



Concept Symposium 2018

Governing Megaprojects – Why, What and How

Updates on Project Governance in Norway

In Norway the Cabinet decides on most major projects. As decision support reviews are produced at specific gateways by independent private consultants holding framework contracts with the Ministry of Finance. There are two intervention points:

- Quality Assurance 1 “QA 1” prior to the basic engineering phase. Review topic: The choice of concept. Prime ranking criterion: Net present value (benefits minus costs). Introduced in 2005.
- Quality assurance 2 “QA 2” after completion of the basic engineering phase and before budgetary appropriation. Review topics: Cost, risk, schedule and basis for management. Introduced in 2000.

There is a relatively high threshold value (750 mill. NOK). A total of more than 350 reviews have been made and the first projects are now readily implemented and evaluated. This introduction will give some perspectives on the results achieved and how Norway work to improve project governance further, especially looking into how projects develop in the early planning period, how costs have increased between QA 1 and QA 2 and recent measures taken to improve focus on cost-effectiveness in this phase of project development.



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The Concept Symposia on Project Governance

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Updates on Governance Research in Norway

The Concept research program was established in 2002, to develop knowledge and expertise to ensure efficient use of resources and enhance the benefits of major public investments. The focus is on project governance, and the long term benefits of investments, as seen from the financing party's perspective. It is also essentially restricted to the front-end before the commitment to finance, since this is the period when the most essential decisions are made. This is a time of urgency, since the possibility to make major changes decreases as projects enter into their planning and implementation phases. What is required is interdisciplinary research, where the social sciences merge with project management and engineering.

Current research is on environmental impact and sustainability, financing mechanisms, governance schemes, investment practices, technological change, ex ante and ex post evaluation, productivity and flexibility.



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Gro Holst Volden

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Project Governance in UK Defence Acquisition – Still Trying to ‘Get There’

Lord Levene’s report (2011) was the basis for the recent UK Defence Reform Programme. By 2015, Levene had reported successful transformation in the most critical areas. The purpose of this study is to elicit a bottom-up view of the current state of governance in the Department - based on the ‘lived’ experiences of 60 delivery managers. In brief, while there is general agreement that the structural aspects of governance are largely in place for project alignment, P3M framework, organisational responsibility and reporting, financial scrutiny and career structures, there are practical and perceived challenges requiring senior management attention. For example, the Programme’s control processes have created partial duplications and project time and cost continue to be approved at 50% confidence level with no allowance for any individual breach of approval. Terms of reference have not been redefined to capture new responsibilities and activities. Short tenure in role by military staff and on-the-job learning for those new to defence acquisition further compound capacity, capability and consistency concerns.

Key lessons for organisations seeking to design and implement governance in a complex setting are: (1) intent (ambition) must be clearly articulated in terms of purpose, benefits, outcomes and actively communicated, (2) governance design must be true to its principle tenets while cognisant of organisational contexts, (3) a strong understanding of the underlying reasons for prevailing attitudes and norms e.g. ‘fear of failure’, ‘low trust’, ‘high risk aversion’ etc., is essential, (4) implementation must balance direction and defined processes with delegated freedom and accountability, and (5) regular reality checks or ‘stocktakes’ are essential. The annual reviews by Levene are too high-level and focused on progress against the Programme’s ambition for transformation. Grass-root reality must be understood and problems managed before the Programme can achieve its ultimate goal of a “simplified and improved Acquisition System” (ASOM, V4, 2016).



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Governing Megaprojects – Why, What and How

The Ministry as Project Owner – Value for money or Higher risk?

On the 22th of July 2011, 77 people were killed in the worst act of terror ever committed on Norwegian ground. 13 months later the report from the investigating commission became public. One of their 31 recommendations, was to build the Norwegian National Response Center (NNRC). 15 days after the report was presented the preceding Prime Minister announced that the Government had decided to build the NNRC in Alna, Oslo. The Parliament was informed that the NNRC should be operative by the end of 2017. In 2012 the Ministry appointed the Police Directorate as project owner. According to procedures for governmental construction projects Statsbygg was appointed consultant and developer. It was decided that planning would start without any prior concept evaluation (KVU). In 2013 it became clear that the lot made available at Alna represented some potentially irreversible problems. New estimates revealed that construction of the NNRC would be considerably more expensive than first projected, even without the most needed training facilities. In 2014 the new acting Government decided to restart the project. This time with a concept evaluation and the Quality assurance part 1 (KS1). The consultancy firm Metier were given the task to lead the team responsible for project planning in the initial engineering phase, but with the Ministry as project owner. Conclusions from this phase were positive with substantial cost savings and a much more functional NNRC as important results. In December 2017 plans for relocating the NNRC were approved by the Parliament, and in March 2018 the construction work on the new premises at Taraldrud, nearby Oslo, started.

What lessons can be learned? Why did we spend three years planning for the NNRC at Alna before the project was stopped? Why has the initial phase for Taraldrud been a success? Why did the Ministry itself take the role as the project owner, and why was it decided to replace Statsbygg with Metier? Will this model expose the Minister and Prime Minister to more criticism than normally expected if something goes wrong?



Thor Arne Aass

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Opportunities in a Circular (Industrial) Economy & Performance Economy

Circularity is the basis of nature; similarly, a circular society of stewardship and caring has existed as long as mankind: the Global Commons and municipal commons are examples. A Circular Economy of poverty is omnipresent in poor societies and rural areas, where trading second-hand goods and the availability of local repair and maintenance services are the norm. Many of these crafts still exist today, such as blacksmiths, shoemakers, builders and building trades like carpenters, roofers, plumbers and electricians. The modern post-industrial society with markets near saturation for many goods faces three challenges:

- Shifting to a Circular Economy of abundance – the necessity of earlier times has to be replaced by a motivation for sufficiency-efficiency combinations and a caring attitude for existing stocks of objects,
- Moving to a Circular Industrial Economy – the knowledge and technologies of a Circular Economy exist in SMEs and with fleet managers (armed forces, railways etc), but needs to be brought to all classrooms and boardrooms in order to industrialise the Circular Economy and create synergies and motivations to transform the linear industrial economy into a Circular Industrial Economy (CIE).
- Transforming the CIE into a Performance Economy (PE) – a CIE where economic actors retain ownership and internalise all liability. Only a PE is really sustainable and durable, because it is driven by egoistic incentives of higher profits from less resource consumption and waste.

Key tasks to be tackled within these challenges are the adaptation of policy frameworks and public procurement procedures to circularity; new innovative technical and commercial solutions; the introduction of sustainable taxation (do not tax renewable resources including labour, as the CIE substitutes manpower for resources). The issue of ownership and liability, in shifting from hardware to systems solution (IoT), has to be clarified. Drivers need to be identified and pushed, and obstacles to be overcome, as a matter of competitiveness!



Walter R. Stahel

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Governing Megaprojects – Why, What and How

Digitalisation and Consumer Demand – the Empirical Evidence

With the advancing energy transition, the integration of renewable energies into the energy market is becoming increasingly important. In order to avoid overloading the grid, the supply of electricity must always correspond to the demand for electricity. Fluctuating generation and grid feed-in from renewable energies with relatively rigid demand at the same time presents problems that can be addressed with various flexibility options on the supply and demand side. These include grid expansion, storage or a more flexible demand for energy. The digitalization of the energy industry, summarized under the term "Smart Energy", provides approaches to such a flexibilization and reduction of energy consumption.

Smart metering technologies enable flexible pricing of energy consumption for demand management. With the help of digital feedback technologies, more informed energy consumption decisions can be made, e.g. by informing about benchmark consumption. However, these opportunities associated with digitisation go hand in hand with many open questions: Which factors influence the energy demand behaviour of households and companies? How do households and companies react to variable prices and real-time feedback? What savings potential and degree of demand flexibility can be realized? The presentation will present some empirical evidence on these questions.



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Trends and Paradigm Shifts in the Age of Disruptions

The term paradigm shift is used to describe major changes in technology and its impact in society. The invention of gunpowder, for instance, marked a paradigm shift in military thinking and practice, penicillin in medicine, jet engines in aviation, and the Internet in dissemination of information, marketing, financial transactions, crime and numerous other aspects cultural development.

Technological breakthroughs are now more frequent than ever, and it is essential to try foresee what's coming and its possible consequences. What took a hundred years earlier now only takes a decade or less. But this also increases our possibility to predict changes. What was previously called future studies had little credibility and was referred to academic environments and less established institutions. Now this is an integrated endeavor in industry, designated think tanks and industry laboratories where future technology is developed. We commissioned one such institution to give some ideas about what's in store within four sectors: transport, construction, defense and ICT.



Knut Samset

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Realizing Value from the Digital Transition

Realizing value from digitalization initiatives ties together project, program and portfolio practices as well as operational and change management, which needs to be adapted to increasing expectations of speed and return on investment. Technology and digitalization are enablers of change in core business and expansions to new areas, and effect expected on key business parameters. Close stakeholder involvement and alignment is essential.

Key challenges include

- Ensuring strategic alignment and anchoring of goals and directions, and a climate for change from initiation through realization of value
- Engaging and empowering the extended organization through sound change management as well as adapted portfolio, program and project management and organizational governance
- Transforming and implementing new, more digital ways of doing business and at the same time maintaining balance between operations and change. Ensuring sufficient attention to technology and processes, but also competence and organizational changes.

Future digitalization initiatives face both known and changed challenges and risks to be addressed to realize value. The presentation will focus on digitalization and transformation in existing organizations.



Anne Marte Sand Haarberg

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Hyperloop – How could it Impact the Society

A Hyperloop One system is comprised of a vehicle carrying passengers or freight travelling through a controlled, low pressure environment within a tube. Since low pressure environment minimizes the aerodynamic drag, the energy consumption is minimized even at high speeds.

It would reduce the travelling time from Helsinki to Stockholm below 30 minutes. Such a system would have a huge impact on society. The meaning of place and time could change completely and a Nordic super region could evolve.

The City of Salo has discussed with companies Virgin Hyperloop One and FS Links the construction of POF test track and the establishment of the Hyperloop technology innovation centre in Salo. The discussions have particularly highlighted the fact that the know-how and the labour force available in Salo can be utilized for the advantage in technology development and construction.

When implemented, the test track and the innovation centre would bring to Salo new jobs, both directly and indirectly. It is estimated that the indirect jobs will be generated by those companies, which will produce services and products for the needs of Hyperloop One and for the test track construction in Salo, and later on, when building the tracks around the world.



Mika Vilhelm Mannervesi

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The Symbolic Value of Megaprojects

Megaproject organizations have become popular with public politicians and local officials as a way of creating attractive, sustainable and economically viable urban areas for citizens. Such projects have become great symbols of modern engineering and for politicians are an important political legacy, serving as highly visible, material results of public policy and officials at the local and national level. For a long time academic attention to the management of megaprojects was reserved to the engineering discipline. My aim is to further develop our understanding of megaprojects by studying these from a cultural perspective. With others, I position megaprojects to be as much the object and outcome of social interactions as any other form of organizing that occurs within a multiple context of socially interdependent networks.

Such an interpretative perspective focuses on processes of meaning, sense-making and social construction of megaprojects and recognizes the role of rituals, myths, artifacts, ambiguities, power, subcultures and spatial settings to be important. In my presentation I will present a cultural lens to study megaprojects and discuss how megaprojects can be perceived as modern symbols, crucial for the encapsulation of ideas, attitudes, and beliefs. Examples will be given of longitudinal studies of the Panama Canal Expansion Project and the Dutch High-Speed Train megaproject. These megaprojects encapsulate symbolic meanings which shape the megaproject's life cycle process. The findings show three symbolic meanings of a megaproject that can be valuable for managing megaproject.



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Governing Megaprojects – Why, What and How

Insights from the British Government's Major Projects Portfolio (GMPP)

The British Government's Major Project's Portfolio (GMP) comprises the c150 largest and most complex projects being delivered across Britain. Collectively the GMPP has a whole life cost value of c£450bn and spans military, infrastructure, ICT and transformation projects.

The presentation will cover some of the key insights from the portfolio around costs, benefits realisation, benefits management, lessons learnt and how these can be fed into a more effective project delivery system in the future.



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Project Value Creation in a Public Setting

How is project value understood and created in a public setting? The issue of value in projects has received increasing attention over the past years, but there is still room for further research in to the process. Looking into the field itself value management and the conceptualizations of value may teach us the importance of putting cost and benefits together. From strategic management projects may borrow the concept of value capture or appropriation.

Combined with literature on Service-Dominant logic, an empirical study of projects in the public sector provides the point of departure for a conceptual model of project value creation. The model is related to activities for managing and creating project value - that is not financial. In this light, value can originate in the project process for the participating individuals and organizations, or it may be the valuation of value propositions that could be beneficial to both existing and new stakeholders. This suggests an instrumental understanding of value, which is applied in value constellations that serve as the “value chain” for projects.



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Neglected and Underestimated Impacts of Transport Investments

Based on the recent Concept Report no. 54, this presentation aims to call attention to the fact that there may be neglected or underestimated negative impacts that are not taken into account in the cost-benefit analyses of transport investments. This study was initiated in a response to the public debate about the wider economic benefits of transport investment projects. An understanding seems to have emerged among stakeholders, planners, consultants, and some researchers that some components are usually omitted in cost-benefit analyses of transport investment projects, which are positive and potentially large. There is a need to balance this picture and focus on some weaknesses in the cost-benefit analyses that lead to underestimating or even ignoring negative impacts.

The neglected and underestimated negative impacts differ in type. The presentation will focus on four main categories of negative impacts that are normally neglected or underestimated: i) Disadvantages pertaining to the construction period, ii) neglected environmental impacts, iii) induced traffic, urban sprawl, and negative implications, and iv) underpricing of environmental assets. It is the sum of these impacts of different origins that led us to argue that the cost side of the analysis may be considerably underestimated. These negative impacts are not necessarily new or unrecognized by researchers, but they are rarely mentioned in the public debate about the shortcomings of cost-benefit analyses.



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How can we use Cost-Benefit Analysis to select the Right Projects?

How can we ensure that viable and relevant projects are selected? The railway project Grenlandsbanen is an example of a huge project in the billion-dollar category, which has a lot of public interest. Its function is to connect two major railway lines in Norway, by building 60 km of new railway. The project has been reviewed over several decades. In the current Norwegian investment plan for transport (NTP) there is substitutional funding for planning and preparation in order to start realizing the project. Grenlandsbanen is an example where the pre-study and the quality assurance of major public interest (QA scheme) arrive at completely different conclusions regarding the benefits of the project. This illustrates the importance of conducting QA-analysis where cost-benefit analysis has a central position.

The biggest benefit of the project comes by decreasing the travel time between several large cities in Norway (Oslo-Kristiansand-Stavanger). This will increase the railways competitiveness compared to other means of transport, and strengthen public transport. The pre-study, from 2016, recommends a double railroad track at the cost of 25.6 billion NOK (3.2 billion USD). The present value is estimated to be -5.5 billion NOK (almost -700 million USD). However, accounting for regional benefits the project is still considered to have a positive net benefit. The cost benefit analysis in the QA scheme concludes that the project has a negative net benefit of -12 billion NOK (-1.5 billion USD). The difference to the pre-study is due to higher cost and lower consumer impact. Wider economic impacts are also marginal. Even with a substantially increased number of passengers the project will still not be considered beneficial. These results accumulate to the conclusion that the project should not be realized.



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Cost Escalation before the Formal Decision to Build

This presentation investigates an issue largely ignored in the academic literature on cost overruns, namely, cost escalation in the early project phase, before the formal decision to build is made. This is the phase of project planning that is referred to as the front-end phase in the literature. This is an important issue because unless cost estimates during the front-end phase are relatively accurate, the wrong projects may be selected for further development. If costs are underestimated, this may bias the decision making process. We first argue for why it is important to address cost escalation during the front-end phase of project planning. We then use Norwegian data to demonstrate the magnitude of cost escalations during the front-end phase of projects and in comparison to the implementation phase. We find that even in a sample of projects with relatively small cost overruns as in the case of Norway, there are substantial cost increases before the formal decision to build was made. This raises the issue of whether decisions and priorities taken at the early stages of project development are based on false information and whether this may lead to the wrong project concepts being selected.



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Designing to Cost in Built Environment Projects

Designing to cost has a long history, reaching back at least 70 years. Its primary roots are Value Engineering, the Design to Cost initiative of the U.S. Department of Defense in and after World War II, and the target costing practiced by Japanese manufacturers in their development of new products. The latter was adapted for use in built environment projects in the early 2000's, and now goes under the name Target Value Delivery (TVD). This presentation provides 1) an overview of TVD: what it is, how it works, and what results have been achieved through its use; and 2) a report on current research to evaluate cost models used to estimate costs at completion of building projects from programmatic data alone, prior to design.



Herman Glenn Ballard

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How to avoid Scandalous Cost Growth?

Why do the investment costs for some of the large projects rise far beyond the expected between the concept selection and project sanctioning? Are the concept decisions made based on unrealistic or false premises, or are perverse economic incentives driving the project scope to change completely? How do we recognize the projects most likely to experience scandalous cost growth?

Can project governance be improved such that scandalous cost growth may realistically be reduced or eliminated? How can realistic premises be established early? How can the necessary commitment be established? How can adverse incentives be neutralized? How can realistic cost estimates be established early?

These are questions raised by many frustrated project owners over the years. Some answers may be proposed during the presentation and the following discussions, based on experiences from selected Norwegian projects and the Norwegian major projects governance system.



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Cost Estimation in Equinor; Adapting to Markets in Change

Succeeding the oil price drop in 2015, the recovery period has brought some significant changes to the mindset for how Equinor evaluate project development costs. The industry has gone through a journey from being extremely profitable, via marginal, to conditionally profitable. Cost estimation and benchmarking has gained increased internal interest as decision makers and project team members are obliged to push improvements, “knowing their numbers” and increase competitiveness of projects.

The name change to “Equinor” in May 2018 finally came after sharpening of the company strategy and the strategic intent, along with revision of the company values. “Collaboration” is key for future success, also when it comes to establishment of cost and weight estimates for the next generation portfolio.

How can cost estimation keep up with ever-changing markets and project framing in a long-term O&G business; still delivering expected values for future decision making?



Øystein Holth

Manager, Estimation
Equinor, Technology, Projects and Drilling,
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Norway

The Concept Symposia on Project Governance

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Concept Symposium 2018

Governing Megaprojects – Why, What and How

Inaccurate Cost Forecasts: Development of Costs over Time

Governments worldwide are faced with the risk of significant cost overruns with the delivery of infrastructure projects. Despite the development of better project management tools and techniques to forecast costs and research efforts to identify the causes of cost overruns, still many projects fail.

Contract changes are often said to be an important contributor to cost overruns in infrastructure projects. However, the failure to deliver projects within budget is mainly due to problems before the contract stage, i.e. in the front-end of projects, the decision-making and planning phase, where risks and uncertainty are often not adequately addressed.

This research aims to improve our understanding of how cost overruns come about by investigating how costs develop from the first project plans to the opening of the project. We contribute to the literature on Early Warning (EW) signs, by identifying when in the project development process projects are most vulnerable to changes. This stage may reveal a possible sign of project failure, and knowledge of these EW signs can help prevent project failure or deviation from the main goals.

Moreover, we investigate the extent to which projects follow similar patterns regarding the development of their costs over time. Based on the classification of past projects, the cost development of future projects can be assessed improving their predictability and potentially their performance.



Chantal C. Cantarelli

Lecturer (Assistant Professor) in Operations Management
Sheffield University Management School
United Kingdom

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Governing Megaprojects – Why, What and How

Cost-Benefit Analysis in the Netherlands – Application and Use of Results

All major National transport infrastructure projects in the Netherlands are ex ante evaluated using a Cost-Benefit Analysis. A guideline for how to do this is available since the year 2000. Inspired by that guideline in 2013 a new guideline for all kinds of projects (not only transport) was published. Updates of the guideline and default values for key variables such as the value of time, have been published regularly. Consultants generally follow the guideline but often in a way that meets the interest of the client of the CBA. Impact on decision making is quite limited, but the guidelines fuel a lot of debate, in some cases also in the media.

Debates on the use of CBA for transport infrastructure projects in the Netherlands include:

- the consumer versus the citizens perspective
- distribution effects
- the lack of ethical aspects
- the quality of the research
- the lack of difficult to monetize effects



Bert van Wee

Professor of Transport Policy, and Scientific
Director TRAIL Research School
Delft University of Technology
The Netherlands

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Governing Megaprojects – Why, What and How

The What Works Initiative: Increasing the Use of Evidence Based Policy Making

The UK's 'What Works' Initiative was launched five years ago to embed robust evidence at the heart of policy-making and public services delivery. The initiative is led by a team in the Cabinet Office that: (1) delivers a programme of activity across government to improve the use of evidence in spending decisions, and (2) oversees a network of 10 external What Works evidence centres, covering policy areas ranging from education to local economic growth. This presentation will set out the What Works approach to evidence-based decision making and discuss the different channels by which impact evaluation feeds back into policy design and practice in the UK. It will highlight examples of effective evidence-based public investment and describe challenges and priorities for the initiative going forward.



Mihiri Yasmin Seneviratne

Senior Policy Advisor
Cabinet Office
United Kingdom

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Governing Megaprojects – Why, What and How

Ex post Evaluation of Large Public Projects – Experiences from Norway

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 Concept Research Program has argued that such projects must be assessed in a broad perspective that includes both operational, tactical and strategic aspects, and intended as well as unintended effects. A generic six-criteria evaluation framework is suggested, inspired by a framework frequently used to evaluate development assistance projects. The criteria are: efficient implementation, effectiveness, impact, relevance, sustainability, and value for money. The framework is tested on 20 Norwegian projects from various sectors (transport, defense, 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.



Gro Holst Volden

Research Director
Concept Research Program, NTNU
Norway

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Governing Megaprojects – Why, What and How

Governing a Mega IT-project for the Norwegian Department of Social Security (NAV)

NAV is the short name for the Norwegian Labour and Welfare Administration. NAV employs 19 000 people and administers a third of the national budget through schemes such as unemployment benefit, work assessment allowance, sickness benefit, pensions, child benefit and cash-for-care benefit.

NAV was established in 2006 as a result of the Norwegian Labour and Welfare Act (NAV-reform), bringing together three existing agencies. IT-related challenges related to this merging of agencies were well known at the time and considerable investments were expected to reach reform-goals.

In 2010 NAV presented their plans for the project "NAV ICT-modernisation". At the time it was described as the largest public IT investment in Norway, and also the first IT-project to be subject to the Norwegian scheme for quality assurance of major public investments (the QA scheme).

The project developed to be a 3.3 billion NOK program by 2012 with a planned 6 years of execution. The program has faced major challenges and overruns, but also managed to deliver results and benefits. Together with typical project challenges the program has adapted to live with emergent methods such as agile development and new approaches to IT-management.

The presentation will tell the story from the perspective of the quality assurance team and how the QA scheme has been tailored and contributed to important aspects of governance of this mega IT-project.



Øyvind Tendal

Consulting director
Metier OEC
Norway

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Governing Megaprojects – Why, What and How

Cost Management in Business Contracts

Concept studies show that the cost management in Norwegian public projects in average is good. Public road projects are typically performed through Design Bid Build, where Norwegian Public Roads Authority (NPRA) has the responsibility for the design, and a number of contractors get the responsibility for construction, through a unit price contract. Typically, a project include a number of contracts. While costs control is in average good on the project level, we can see large deviation on the contract level, through scope changes and additions to the contracts. In a study we have looked closer at the cost management of construction contracts. Through quantitative data from NPRA we have look at what extent there are deviations between the initial contract sum and the final sum for the contract. We found that in average, the deviation between initial contract sum and final cost for the contract is 17,1 %. We have analyzed different variables that can explain this deviation. Interviews are also performed with experienced people to achieve a more in-depth understanding of the deviations. The overall aim is to identify measures to improve the situation. Overview of preliminary results from the study will be given in the presentation.



Olav Torp

Associate Professor
Norwegian University of Science and
Technology
Norway

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Concept Symposium 2018

Governing Megaprojects – Why, What and How

Contracts in Public Construction Projects Compatible with Market Demands and Competition

Norwegian public investment in infrastructure has intensified in Norway in recent years. State investments in Norwegian national roads (riksvei) has doubled since 2010, and the Norwegian National Transport Plan for 2018-2019 has budget frame of 1 064 billion NOK. The growth in infrastructure spending has been followed by a drastic increase in the amount of large infrastructure contracts, especially in the market for public rail and road projects. In 2014 the project E39 Eiganestunnelen was the largest construction contract in the road sector to date with a value of 2 two billion NOK. The largest public road contract signed in 2018 at the time of writing is the project Rv 3/rv 25 Løten-Elverum, valued to 5,5 billion NOK. How will this development affect the Norwegian construction market, and what measures should be made to ensure a high degree of market competitiveness in the long run?



Julie M. Brodtkorb

CEO
Norwegian Association of Heavy Equipment
Contractors
Norway

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Governing Megaprojects – Why, What and How

Contract Strategies Road and Rail – Similarities and Differences Norway and Sweden

Different contract strategies with early involvement of the contractors are all the rage in Norway these days, led not least by new entities like Nye Veier. From the basis of our experience as advisors to public entities such as Statens vegvesen, as KS2-consultants under the Governments Quality assurance program in Norway and as both consultants and designers of solutions in Sweden, we discuss usage and trends, advantages and pitfalls, focusing on similarities and differences between the two countries.

Speakers are Simen Olstad, partner in Concreto, and Bengt Hansson, Head of business Land and construction in Tyrens of Sweden.



Simen Olstad

Partner
Concreto
Norway

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Governing Megaprojects – Why, What and How

How Contract Strategies Impact Project Success

Owners and contractors alike will generally agree that contract strategies have significant influence on a project team's ability to effectively execute work and achieve project objectives and other criteria for success. Contractual considerations include such elements as the comprehensiveness of project planning, awareness of market, economic, and other external conditions, project complexity, contractor familiarity and capability, risk and contingency management, change management, and the organizational structures and core competencies of the contract parties. The importance of these issues cannot be overstated and research has conclusively demonstrated that project teams can significantly influence project success by organizationally committing to the definition and effective implementation of well-developed contract strategies. This presentation reports on research funded by the U.S. Construction Industry Institute and is supported by associated case studies that collectively provide a compelling argument for the need of project teams to dedicate significant focus to these proposed best practices.



W. Edward Back

Professor and Department Head Department of Civil, Construction, and Environmental Engineering, The University of Alabama, Director Center for Sustainable Infrastructure
Tuscaloosa, AL USA

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Governing Megaprojects – Why, What and How

Prioritisation at Programme and Portfolio level in the UK

The National Audit Office reports to the UK Parliament on the economy, efficiency and effectiveness with which UK Government Departments spend public money to implement government objectives. Many government objectives are delivered through major projects and programmes which cover a broad spectrum of outputs and activities including the building of infrastructure, transformation of services, delivery of equipment and ICT. About one quarter of the NAO's value for money reports examine the delivery of such projects.

In this session, Geraldine will talk through the NAO's findings and insights around how Government departments prioritize and make choices both at project and portfolio level, against a background of increasingly high expectations of what government funded projects can deliver.



Geraldine Barker

Director Project Delivery
National Audit Office
United Kingdom

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Governing Megaprojects – Why, What and How

Regional Victories or National Success? Building roads across Norway

A large part of Norway's population and industries are located along the west coast and the south-eastern part of the country. Between these two regions you find high mountains and deep valleys, reindeers, herds of sheep, tourists, heritage farms, forest, ski slopes, fishing creeks, villages and cottages. There is a need for transporting goods and people efficiently through this landscape in a safe way all year round. Local industry along the roads crossing Norway may benefit from the traffic. However, the roads' effect on nature and wildlife is not necessarily positive. And if a planned road is threatening to ruin a cottage village, where Norwegians spend their oval weekends, there will be trouble.

We were asked to perform quality assurance of two concept studies of main road connections between east and west of Norway. The concept studies were based on transport analyses, research reports on wildlife, cost estimates and economic studies. But they were also subject to constraints and scope limitations that may seem politically motivated. The study comprised a prioritisation between regional and national benefits. The decision process has been quite interesting.



Elin Kverneggen / Astrid Oline Ervik
VP Project Advisory and Analysis / Researcher
Holte Consulting / SNF
Norway

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Governing Megaprojects – Why, What and How

How are Experts' Uncertainty Intervals Perceived by Non-experts?

Estimated project costs can be described as an uncertainty interval where low (minimum), middle (expected or most likely) and high (maximum) values are specifically indicated (e.g., corresponding to P15, P50, and P85 in a cumulative probability distribution). We report the results of a questionnaire study where experts' estimated costs for a road project, illustrated by a bell-shaped graph, were presented to several educated samples (including students, employees in a major construction company, and judges). In line with findings from other domains, they underestimated the span of the uncertainty interval, and yet they believed that actual outcomes outside of this interval, especially excess costs, would be likely. When asked to suggest outcomes corresponding to verbal phrases, like "entirely probable", "not surprising" and "could cost", they mostly selected extreme values (at the top of the uncertainty distribution). Outcomes inside, or at the boundaries of an uncertainty interval were regarded as accurately predicted, while outcomes outside indicated that the estimates were wrong. It is concluded that even well-defined probabilistic estimates cannot be assumed to be understood as intended, even by educated readers, due to lay notions of probabilities, categorical thinking and the colloquial meaning of verbal terms.



Karl Halvor Teigen

Professor emeritus
University of Oslo and Simula Research
Laboratory
Norway

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Governing Megaprojects – Why, What and How

Obstacles to Efficient Decisions

High quality in the basis for decision making is key to ensuring the efficient use of government resources. Inadequately assessed government measures result in high costs or in measures that fail to address the problem they were supposed to solve. The Government Agency for Financial Management is the expert body within central government responsible for administrating the Instructions for Official Studies and Reports. The agency advises the Ministry of Finance on improving the requirements and give guidance to government agencies on how to comply with them. According to a survey conducted by the agency, the quality of official studies leaves considerable room for improvement. One shortcoming is unclear descriptions, both of the problems that need to be solved and of the objectives to be achieved. Other major deficiencies include the failure to assess alternative solutions, the tendency to overestimate benefits and underestimate costs, and inadequate descriptions of the prerequisites for successful implementation.

In her talk Singaas will highlight what government agencies themselves consider to be the biggest challenges when conducting these studies.

A revised version of the instructions, which came into effect in 2016, contains several important adjustments that are intended to make it easier to comply with the requirements: simpler and more specific provisions, greater flexibility, and clearer requirements for the early involvement of affected parties. These improvements will hopefully improve the quality of the decision-making basis in central government.



Hilde Singaas

Director General
Norwegian Government Agency for Financial
Management (DFØ)
Norway

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Governing Megaprojects – Why, What and How

Lessons from Research and Management of Polar Bears in the Extreme North

An Agreement on the Conservation of Polar Bears was signed by the five Arctic range states in 1973. The rationale for the Agreement was concerns that polar bears were over-harvested in many areas. Local/ indigenous people's rights and roles as custodians of polar bears was, however, recognized and the Agreement allows for taking of polar bears by local people using traditional methods in the exercise of their traditional rights. However, much has changed over more than the forty years, which have passed since the agreement was signed. The consequences of climate change are particularly pronounced in the polar regions. Less sea ice around denning areas in autumn means that pregnant females are unable to get ashore at their denning areas, hence fewer dens and reduced cub production. Pregnant females stranded ashore in summer goes without food for months. They have poor body conditions and lack fat reserves needed for their newborn cubs to increase body weights from 0.5 kg to 10 kg. There are fewer ringed seals because of less ice, hence less prey/ food for polar bears, which also can affect cub/ yearling survival. Transboundary pollution may add to the problem. Adult bears will probably survive one way or another, but with reduced recruitment and increased cub/ yearling mortalities, the polar bear populations will probably decline in many areas in the foreseeable future. Added mortalities caused by hunting (Greenland, Canada and Alaska) will make things worse. Some researchers/ managers/ indigenous people groups are of the opinion that hunting of polar bears will not have detrimental consequences, even in times of negative impact from climate change/ reduction of sea ice. But others disagree and claim that many polar bear populations are declining. The precautionary principle should be recognized and applied to polar bear management.



Thor S. Larsen

Dr. Philos, researcher
The Norwegian University of Life Sciences/
Department of International Environment
and Development Studies, Norway

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Governing Megaprojects – Why, What and How

Electrification of Aviation and its impact on National Transport

Norway's geographical position in Europe and challenging domestic topography makes it totally dependent on aviation. At the same time, all sectors in society – including aviation – must contribute to reduce global emissions of greenhouse gases. The airlines are investing in new more energy efficient aircraft, and over the last two decades emissions per passenger kilometer have been halved. However, due to strong traffic growth the total aviation emissions have grown and are expected to continue to grow. Additional technological solutions are needed. Sustainable jet biofuel has been certified for use in aviation since 2009, production is increasing and production costs are reduced. This is promising for both long and short haul flights. Furthermore, over the last couple of years, electrification of aviation has also gained momentum. Airbus, Boeing, Siemens, Rolls Royce and many more are looking into novel solutions and technologies that could reduce aviation carbon and noise emissions significantly. The new technologies can also reduce costs and thus open new market opportunities for the airlines, and improve connectivity for the passengers. With a network of almost 50 airports, strong political backing and an abundance of renewable hydropower, Norway is well suited for electric passenger aircraft. Mr. Falk-Petersen's presentation will provide insights into why we believe that by 2040 all domestic air traffic in Norway will be electrified.



Dag Falk-Petersen
CEO
Avinor
Norway

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Governing Megaprojects – Why, What and How

The front-end of Projects – Structuring using a PMI literature survey

The “front-end” of a project is an under-researched area, but has been shown to be critical to the strategic success or failure of the project. This phase of the project’s lifecycle seems not to be well understood.

This presentation will describe the results of a detailed, comprehensive, systematic literature survey on the project front-end, commissioned by the Project Management Institute from University College London, the University of Hull, UK, and the Concept programme based at NTNU. Based on this, we will present an understanding of the concept of the front-end, then define a temporarily ordered structure of generic processes that form part of the “front end” and how these fit together as a coherent whole. These start from the preliminaries to the initiative, then the project purpose (for various stakeholders), the initial analysis and scenario analysis; the analysis of alternatives and choice of project concept; assessment of the project (scope; estimation of cost, benefits and schedule; risk; technology & sustainability; and the project delivery system), finishing with setting up the project execution (finance, governance, and contracts). We will note the seven Winter & Szczechpanek “images”, keeping attention on the surrounding environment, the intended project benefits, and the temporariness of the project.

The result of this is a conceptual framework and structure for the front-end. We will also discuss some particular areas where further research would be valuable.



Terry Williams
Director, Risk Institute
University of Hull
United Kingdom

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Governing Megaprojects – Why, What and How

Summary Remarks and Closing Statement

The Concept Symposium 2018 is coming to an end and we hope you all have appreciated the presentations, discussions, the people and the venue. As the final speaker, the Concept Research Director will summarize and close the conference.



Gro Holst Volden

Research Director
Concept Research Program, NTNU
Norway

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