it comprises a broader set of criteria.

This paper presents a generic framework for broad evaluations of large public projects. It is inspired by the criteria recommended by the Organisation for Economic Cooperation and Development's

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Development Assistance Committee (OECD-DAC), which are much used in development assistance. The present study aims to demonstrate that the criteria are well-suited for infrastructure projects in industrial countries as well.

### 1.2. The case of Norway

Several authors have highlighted the crucial role of the front-end phase of projects (Williams & Samset, 2010; Morris, 2013; Samset & Volden, 2015). Many aspects that later create problems are typically present already at the project definition stage. In public projects, the Government as ultimate project owner should ensure the necessary quality-at-entry of project proposals and plans. This was done in Norway year 2000, when a scheme requiring external quality assurance of the decision basis was introduced for projects with an estimated investment cost exceeding USD 90 million. The scheme includes: (1) quality assurance of the choice of concept before the Cabinet decision to start a pre-project, and (2) subsequent quality assurance of the project management basis and cost estimate before the project is submitted to Parliament for approval and funding. Quality assurance is performed by external experts that are pre-qualified by the Ministry of Finance (Volden & Samset, 2017).

As of today more than 200 projects have been subject to quality assurance up-front, of which some 90 have so far been completed. There is evidence that this has improved the Norwegian Government's basis for decisions regarding major public investments (Kvalheim, Christensen, Samset, & Volden, 2015) and that the projects keep within their budgets (Welde, 2017). Nevertheless, the projects should also be evaluated ex-post, to verify how they actually perform in a broad perspective. In this study we test the suggested OECD-DAC evaluation framework on 20 Norwegian projects that were quality-assured in their front-end phase. The findings regarding these projects' performance are interesting in themselves, but the main purpose of this paper is to discuss the experiences with the evaluation framework and the evaluation process, as basis for improving and consolidating them.

The framework was first tested on four projects and the results presented to the Norwegian Ministry of Finance. The subsequent 16 evaluations included in this study were conducted on request from the Ministry. Ex-post evaluation has thus already become an integrated part of the project governance scheme and is likely to be used to further improve the quality assurance scheme. With time, a database is built, which allows for quantitative analyses of success at different levels across sectors and project types.

The paper starts with a presentation of the theoretical framing and the chosen evaluation framework. Then we present our methodology and data (the 20 projects), before we provide a synthesis of the findings in terms of the projects' success on various levels, and a discussion of the experiences with the evaluation framework and how it has been applied. Finally we offer some conclusions and discuss future extensions of the study.

## 2. Theoretical framing

Evaluation is the systematic investigation of the effectiveness of a project or other intervention. An evaluation requires evaluation expertise and rigorous application of scientific methods, while at the same time being focused on solving practical problems and being useful to project sponsors, decision-makers and other stakeholders (Rossi, Lipsey, & Freeman, 2004).

Evaluation became particularly relevant in the U.S. in the 1960s associated with the Kennedy and Johnson administrations and the social programs implemented at the time. Its aim was to learn from successes and failures and improve forward planning. It spread subsequently to other countries and different sectors, particularly to international development aid, where the effectiveness of investments and policy was contested.

Evaluation may be conducted at different stages during a project's lifetime. Each stage raises different questions to be answered, and correspondingly different evaluation approaches are needed. This would involve the assessment of i) the need for the project, ii) project design and logic/theory, iii) the implementation of the project, iv) its outcome or impact (i.e., what it has actually achieved), and v) its cost and efficiency (Rossi et al., 2004).

All projects are explicitly or implicitly based on an assumed set of causal relationships between inputs, project activities, outputs, and outcome. Several authors argue the merits of using this so-called logic model (McLaughlin & Jordan, 1999; Samset, 2003), also referred to as the programme theory (Chen, 1990; Weiss, 1997; Rogers, Petrosino, Huebner, & Hacs, 2000) as representation of the project to help visualize important aspects, and especially when preparing for an evaluation. It helps clarify for all stakeholders: the definition of the problem, the overarching goals, and the capacity and outputs of the project (McLaughlin & Jordan, 1999). Further, looking at the different components of a project in relation to the overall societal objective, it allows for illumination of potential misalignments. Experience has shown that projects' logic is often unclear (Karlsen & Jentoft, 2013) and that goal hierarchies are characterized by a range of errors (Samset, Andersen, & Austeng, 2014). A critical assessment of the project's logic model might enable the evaluator to reveal a weak or faulty logic before any empirical evidence has been gathered (Brousselle & Champagne, 2011). In recent years, new versions of theory-based evaluation have emerged, such as realistic evaluation (Pawson & Tilley, 1997) and the theory of change (ToC) (Connell & Kubisch, 1998; Sullivan & Stewart, 2006).

## 3. A six-criteria evaluation framework

The chosen evaluation framework in the Norwegian context is presented below. As a general requirement, an overall evaluation framework ought to measure the success of projects in a broad perspective. It should be flexible enough to accommodate all types of projects, and sufficiently standardized to allow for comparisons between projects.

The starting point of each project evaluation should be the mapping of the logic model. The logical framework methodology is used, which focuses on the hierarchy of agreed goals, and identifies external risks on each level (Samset, 2003). The methodology was originally developed for USAID (Rosenberg, Posner, & Hanley, 1970), but its use spread rapidly by the UN, to aid administrations in a number of countries, and later to the OECD and the EU Commission.

In the Norwegian quality-assured projects, a logic model in the form of a goal hierarchy already exists, but it must be checked for consistency, and if necessary upgraded by the evaluator. When possible, the evaluator should also thoroughly investigate the goodness of the underlying theories (i.e. apply a truly theory-based approach), using existing literature and expert statements. The resulting model should be on the form illustrated in Fig. 1.

The overall evaluation criteria should be developed from the logic model. Since projects are de facto established to fulfil a certain purpose (Project Management Institute, 2013), one must ask *whether the intended*



Fig. 1. The logic model for a project.

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