

Challenges in the Front-end of Major Public Projects

Relevance and Sustainability A survey

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Summary

This report looks into the challenges in the front-end of major public investment projects investigating problems leading to lack of relevance and sustainability. It is argued that these problems has to be the most important to solve in a strategic perspective.

The survey gives answers to the questions: What are the most important challenges in the front-end of major public investment projects? What can we do to avoid or counteract problems when a public investment project is defined and designed? The results of a survey are shown in detail, elaborating the assessment of 80 international senior experts from western developed countries.

Most important problems leading to lack of relevance are that the **users' needs are unknown, misunderstood or ignored** and that **the objectives of the project are unknown or misunderstood**. Most important problems leading to lack of sustainability are **lack of commitment from key stakeholders** and **conflict over objectives and/or strategies concerning the project**. The most important underlying reasons are identified and include critique that users' needs are ignored for political or personal reasons, the way users participate in the process produces the wrong answers, objectives are stated unclear or not at all, conflicts are being neglected as well as consequences of planning optimism.

What to do about it are a more complex matter and the answers consequently multifaceted. Public projects have to be planned and executed within a **governance framework** which includes a **structured decision making process** and **critical scrutiny** as well as **professional standards** for management. The suggestions from this survey are focused on control, but also positive incentives and information should be considered. The proposed actions from this study should be included in developing the governance framework for public projects, or in processes to improvement existing frameworks. The survey shows the most important corrective actions in a generic case. In each actual case, what is most important depends on the starting point – the status from which the improvements starts. This may give very different results according to the specific setting and context.

This report gives other answers than the traditional project management literature and supports findings made by authors of mega-project books. The findings are concluded to be solid and can be generalized to cover western, developed countries. With careful consideration the findings may be transferred to private sector as well. The results may be a valuable source of ideas for anyone in the process of defining or improving a governance framework for public investment projects. The report concludes there is potential for more research in this field and some ideas are suggested in the end.

Keywords: Governance of Projects, Public investment projects, Front-end planning, Project management, Project failure, Project success, Project evaluation, Decision making.

Preface

This report is a documentation of the planning, execution and analysis of a survey on the most important problems in the front-end of major public investment projects, their causes and possible corrective actions¹. I have always found it hard to sort out the most important issues among the many problems identified in literature about projects and programmes. My own experience from a wide range of projects tells me it is really difficult to say what is the most important. This work is supposed to help.

The project is a part of my PhD project and includes discussions of a survey with 80 respondents world-wide. The part concerning challenges and their causes are by far a more challenging and advanced research task than the part concerning what to do with it. The first one included months of preparation, several rejected proposals and adjusted both scope and objective. Preparations were tough, but the job analysing the results was an easy one. Special thanks to Professor Knut Samset for challenging my proposals in this phase of the development. The latter part of the survey has more character of an open survey and structuring a rather complex and multifaceted material. This part was easy to prepare, but more difficult to process after the survey.

Thanks to 80 respondents world wide. I know it is a lot to ask for to use a fair amount of anyone's time to answer my questions. Especially when addressing senior personnel and top experts on a high level. I am very thankful to each one of them.

Special thanks to 6 interviewees in U.K. and Norway which have helped to challenge my analysis and given additional debt to the answers from the survey. These are, in alphabetical order; Peter Deary, Alan Harpham, Morten Hjelm, Arne Hovden, Colin Howard and Jan A. Martinsen. Thanks to Professor Knut Samset for challenging the survey in the beginning. Thanks also to Professor Bjørn Andersen and Professor Tore Haavaldsen for giving valuable comments on this report and the accompanying article.

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¹ The survey actually included a part 3 not reported here. Part 3 is reported as part of a separate study.

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1 Introduction

There are many ways for a project to fail. Most frequently reported is the failure to meet the deadlines, deliver within budget and to the specified quality. These failures are usually linked to problems in planning or executing activities within the project. Focus on this category of problems has created a demand for better methods and tools for the project manager, and lately also the programme manager. The project management organisations like Project Management Institute (PMI), Association for project management (APM) and International Project Management Association (IPMA) has contributed with common guidelines/PM BOK's and improved professional standards in the field of project and programme management. This has certainly improved the situation and contributed to the maturing project profession. But the failures have not gone away.

Another category of failure is also reported quite frequently – the failure to deliver the functionality, benefit or contribution to business objectives that was intended upon initiation of the project. This seems to be both a more serious category of faults, and a more difficult set of problems to solve. These challenges are found on a higher level and earlier in the development process. The problems here are more complex, involve more difficult trade-offs and at the same time less comprehensible. Economists and other authors have studied these problems as decision making problems for many decades, even produced Nobel-prize winners, without making the problems go away. Often these studies are embedded in either a very high level setting (society as a whole) or presented on a very small scale contributing to understanding small pieces of the puzzle, leaving the whole picture unsolved. Several authors with experience and knowledge of projects have also touched upon this field, but they are still not many in numbers. Their contributions span a long period of time and are based on different theories and perspectives, leaving us with a rather confusing impression. This is further studied in chapter 3 and 4.

2 The starting point of this study

This authors interest for these problems come from own experience as project manager and consultant. As a researcher studying major public projects I observed that there are several papers, books and reports on 'what goes wrong' in projects giving slightly different answers. These reports are based on empirical evidence from literally thousands of projects. They tend to point towards things gone wrong in the detailed design and management of the projects, quality problems in execution of tasks during project execution. The amount of prove is vast (see examples in chapter 3). My aim is not to challenge these findings. They are certainly important, but do not seem to explain well the really big mistakes. The most important problems seem not to be adequately covered: What goes wrong in the decision making process leading up to the projects being started? Therefore there is a need for more research into this area. An important contribution to understanding what goes wrong with projects in the form of several books on mega-projects (see chapter 4) inspired me to look for new ways to answer these questions.

This study looks into the front-end of major public projects and identifies the reasons behind the most important problems facing these projects. The front-end is defined as the whole period of time from an idea is identified and up to the final Go/No-go decision when the project is finally approved by owner, and given financing. The study looks at investment projects – not purely financial operations like trading a large asset of shares etc. Public projects are identified by being owned and financed (mainly) by a public entity, typically the state. The term ‘major’ indicates large size (in monetary terms) and a substantial degree of complexity and criticality. It includes, but is not limited to, ‘mega-projects’ – a category of projects of a grand scale, intangible complexity and with large political importance.

I am not trying to solve all the problems other authors have not been able to solve. Instead I choose a certain section of the whole problem-complex. The purpose of this methodological choice is to come up with a more precise answer to what should be given highest priority first in the face of repeated failures to projects. Thus, my focus is; what are the most important problems? The fundamental choice at my starting point is using OECD’s draft standard on Development Evaluation Assessment (OECD, 2006). These criteria have a position of international consensus. The criteria for evaluation of projects are:

- Efficiency
- Effectiveness
- Impact
- Relevance
- Sustainability

Of course other frameworks for choice of projects could have been chosen² but the OECD criterion seems to have the strongest position towards public projects and is appropriate for this line of inquiry.

Having chosen to look at major public investment projects, the perspective in this study is that of society (the project owners and financing party) – I will use the term ‘strategic perspective’. At front-end the most important challenges are to secure relevance and sustainability. These two criteria are critical in the sense that if the project ends up not fulfilling them, the project has failed no-matter how well the project has performed with respect to the other three criteria. And vice versa, if the project performs well with respect to relevance and sustainability, it can make up for lesser performance in the remaining three, perhaps with the exception of some impacts. Dinsmore and Ribeiro (2007) have come to a similar conclusion, saying ‘*While good project management cannot save an organization from a bad strategy, bad project management may harm a good strategy.*’

² Archer & Ghadsemzadeh (1999) and Shenhar & Dvir (2004) propose selection and classification frameworks, Cole (1997) looks specifically at how environmental criteria should be set in an overall framework.

As a consequence, focus in my work will be on the two superior criterions; Relevance and Sustainability. This choice does not imply the three other criteria are not important. They can certainly create failure as well, but starting with the most important ones is a good idea.

In this strategic perspective, ‘unsuccessful’ is the label used for projects that are not useful and/or not viable in the longer time perspective. Consequently success is creating a relevant project with sustainable effect (a simplified definition chosen for this report). A study in this field is important if the success rate of public projects is going to improve. Understanding why these major public investment projects fail will improve the probability for success and contribute to less wasting of public funds. For the project community this study offers new insight in what pitfalls are the most critical to avoid. As will be shown later, this gives different results than the traditional project management literature has given and supplements the important studies of mega-projects.

The research questions addressed in this report is:

‘What are the most important problems that occur when a major public investment project is defined and designed?’

Through the discussion of evaluation criteria above the most important problems seems to be those related to relevance and sustainability. Therefore, that gives the limitations of this report. The term ‘define’ means the process of defining the objectives of the project. The term ‘design’ means the process of defining the means of obtaining the objectives (Turner, 2006). These processes (definition and design) include development and selection of the best alternative concept for the project in a strategic perspective.

‘What can we do to avoid or counteract problems when a public investment project is defined and designed?’

The latter question is addressed with open questions for free-text responses both with and without the limitation mentioned above. The limited part is pointing directly to the first research question. The general part is not limited, but the respondents have linked it to some degree to the first question anyway.

Results of other research will be used as a basis for comparison and reference for further analysis, in addition to delivering main reasons for doing the survey in the first place. The result of the survey is intended as part of the basis for developing improvement strategies for governance frameworks. A side-effect will be testing if international experts agree on what literature has found to be challenges in the front-end of projects. Therefore, let us start with looking at some of literature, before we study the results of the survey in the consecutive chapters.

3 What goes wrong in projects?

As argued above, I will not challenge the findings of earlier studies into what goes wrong in projects. It seems appropriate to comment a bit more on why these do not give the answer I am looking for, and why I still do not want to challenge them. Consider the examples in Table 3.1.

Harpham & Williams (2007) has gathered a large number of independent results on what goes wrong in projects. Sources is said to include University of Bath, National Audit Office, Standish Survey, Computer World, Washington University and a number of consulting firms. The basis for ranking 1 to 10 is unknown. In total there is input from probably hundreds or even thousands of projects behind this list. The original sources are not available, but there is reason to believe they have different starting points, methodology and focus. This does not mean the list is wrong, but it is difficult to apply it in a specific setting. In a practical view it is useful as a general source of awareness and experience transfer.

Table 3.1 Top listings of what goes wrong in projects - Examples.

No.	10 Reasons Why Programmes & Projects Fail – A Poll of Polls (Harpham & Williams, 2007)	NAO/OGC agreed list of common causes of project failure (OGC, 2005)
1	Lack of Planning	Lack of clear link between the project and the organization's key strategic priorities, including agreed measures of success.
2	Poor User Input (& Mismatch of Expectations)	Lack of clear senior management and Ministerial ownership and leadership.
3	Lack of Senior Management/Executive Support	Lack of effective engagement with stakeholders.
4	Poor Definition of Project Scope	Lack of skills and proven approach to project management and risk management.
5	Unrealistic Timescales	Too little attention to breaking development and implementation into manageable steps.
6	Lack of adequate Resources	Evaluation of proposals driven by initial price rather than long-term value for money (especially securing delivery of business benefits).
7	Incomplete or Changing Requirements and Specification	Lack of understanding of and contact with the supply industry at senior levels in the organization.
8	Lack of Leadership and/or Communication Skills	Lack of effective project team integration between clients, the supplier team and the supply chain.
9	Lack of Project Specific Skills/Competence	
10	Poor Stakeholder Management	

The impression this list gives is that, from a project perspective, many of the most important problems points towards external sources (examples are ‘poor user input’ and

'lack of senior management/executive support'). Other tends towards the traditional tendency to look at the project as a task force getting the necessary inputs like objectives and resources defined from its owner (examples are 'poor definition of project scope', 'lack of adequate resources' and 'incomplete or changing requirements and specifications').

The project itself seems only to be actually responsible for what Atkinson (1999) refers to as the 'iron triangle' – cost, time and quality (examples are 'lack of planning', 'unrealistic timescales' and 'lack of project specific skills /competence'), and even that does not succeed. This can be interpreted as a very narrow project perspective. Or could it be that the projects are trying to put the blame on everybody else? There are other ways of interpreting these findings: 'Unrealistic timescales' and 'poor definition of project scope' could very well be a problem originating from decisions made by the owner or from planning activities performed by the project. This illustrates the problems in further use of top listings like these.

One of the original sources mentioned by Harpham & Williams is available – the one from National Audit Office in UK (OGC, 2005). In Table 3.1 this result is shown as well. This one is easier to use, since the context is more defined. This refers to studies into major public projects in UK and is performed by one party (the National Audit Office). It is therefore assumed that the basis for the study – its starting point and methodology is well defined and similar for all cases. This makes the results more credible and useful. Being a result of a high level initiative within the UK public sector, the perspective of the study is also easier to understand, even though not precisely defined in the source. It is naturally expected to be the owner's perspective on behalf of society. The result is agreed with the part responsible for improving performance in UK public projects; the Office of Government Commerce which also published it. It is reported in interviews to be 'highly influential' in the UK.

Look at the eight 'common causes of project failure'; these points to high-level causes external to the project. They point to the **governance of the public projects** (examples are 'Lack of clear link between the project and the organization's key strategic priorities, including agreed measures of success' and 'Lack of clear senior management and Ministerial ownership and leadership'). Quite a few of the findings points directly to weak competence and performance in the project itself (examples are 'lack of skills and proven approach to project management and risk management' and 'too little attention to breaking development and implementation into manageable steps'). The rest has to do with effects in the interface between the project and its environment. Consequently, even if these eight key points are credible explanations to why public projects go wrong – it is still only answer to what goes wrong IN projects.

Two interesting research initiatives in the same category are done by Pinto & Slevin (1992) and Delisle & Thomas (2002). These two are interestingly enough linked through the work of Delisle and Thomas who tested the ranking of Critical Success Indicators made by Pinto and Slevin (Delisle and Thomas calling them Factors not Indicators). Figure 1 below shows the result of both investigations.

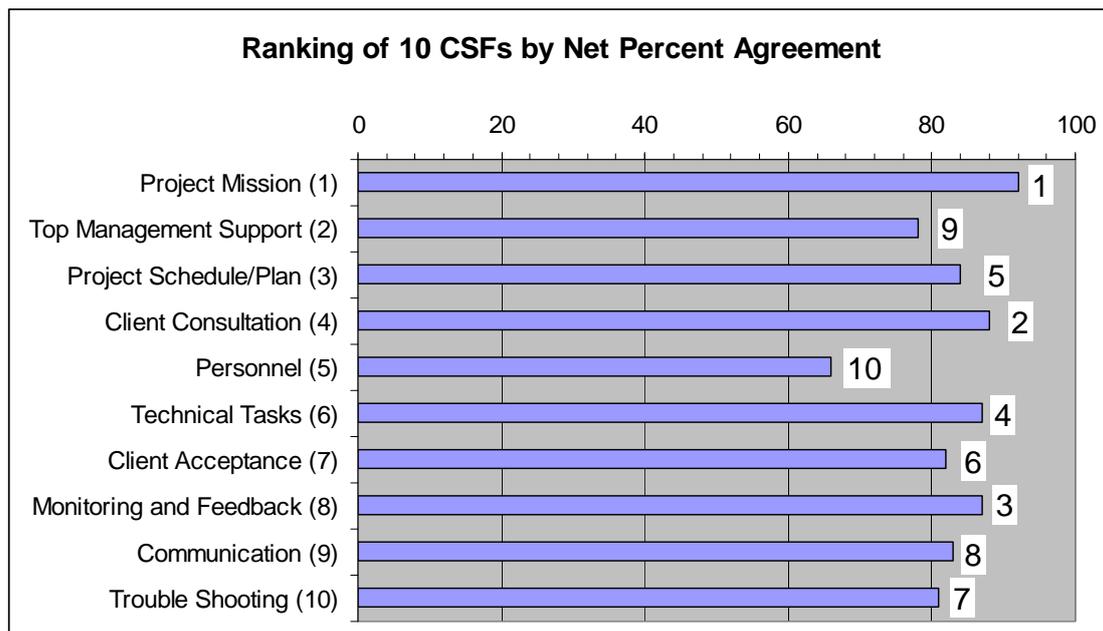


Figure 3.1 Top 10 Critical Success Factors based on Delisle & Thomas (2002).

The left hand side of Figure 3.1 shows Pinto and Slevin's original ranking from their 1992 paper, numbers 1 to 10. On the right hand side is shown the ranking of the same factors by Delisle and Thomas after combining a large set of data from several surveys where they aim to find what criteria allow for the best judgement of the success of projects, and what relationship exist between success, value and communication and project outcomes (p 191). Their interesting work looks specifically at virtual teams and test whether the success criteria is the same in this setting as in the general project setting of Pinto and Slevin. As Figure 1 shows, there are many indications that there is a difference. A simple visual exploration of the bars in the diagram seems to indicate an unfortunate mistake when ranging the CSF's (number 8 placed two ranks too low). However, this does not make the result less interesting.

The two references here along with others, like Cooke-Davies (2002), study the phenomenon of success in the light of project management. They are representatives of systematic use of research methodologies to unravel the answers, as opposed to the practical gathering of empirical experience data from practical life. This work shows how difficult it is to find a general answer to the questions of what success is and what determines whether a project will become a success. Figure 1 indicates the ranking of the factors are very different. This has to be interpreted as a message that the setting – the project and its context – is highly important. Could it be there is no general answer to what is project success or failure? In which case the correct answer will never be found, but still there is interesting learning to be found. By looking at more examples of such listings (Delisle and Thomas illustratively calls them 'shopping lists of Success Factors') we will know more about this. Delisle and Thomas (2002) also points out that the concept of success and thus also these lists will change over time.

Another example, this time from public projects, is presented by Mark D. Schaeffer of Department of Defense in USA (Schaeffer, 2006). He refers experience from a System Engineering Revitalization Initiative. The initiative focuses software as a result of four main developments;

- Requirements are fast increasing,
- The research is declining and the knowledge gap increases,
- The President’s Information Technology Advisory Committee Report, (February 2005) identifies SW (software) as “major vulnerability”,
- Cost, time and performance issues.

He identifies top 10 reasons programs fail – see Figure 3.2. Actually, it shows 10 problem areas and identifies at least 17 reasons, several of them with more than one element. What is most important?



Top 10 Emerging Systemic Issues

1. Management	<ul style="list-style-type: none"> • IPT roles, responsibilities, authority, poor communication • Inexperienced staff, lack of technical expertise
2. Requirements	<ul style="list-style-type: none"> • Creep/stability • Tangible, measurable, testable
3. Systems Engineering	<ul style="list-style-type: none"> • Lack of a rigorous approach, technical expertise • Process compliance
4. Staffing	<ul style="list-style-type: none"> • Inadequate Government program office staff
5. Reliability	<ul style="list-style-type: none"> • Ambitious growth curves, unrealistic requirements • Inadequate “test time” for statistical calculations
6. Acquisition Strategy	<ul style="list-style-type: none"> • Competing budget priorities, schedule-driven • Contracting issues, poor technical assumptions
7. Schedule	<ul style="list-style-type: none"> • Realism, compression
8. Test Planning	<ul style="list-style-type: none"> • Breadth, depth, resources
9. Software	<ul style="list-style-type: none"> • Architecture, design/development discipline • Staffing/skill levels, organizational competency (process)
10. Maintainability/Logistics	<ul style="list-style-type: none"> • Sustainment costs not fully considered (short-sighted) • Supportability considerations traded

Major contributors to poor program performance

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Figure 3.2 Top 10 Reasons for Programmes to fail according to DoD Systems and Software Engineering (Schaeffer, 2006).

Like the previous listings in Table 3.1 this list has a clear project (programme) perspective. The specific context here is system development. It gives an impression of what activities and functions do not deliver up to standard, and what execution strategies often prove to be insufficient. The background tells us this is a description of the status on a given point in time, influenced by changes and development trends. This is of course interesting and important findings for improvement of the project- and programme management.

Going back a bit to see what others have said about programmes at an earlier stage could be interesting. One example is ‘Twelve reasons why programs fail’ (Gioia, 1996). He points out that large, high profile programs either quietly succeed or fail spectacularly. His main message is that handling risk is the name of the game – all programme failure comes down to a few basic forms of risk. He distilled the reasons for failure down to a dozen fundamental reasons as shown in Figure 3. Although listed in a different sequence, the reasons given in this work look quite similar to the ones identified by Harpham & Williams in Table 3.1.

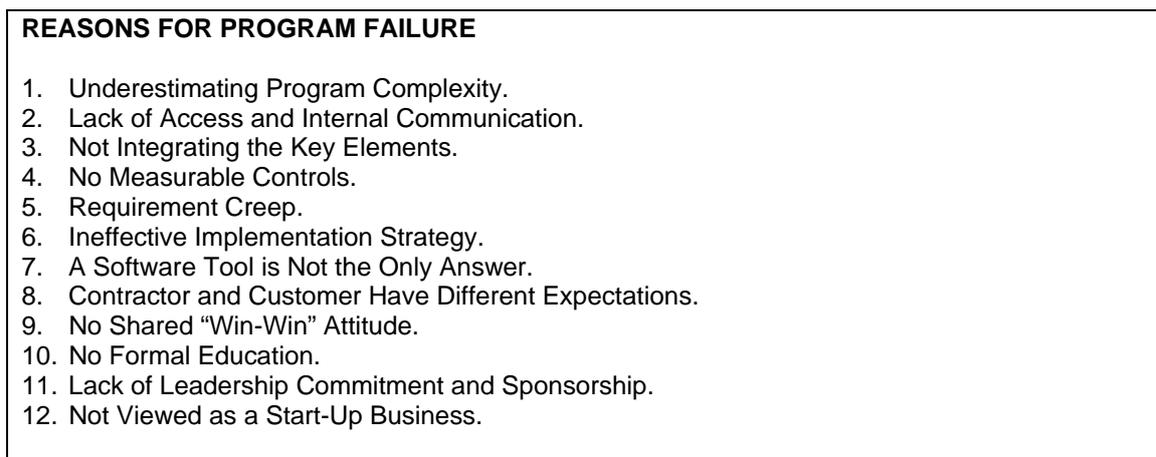


Figure 3.3 Twelve reasons why programs fail (Gioia, 1996)

In Norway Torp et al. (2006) has collected data from a large number of projects from the Norwegian Quality Assurance Scheme (see Magnussen & Samset (2005) or Samset, Berg & Klakegg (2006) for a description of this scheme. The source of the data behind these findings is reports made by independent quality assurance consultants giving advice to the project owner about the three most important success factors and pitfalls in the project. The background is a thorough assessment of the project including an independent cost uncertainty analysis of each project. The projects include investments in roads, railways, buildings, military equipment and ICT systems with an expected cost > NOK 500 million All these projects are analysed in the period 2000 – 2004.

A total of 303 success factors were identified in 53 projects, analysed by the authors and categorized as shown in Figure 3.4. The analysis suggests pitfalls and success factors are two sides to the same coin. Not surprisingly; if the factor is handled well it is an important contribution to success and if it is neglected or handled badly – it is a pitfall. This result is relevant to the study reported in this white paper. It is compiled from a sample of projects with identical characteristics as the intended focus in the survey in this report. However, the problem remains – Figure 3.4 shows the occurrence of the different success factors, indication how commonly it is considered a vital concern in the projects. But still it does not answer the question of what is most important. The focus is also clearly that of the executing party. Concerns about project control, organization, contracts, PM and scope management are all internal to the project.

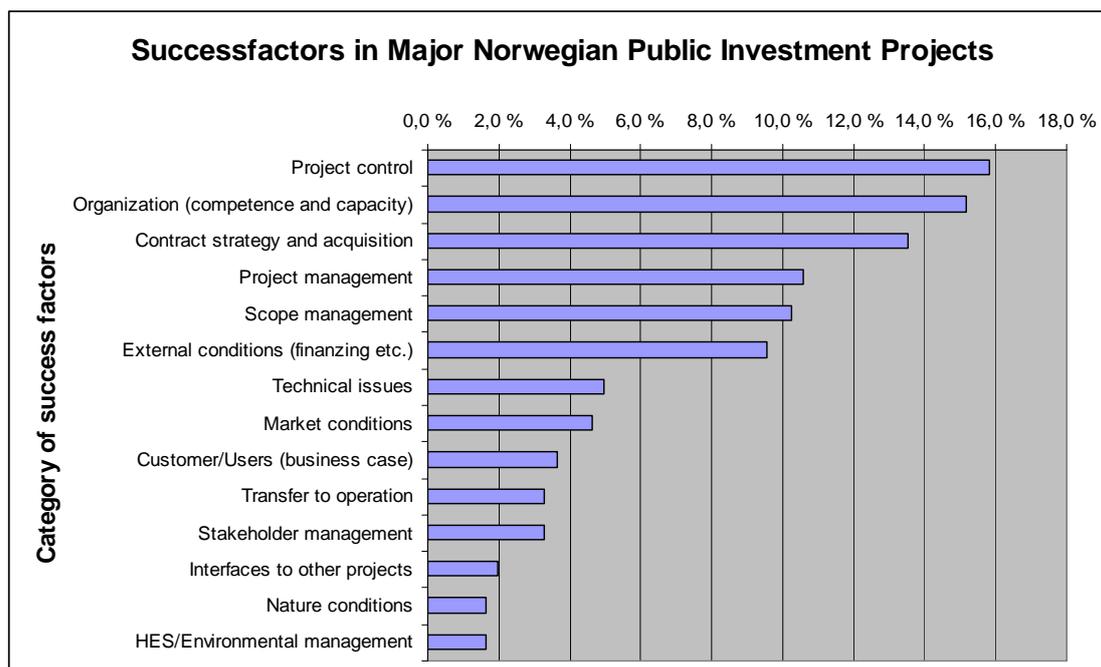


Figure 3.4 Success factors identified in major Norwegian public investment projects. N = 53 projects. Source; Torp et al. (2006).

Hopkinson (2007) has made a Top-ten list of reasons for Mega-projects to fail – see Table 3.2, based on his own experience, cases and literature.

Table 3.2 Example of top-ten list of causes for mega-project failure.

No.	Ten causes of mega-project failure (Hopkinson, 2007).
1	Multiplicative combination of the effects of other causes of failure
2	Weak governance of project management (Hopkinson refers to the NAO/OGC list of causes (OGC, 2005) here)
3	Political imperatives – authorisation of public funded projects lies in the hands of politicians
4	Uncertainty exploitation – long timescale and significant degree of novelty
5	Project authorisation pressures on individuals
6	Failure to invest sufficiently before the project's main authorisation point.
7	Hopkinson's Law (Parkinson's law in reverse): 'unachievable targets cause sub-optimal project outcomes'
8	Efficiency and Effectiveness of the Project Management process
9	Naïve risk analysis
10	Inappropriate rules of thumb used to review contingencies

Comparing Table 3.2 with the lists in Table 3.1 there is a difference. Only a few of these causes are focussing on what goes wrong IN projects (no. 8, 9 and 10 and partly no. 2, 4

and 7), but not all. The rest is clearly directed at what goes wrong with projects. Interestingly Hopkinson concludes that *'Most of the causes of mega-project failure discussed in this paper are concerned with what happens up to and including the project authorisation point.'*

This last contribution has a wider perspective on the reasons for failure, and it gives an interesting indication as to what actually are the important challenges in the front-end phase. In addition, it gives an indication that there might be some issues more focussed in discussions on mega-projects³ than in other sources.

Even more 'top-ten'-lists are referred by Torp et al. (2006, p. 46). They comment that over time the focus in these lists have changed from a technical focus in the 1960-70es to a more organizational/management focus today. After studying all these 'top-ten' lists of reasons for failure and success, there is still room for confusion. This author want to find out what are the most important problems in the front-end. These top-lists of typical things to go wrong do not give the answer. They point to what reasons are most common (registered most often) – they do not consider what reasons have more or less potential for damaging or improving the project or programme. They do not tell a credible story about what is most important.

Looking at the 'top-ten' lists presented here, there are obviously some interesting patterns, and they point to important and interesting conclusions. They are summaries of practical experience and should be considered useful in that respect. However, most of them are not research results. The perspectives and use of method is in general unclear. The ones that are results of systematic research have a narrow project management perspective, answering only what goes wrong/are success factors IN projects.

Besner and Hobbs (2006) note that over the last 30 years several noteworthy studies have identified project success factors. They conclude that although these studies have identified some significant and consistent results, the factors only partially explain project success. The dynamics leading to project success remain largely undisclosed. The demonstration of business value (contribution to return on investment (ROI) is not completed yet, and it is possible that past research has failed to identify the factors that truly determine projects success (p. 3). This author believes Besner and Hobbs was right about this, and will therefore turn to other sources for additional answers to our questions.

³ Mega-projects denotes projects that are very large, complex and of strategic importance to the owner. It is often used for large infrastructure- / engineering projects. They are often politically disputed and attract media attention.

4 What goes wrong with projects?

4.1 Project management research and literature

Several authors, with a wide range of positions and purposes in mind, have looked at the success in projects and tried to understand what creates success and what goes wrong with projects (see also examples in chapter 3). Here I use the term '**with projects**' to open up the perspective for the possibility that the problem may not be in the project but the reason may be found long before it even started. Youker & Brown (2001) indicates this when they state '*Clear and concise objectives early in the life cycle are critical to project success because they help ensure that project stakeholders will develop a common understanding of what the project is attempting to do, and Commitment to the same objectives.*' The process of developing objectives and commitment to them should be expected to start well before the execution of the project.

Others have made important observations: Frame (1987, p. 18) says '*What the user needs is not what the user gets*' He concludes that there is a growing awareness that clients' needs are inherently fuzzy, dynamic and misunderstood. The reason may be that the clients' eventual assessment of effectiveness, relevance and utility, at least in part, has to rely on knowledge that is tacit. Tacit knowledge is knowledge that can not be easily explained (Nonaka 1994). Beckman (1979) observed that projects tend to 'immune' itself from external feedback and survives long after the environment has discarded it as irrelevant. This is a well known effect – project managers define themselves into a sphere of independence to make sure the project organisation can work unaffected. This is effective in the sense that it increases their probability of success in terms of time, cost and quality (the iron triangle). Tetlock (1985) have shown that individuals who are certain about the criteria on which they are evaluated, tend to adopt those as their own. The battle over 'spec freeze' or 'spec float' is well known in a practical context. The project manager wants to freeze the spec early and the users want to keep the spec floating to make sure they can have the latest of technology and solutions. This may of course lead to the effect that Frame observed. Effectively project manager may this way sacrifice relevance of the very effort they are making to deliver a good result.

Kreiner (1995) investigated strategies to cope with the dilemma indicated above and made a major contribution in this field. He acknowledged the challenge that stems from the possibility of relevance becoming eroded in the course of implementation. He thinks of the project as an island that has to co-evolve with a drifting environment (p. 336) and calls for reinstalling relevance among the project manager's concerns. He refers to Weick (1990, p. 33) when he concludes that decoupling the project from its context may 'allow events to ramify in their consequences and grow increasingly incomprehensible'. If neglected, due to oversight or arrogance, the relevance of the project's achievements may rapidly be eroded by changes in the environment. Project managers may be criticized any way they choose to handle this. They are held accountable. Kreiner (p. 341-342) suggests the following management strategies to cope with this:

- Use a hierarchical approach. With this approach the project managers deliver what they are obliged to do, and the superiors take the blame that it did not turn out relevant. This is advocated by best practice.
- Use a networking approach. This includes working with the relations of the project to the external environment to make sure the right information and the necessary contacts are made to keep the project relevant and/or make sure there are alliances strong enough to make the project come out successful. Ideally networking allows the project and its environment to co-evolve.

Kreiner (p. 343) concludes that neither of these strategies will work as exclusive strategies for project management. *'The cost of eroding relevance is no less real than the cost of diminishing productivity. Project managers must therefore ensure that both strategies remain an option throughout the duration of the project.'* When uncertainty prevails, we would expect to see loose coupling as an indication of managerial virtue rather than of weakness.

Well – how good are the project managers of handling this drifting environment?

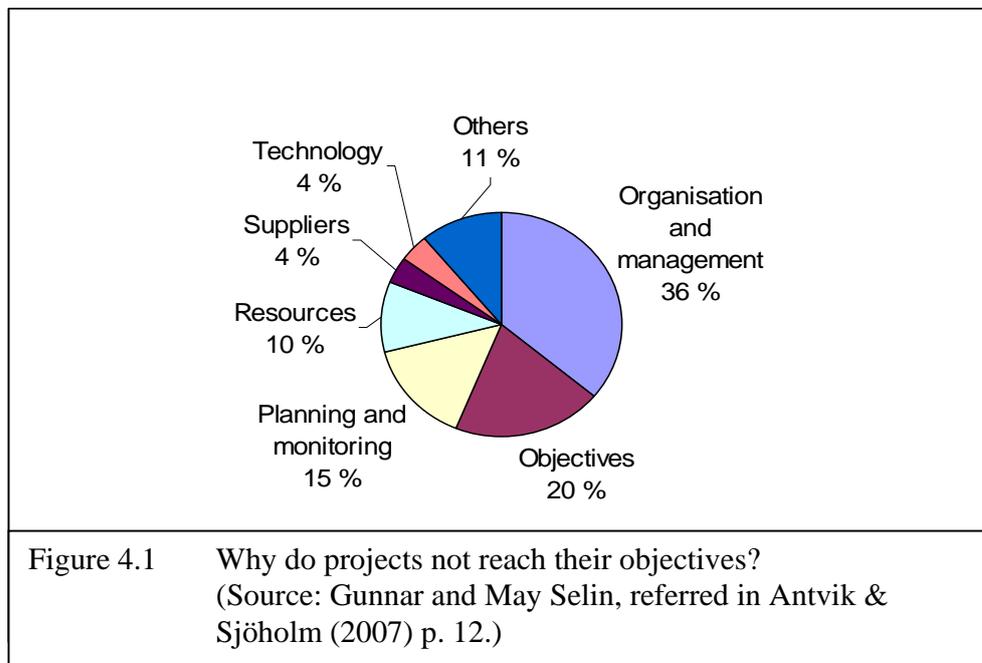
A survey made by the Standish group (Standish Group, 2000) – this may be one of the sources mentioned in chapter 3 – points out that 80% of project successes or failures may be linked to planning (examples are bad scope definition, bad stakeholder analysis, bad activity decomposition and bad resource assignment). On this basis Stahl-Le Cardinal & Marle (2006) conclude that *'the decisions upstream in planning phase have much bigger consequences in the downstream execution phase. Failing to plan is planning to fail.'*

One author already mentioned is Atkinson (1999). He suggests to define a better success criteria than the traditional 'iron triangle' of cost, time and quality. His work is looking at success, not failure. This is no contradiction to this paper; with my simple definition of success – the opposite of success is failure. If we understand one – we understand the other. His intention is, like mine and many others, to find better ways of securing project success – i.e. to avoid failure. He shows how projects for 50 years have been focused on the criteria cost, time and quality – the delivery stage up to implementation. Other success criteria have been suggested, but have not really been able to change the focus. He points out that we need a shift from focus on 'doing it right' to 'getting it right' (others have said the same, using the phrase 'doing the right thing' – an example is Cooke-Davies (2002b) characterizing portfolio-management predominantly to be about 'choosing the right project' and project management about 'doing the project right'. He also adds (Cooke-Davies, 2002b) *'assuring the consistent delivery of successful projects (doing the right combinations of the right things in the right sequence)'*. Shenhar et al (1997) indicates the same when arguing project managers need to *'see the big picture. ...be aware of the results expected... and look for long term benefits'*. This leads to thinking of projects in terms of being tools to achieve strategic objectives.

Over the last years a strong focus on the links between projects and strategy has arisen. This brought an increasing literature on themes like programme management, portfolio

management and project management offices. Still many of these contributions are keeping the focus on how to improve management of programmes and projects, less on the strategic perspective as defined in the introduction of this paper. Examples are Turner (1999), Kerzner (2000), Partington (2000), Pellegrinelli (2002), Cleland (2004), Morris & Jamieson (2004), Lycett et al (2004), Maylor et al (2006), Raschke (2007), Pellegrini et al (2007) and Artto et al (2007). Among the findings of these sources are the need to address cultural, political and organisational challenges (Lycett et al, 2004), the strategy's emergent and intended nature (Pellegrinelli et al, 2007) (Artto et al, 2007) and others, the need to look at project and programmes in their dynamic context (Pellegrinelli 2002), (Maylor et al, 2006) and others. Shenhar et al (2005) introduced the division between 'strategically managed projects' (focused on achieving business results) and 'operationally managed projects' (focusing on getting the job done). This division may be used as a characterization of the traditional and the new view of projects and their success. Still the issue tends to be what goes wrong *in* projects – because the strategy tends to be internalized into the project. The main focus is on how the projects handle/deliver up to these strategies.

A reason why it seems very difficult to gain a simple and universal answer to what is project success and how to go about it is of course the complexity and uncertainty of the whole matter. Several authors have pointed out this, among them Gioia (1996) and Chapman et al (2006). Another reason is that the stakeholders may interpret success differently. Malgrati & Damiani (2002) says '*... perceptions of the success of a project are varying, and—especially—how the sense of success depends on the influence of individual stakeholders.*'(p375). They also link the two problems by pointing out that the ambiguity of concrete results of the projects is reflected in the success of the projects.



Researchers Gunnar and May Selin work in general management, but have systematically gathered input from several thousands project participants over a long time. They ask (among other things) about why projects failed or succeeded in reaching their objectives. The answers are summarized in Figure 4.1. Their research shows that aspects of leadership are the dominant explanation why projects fail.

Even if this research is no doubt giving credible results, it is difficult to use results at this level in improvement work. It is useful in arguing focus on management, but it is hard to identify the real problems behind these much generalized categories. Even though there is a solid body of evidence suggesting what the most common challenges are, there is no help in pointing out what is most important, and there is nothing to help us understand what challenges belongs to the front-end of the projects in contrast to the execution phase.

4.2 Evaluation literature

Evaluation literature often looks at large samples of projects – often from development projects. In this ‘sector’ there has been a strong focus on governance and strategic owner’s perspectives for a long time. This section of the report looks into a few chosen references. It is by no means a complete review of the evaluation literature.

Let us start by going back in time to the 1970’es. The Aid Agency Study (Rondinelli, 1976) documented results of interviews performed during 1974-75 with officials in three of the (then) largest international assistance agencies. It also drew on analysis of selected international evaluation documents. The study identified 67 problems in project implementation under the main headings shown in Figure 4.2.

PROBLEMS OF IMPLEMENTATION
(a) Ineffective project planning and preparation
(b) Faulty appraisal and selection processes
(c) Defective project design
(d) Problems in start-up and activation
(e) Inadequate project execution, operation and supervision
(f) Inadequate or ineffective external coordination of project activities
(g) Deficiencies in diffusion and evaluation of project results and follow-up action.

Figure 4.2 Main areas of problems in implementation of aid projects in the 1970’es (Rondinelli, 1976).

An author looking for challenges in projects based on a large evidence of empirical data is Bob Youker of the World Bank. He has analysed a large number of World Bank evaluation reports and identified several typical challenges or obstacles to project success (Youker 1999). The summary is shown in Figure 4.3.

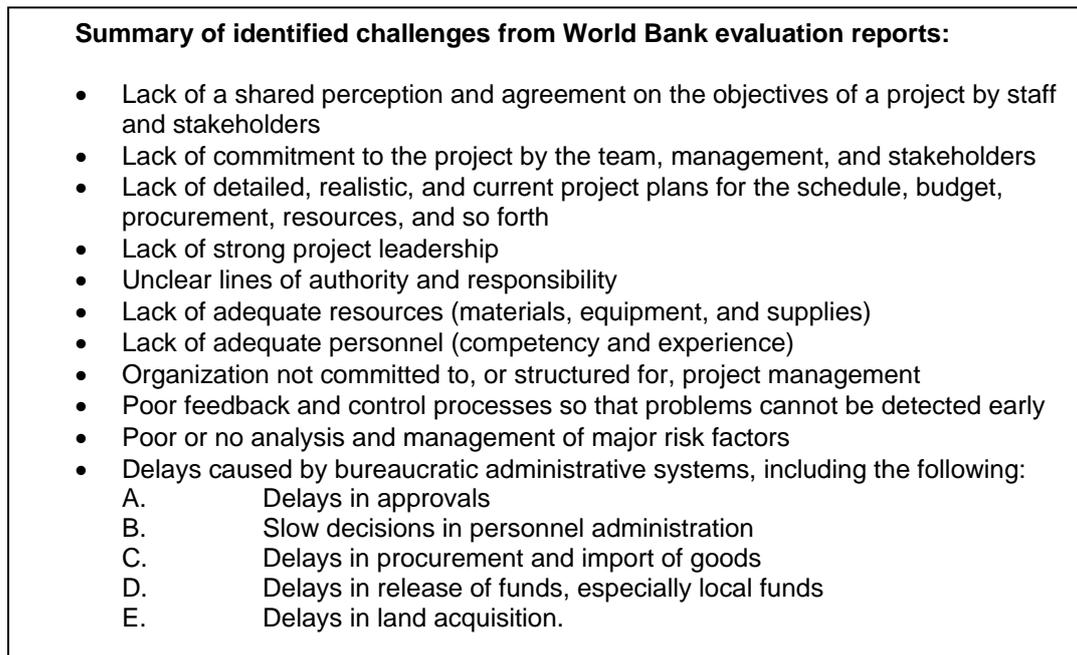


Figure 4.3 Challenges in World Bank projects (Youker 1999)

The list from Youker is not ranked, meaning there is no indication of what is the most important among the 11 bullet-points. An obvious point is that these 11 challenges are more important than the infinite mass of other challenges. The details of the sample are unknown, but they are expected to be a variety of aid projects around the world. The centre of gravity is expected to be outside the western world.

Samset and Haavaldsen (1999) have looked at this in a very different way: By analyzing a sample of 249 development projects from summary evaluation reports they identify the most common uncertainty areas which have caused problems in the projects. The result is shown in Figure 5. The sample covers projects in Asia, Africa and Latin America by 15 different donor organizations. The reports are all analyzed with the same method – the Logical Framework Approach. Results are shown in Figure 4.4.

The authors have not only identified the uncertainty areas, but also at what stage the counter-measures should have to be applied to avoid the problem. This can tell us two things: What are the most common challenges and when should we do something about them. Note the most common challenges do not have to be the most important ones. What is most important depends also on the probability the uncertainty has to lead to failure. This dimension is not covered in the material. The study clearly indicates that the prestudy phase is where the counter measures should be taken.

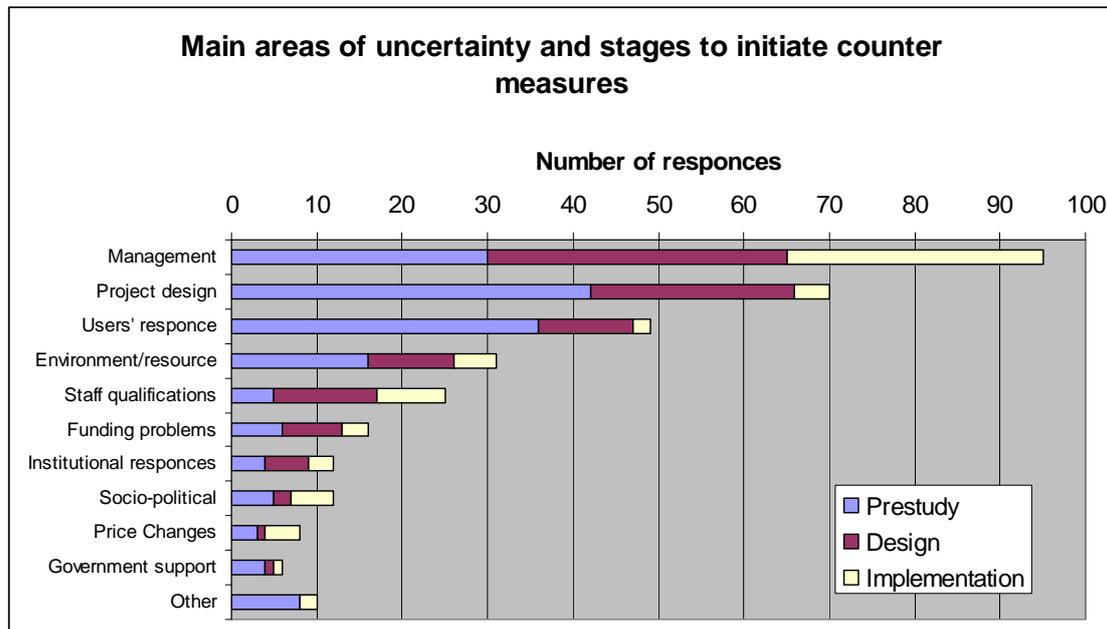


Figure 4.4 Most common challenges in development projects (based on Samset & Haavaldsen 1999)

This study has several other interesting conclusions as well:

- 1) Uncertainty is normally seen as exceptionally high in development projects, but the rate of success does not seem to be much lower.
- 2) Project management literature finds that most uncertainty is contextual and outside project management control, this study finds 60% operational uncertainty and a big share of the rest is influenced by project management.
- 3) Developing countries have other socio-cultural, political and logistic challenges, but they are largely predictable.

The findings in project evaluation literature is very interesting and tells us a lot about what goes wrong with projects. It is still difficult to point to what is the most important challenges, but the starting point and perspective of these studies are more in line with the one in this study than most of the project management literature.

4.3 Mega-project literature

To find out even more about the front-end challenges, further studies includes six excellent books by Peter Hall (1981), Peter W.G. Morris & George H. Hough (1987), David Collinridge (1992), Roger Miller & Donald R. Lessard (2000), Bent Flyvbjerg et al (2003) and Alan A. Altschuler & David Luberoff (2003). These authors have, in different ways given remarkable contributions to the understanding of the field. All these authors have chosen to take empirical evidence from a number of cases as their starting point. They are all looking at 'the whole picture'- identifying what goes wrong and gives answers to how this could be improved from their individual perspective. Here I will

choose to highlight some contributions from these books relevant to my context; the major public projects.

Peter Hall's book 'Great planning disasters' (1981) looks into 5 real disasters and 2 near disasters from public sector, all well known from media and project management literature. Hall's starting point is looking at the decisions leading up to the disasters. His analysis builds on a theoretical framework of decision making models and definitions of roles/actors influencing the decisions. He points out two main improvement areas, closely linked together:

- Forecasting the future world. How will people judge the results of the decision? If they do not like what they have, then there will be dissatisfaction and malaise. At worst a planning artefact that no-one wants and no-one uses.
- Trade-offs between groups. If two alternatives with their likely consequences are known. On what criteria to choose between them? How to measure one individual's or group's gains against the other's losses?

He comments on the problems (p247): *'The resulting system contains curious contradictions. It will tend to be unstable in its decision making, especially where decisions are involved that are unpopular with particular groups. One of the sub-plots in this book is to outwit the Treasury. There is no single all-embracing model, no magic formula that will perform the miracle of remove or mitigate the effect of planning disasters.'*

Morris and Hough's book 'The Anatomy of Major Projects'. A Study of the Reality of Project Management' (1987) looks into 8 cases including both successes, failures and projects showing signs of both, both private and public sector. The authors document the failure of large, difficult projects and states that the reasons are found in areas which is traditionally not the concern of project management. *'For the project sponsor – its owner or his financial backers – overruns are not necessarily the best measure of project success. The project may still be profitable, even though it exceeds its original budget or is late. Similarly the reverse may be true'* (p13). They point out that several perspectives are needed to assess whether or not a project is successful. They sum up minimum three measures which have to be present to identify success (p193):

- (1) Project functionality. Does the project perform financially, technically or otherwise in the way expected by the project's sponsors?
- (2) Project management. Was the project implemented to budget, on schedule, to technical specification?
- (3) Contractors' commercial performance. Did those who provided a service for the project benefit commercially (in either the short or long term)?

The first of these points in the direction of this study, and so does the third. Number two is the traditional 'iron triangle' mentioned before. This book includes a very rich analysis and literature study which is not possible to summarize in a representative way here, but the main finding is that they point to many improvement areas relevant for this study:

- Project objectives and their viability
- Technical uncertainty and innovation
- Influence of politics
- Government as Sponsor
- Government as Champion
- Government as Owner
- Community involvement
- Schedule duration and urgency
- Financial, legal and contractual matters
- Project implementation

In the end they sum up their analysis like this: *‘In the final analysis, projects are implemented by people. People are human and humans sometimes err’* (p245). *‘Guided by organizational structures and controls of considerable sophistication, with their strong goal orientation, multi-organizational framework and emphasis on teamwork, projects are accomplished through personal and collective enthusiasms often only liberated by the very challenge of undertaking a truly exceptional task’* (p246).

David Collingridge’s book *‘The Management of Scale: Big Organizations, Big Decisions, Big Mistakes’* (1992) looks into 6 very different mega-projects (two of them are actually programmes or groups of projects), private and public sector. His starting point is described like this: *‘We need a view of choice that recognizes the weakness of human control and understanding of the world’s complexities. Indeed, this recognition should be the very basis of our account of decision making. Human understanding, analytical capacities and information acquisition are so desperately limited that no decision of any importance, and perhaps none at all, can ever be known to be correct.’* Not really encouraging, but he still contribute with some ideas for improvement:

- Incrementalism; trial-and-error learning. This includes, amongst other things: Do not change too much at once. Lessons are learned quickly (the problem changes over time). Efficient trial-and-error learning cannot be a solitary affair; it is essentially social. Decisions have to be made by compromise between actors with widely differing interests, because power should be shared. Trial-and-error learning embodies cultural wisdom.

Collingridge suggests trial-and-error learning as a part of the decision making about projects but points out some problems concerning the large public projects: *‘We call technologies with the four properties of long lead time, large unit size, capital intensity and dependence upon infrastructure ‘inflexible’, - their development will be plagued by many costly errors. Inflexible technical projects demand central planning. Changes are costly and painful – inhibiting critical scrutiny. The project is therefore likely to go ahead despite many expensive mistakes in its formulation, which means that it may be a costly failure.’* The characteristics of inflexible technologies tend to fit well with large public projects.

He mentions government at several occasions: *'One central hypothesis of this book is that behind any example of inflexible technology will be found the very largest organizations, whose close links with government promote the transfer of the enormous risks involved to the public purse.'* (p82). *'Banning all government interest in the development of technology might prevent the problems caused by inflexible technologies, but only at a huge cost in perfectly innocent innovations foregone or delayed. Rather, the role of government must be a real one, exerting genuine control over the technology in question rather than acting as a mirror reflecting the views and interests of business, so reducing the essential diversity of opinion, fragmentation of political power, and plurality of interests.'* (p18).

His conclusion is summed up like this: *'The message for decision makers is that any steps taken towards the ideal standards of trial-and-error learning will lead to choices that are better for the people taking them; better in the sense that they will be more closely tailored to the world's uncertainties.'*

Miller and Lessard's book *'The Strategic Management of Large Engineering Projects; Shaping Institutions, Risks and Governance'* (2000) looks into 60 different cases, private and public sector (often referred to as the IMEC study). Many of these projects were performing badly. They commented; *'Instabilities created by exogenous and endogenous shocks set crises in motion; once perverse dynamics are triggered, unless institutional frameworks act as bulwarks, catastrophes develop'* (p13). On their own starting point they say; *'Conventional descriptions of decision making view choices as fully rational. The reality is quite different: projects are groomed and transformed by champions, while other actors downplay them. Sponsors invest resources and time to find partners, lobby intelligently to change rules, and participate in time-consuming public hearings to gain approval. Projects experience crises, omissions, or rejections because regulators, ministers, or affected parties have their own strategic agendas'* (p11) and further *'Once built, the project has little use beyond the original intended purpose. If it meets real needs, it might be useful for many years to come. But even so, such usefulness does not guarantee financial success.'* This seems to point exactly in the direction intended with this present study.

The book includes a vast number of important contributions relevant to this topic. It is completely impossible to summarize it shortly, but a few indications are chosen here: *'Failures occur. Here are a few vivid examples: Sponsors overestimate their competencies. Firms are hungry for work. Alliances between partners fail. Regulators are uncooperative. The most striking phenomenon observed by IMEC was the tendency of projects facing turbulence to enter spirals of disintegration'* (p133). *Turbulence – not technical difficulties, external effects, or complications – is the real cause of difficulties in projects. Projects that have built governability in resist turbulence. Instilling governability, however, is never a sure solution. Having imagined the potential for governability and designed each device, sponsors must have faith that parties will respond to turbulence as imagined. Opportunism or omission, however, may dash dreams'* (p149). *'The paradox observed in LEPs is that planning in a traditional sense has little to do with success or failure, yet successful sponsors expend much greater*

resources on planning activities than even a traditional model suggests. Planning that seeks to reduce projects to a sequence of prespecified activities does not work because the future is often turbulent. Massive, integrative strategic models do not solve the problem either, as they cannot readily accommodate the continuous shaping actions that are required as the future evolves. This does not imply, however, that raw intuition and improvisation take the fore’ (ch10). In a way the book leaves the impression it is not about the decisions in the front-end, but the supporting structures and ability to live with the turbulence threatening any major public project.

Miller and Floricel (chapter 6 in Miller & Lessard, 2000) concludes: *‘Configurations of project structures will be unequal in their ability to face crises and difficulties. There is no obvious optimal project structure: sponsors will build configurations that are appropriate to the project’s context. The reductionist dream of finding one or a few organizational devices that can solve governability issues is an illusion, as projects are complex and dynamic systems. Many devices will be thought through and used.’* (p148). This could be interpreted as a warning against believing that one form of governance – or project structure – is the best in all contexts, or as a warning towards the intention of this current study; to find some basic sources of failure.

Flyvbjerg, Bruzelius & Rothengatter’s book *‘Megaprojects and Risk; an anatomy of ambition’* (2003) looks at data from a large number of megaprojects world wide over a long period of time (mainly public sector but also private) and illustrates with details from 3 European infrastructure projects. On their starting point they say *‘good decision making is a question not only of better and more rational information and communication, but also of institutional arrangements that promote accountability, and especially accountability towards risk’* (p7).

Flyvbjerg et al comes up with a large number of answers to ‘what goes wrong with projects?’ A few of them (p28-31) are mentioned in Table 2. Their main conclusion on problems seems to be that the basic problem is handling the risk when dealing with mega-projects, and that *‘The key problem here is a lack of accountability for the parties involved in project development and implementation, that is the key problem, not lack of technical skills or poor data’* (p45).

Flyvbjerg et al gives a comprehensive set of improvement suggestions as well. The four most notable being (p123-124): (1) Increase transparency, (2) decide performance specifications up front, (3) formulate an explicit regulatory regime for projects, and (4) demand at least one third private financing. But they also note; *‘We argue that for mega-projects there is no simple formula for the government-business divide’* (p9). Again, a reminder that there is no ‘one size fits all solution’ or single simple explanation.

Altshuler and Luberoff’s book *‘Mega-projects: The Changing Politics of Urban Public Investment’* (2003) investigates a large number of cases in the public sector. Their starting point is to analyse the empirical findings in four dimensions: (1) integrate them with leading theories of urban politics, (2) to address national patterns, (3) focus on intergovernmental aspects, and (4) look at developments over a long period for evolution

to have occurred. Their perspective is politics and urban development – not project management – leading to a very interesting supplement to the project literature. Their choice of cases and use of theories gives the book a clearly American flavour, but still it is highly relevant as a source of knowledge for the rest of the world as well.

The patterns they identify (p220) can be reinterpreted into reasons for failure:

- Urban Mega-Projects Became Non-routine – the case-by-case initiatives indicates that the lack of competence and transfer of experience may be a problem.
- Core Constituencies – the multitude of parties and roles in the game influence the outcome, making the process very complex and important.
- Public Entrepreneurship – the role of the public sector leadership in mega-projects, management of conflict through years of planning, authorization and implementation.
- “Do No Harm” Planning – the handling of the harmful side-effects of mega-projects – these may be show-stoppers in the front end.
- Mitigation and Beyond – the handling of unavoidable negative impacts by mitigation, economic interests and grey zones.
- Bottom-up Federalism – the initiative and support based locally, in opposition to the federal, centralized financing – a potential conflict.
- Locally Painless Project Financing – avoiding increase in local taxes, the growth of new financing initiatives changing the context of projects.
- Cost Escalation and Underestimation – starting in the 80’s, partly driven by the patterns above and continuing despite improvements in technical capacity for cost estimation.

On cost escalation and underestimation Altshuler and Luberoff comments further: *‘The issue of faulty cost estimation is perhaps even more significant in that it calls into question the bases for political decisions to undertake mega-projects.’* They refer to Flyvbjerg et al (2003) and Merrow (1988). They cite *‘Merrow found Average cost growth in real terms, from the beginning of detailed engineering (which generally followed project authorization) to project completion was 88 percent, and public projects experienced greater proportional increases than private. On the basis of a regression analysis, Merrow concluded that about 80 percent of the cost escalation he identified had been attributable to three factors: unforeseen mitigation costs (often required by regulatory changes subsequent to project authorization), decisions to use new technologies, and perverse incentives built into public financing systems. In our own view, consistent underestimation is an example of the “tragedy of the commons”. It corrodes public confidence in government overall, and especially in proposals with long time frames, even as it helps advance specific projects.’*

Their book is excellent in explaining trends and effects, but is not focused on identifying problems and suggesting improvements. Consequently, the findings in Table 3 are only interpretations made by this author.

No doubt these important books on mega-projects point to serious problems and explain, in a very wide sense, what goes wrong with projects. There is a summary of these

findings in Table 4.1 (see also Table 7.8). Their starting points and methodologies have given a valuable spectre of different interpretations of common signs of success or failure found in all major projects. The six excellent books cited above have all analyzed a set of empirical cases and produced complex pictures of what goes wrong, covering all aspects of the projects included in each authors perspective, theoretical frame and chosen methodology. Each one of them present a large number of reasons for things to go wrong, some of them point to similar causalities and other are specific for each author. Reading several of them may cause some frustration over not finding the common pattern. As shown in this section of the paper, there is a wide spectre of problems and issues that goes wrong with projects. Where to start? When trying to sort out what goes wrong and where to begin the work of necessary improvement, some restraint is necessary. It is impossible to do everything at one time. An obvious suggestion would be to start with the ones that are most important.

In this paper the fundamental choice is to look only at relevance and sustainability, since they are superior success criteria in the strategic perspective. The purpose of this choice is to focus on what this author believes is important. Digging much deeper into the rich sources above to find the specific contribution to the more limited perspective of this paper could be possible but is not done here. The work behind this paper is inspired by these books, and the choice of doing a survey instead of looking at empirical data from cases was as earlier mentioned primarily a question of resources, but also a choice to make a different approach.

Table 4.1 Summary of this authors interpretation of six important books on mega-projects. Major challenges.

Author	Category	Focus	Most important problems/problem areas
Peter Hall (1981)	Decision making	Decision making models and roles/actors. The contradictions of decision making. Planning disasters.	<ul style="list-style-type: none"> - Forecasting the future - Trade-offs between groups
Morris & Hough (1987)	Project management	Different perspectives on project success.	<ul style="list-style-type: none"> - Human errors - Project objectives and their validity - Influence of politics - Government as sponsor, champion and owner - Financial matters - Implementation of results
David Collingridge (1992)	Decision making	Decision making processes in big organisations. Trial-and-error learning.	<ul style="list-style-type: none"> - Limitations in human capacity to control and understand complexity - Inflexibility in technologies (projects) - Changes are costly and painful – inhibiting critical scrutiny
Miller & Lessard (2000)	Governance of projects	Institutional frameworks, decision making and project sponsoring.	<ul style="list-style-type: none"> - Handling turbulence in project environment - Opportunism and omission - Decision making not fully rational - Coordination and cooperation - Design of institutional frameworks
Flyvbjerg et al (2003)	Governance of projects	Better and more rational decision making and communication. Institutional arrangements, accountability and handling of risk.	<ul style="list-style-type: none"> - Applying the wrong method is a minor reason for forecasting failures. - Poor data is a more important reason for prediction failures than methodology. - Discontinuous behaviour and the influence of complementary factors not included in predictions. - Unexpected changes of exogenous factors. - Unexpected political activities or missing realisation of complementary policies. - Implicit appraisal bias of the consultant. - Appraisal bias of the project promoter.
Altschuler & Luberoff (2003)	Politics and urban development	Theoretical analysis, national patterns over time, intergovernmental aspects.	<ul style="list-style-type: none"> - Lack of competence and experience transfer - Handling complex networks of practices and roles - The public sector leadership role - Handling harmful side-effects - Conflict between local support and central financing - Project financing models - Cost escalation and underestimation

5 Methodological approach

5.1 Developing the survey

Previous literature identifies the most common challenges in projects – to little extent is there a discussion on whether these common problems are also the most important. This is to some extent implicitly considered when the problems are identified by asking what has actually caused failure in projects. In other sources the issue is not raised. The idea behind this paper is to supplement existing literature by addressing this question specifically.

Having chosen my starting point as described above (section 1), I started looking for indicators to what could be the reasons for lack of success. This was done by taking the two chosen success criteria (relevance and sustainability) and slicing through all six cross-cutting issues embedded in the OECD Evaluation model – see Figure 5.1. Each slice was then used as basis for identifying possible indicators. Each slice typically gave the idea for 2-4 different indicators. A total of 38 indicators were identified, 15 on relevance and 23 on sustainability.

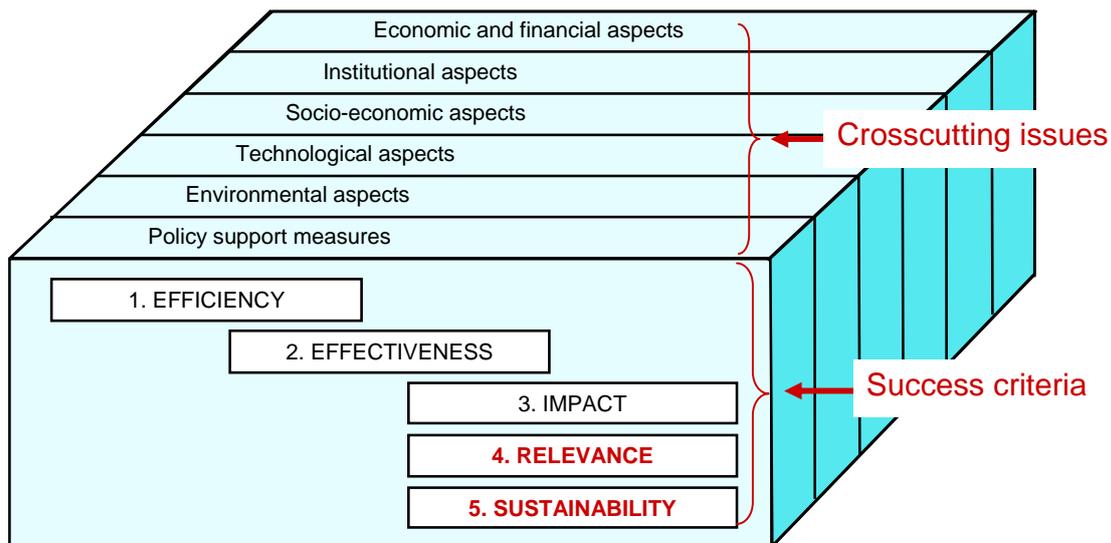


Figure 5.1 The OECD Integrated Evaluation Model based on Samset (2003).

The next step was analysing each indicator to find the ones worth developing. The idea at this stage was to build up an alternative line of prove based on project documentation available in Norway⁴. Later, this was changed into making a survey questionnaire and asks a panel of experienced international experts instead. The reason for this choice was the assessment of cost involved and the limited capacity to do the document studies. However, the process of developing indicators proved to be very helpful in defining questions for the survey. For each potential indicator the following assessments were

⁴ See (Magnussen & Samset 2005) and (Samset, Berg & Klakegg 2006) for details on the Norwegian Quality Assurance scheme producing these documents.

done: validity, reliability, accessibility and cost. Figure 5.2 show examples of how this was done.

Indicator		Validity	Reliability	Accessibility	Cost
CRITERIA: RELEVANCE					
1	Project stated purpose not in line with policy statements made by relevant government	Good	Fair	QA-reports vs. Internet (white-papers)	Moderate
2	Government policy has changed since project started, but project purpose not redefined accordingly	Fair	Fair	White-papers vs. Current project goals, interview.	High
3	Purpose of project is redefined (reformulated), without a clear connection to a change in policy	Fair	Moderate	White-papers vs. Current project goals, interview.	High
CRITERIA: SUSTAINABILITY					
16	Lack of commitment to the project from key stakeholders	Good	Good	QA-reports vs. White-papers (interviews)	Moderate
17	Conflict over objectives and/or strategies concerning the project	Good	Good	QA-reports vs. White-papers (interviews)	Moderate
18	Lack of conformity with prevailing policy	Good	Fair	White-papers vs. Project design, interviews	High

Figure 5.2 Examples of indicator evaluations in developing the survey.

The kind of issues studied here implies qualitative indicators with a varying degree of fuzziness and uncertainty. Accordingly, the evaluation only operates in very rough categories on an ordinal scale. In descending order; Good, Fair, Moderate and Low. (High, Moderate, Low for cost). The assessment of these possible indicators concluded it was possible to get a valid, reliable conclusion from available documents, but that the cost of doing it was too high. Performing a survey was the answer to how it could be made less resource demanding.

Based on the evaluation above, the best indicators were chosen for each of the topics relevance and sustainability. For each of the topics relevance and sustainability 6 major questions were formulated based on the best indicator from each of the six cross-cutting issues, a total of 12 indicators. These formed the basis for my primary questions in the survey. Later, in the testing phase, I concluded I had to include one more indicator from the economic and financial aspects in order to cover the needed information on sustainability. This increased the number to 13. Thus the primary questions came out like shown in the questionnaire (Appendix A⁵, questions 2 and 3). The questions cover a chosen set of possible challenges in the Front-end of Major Public Projects. The respondents are asked to 'rank' the importance of these on a simple ordinal scale.

To each of the 6+7 alternatives above, several possible root causes was identified, based on the indicators 'left over' from the above process and the logic of causality. A set of sub-questions were formulated in which the respondents should identify which of these root causes actually was most important. They were only asked to elaborate on the ones they considered the most important ones, in order not to take too much of the respondents time.

The last alternative on the list gives the respondents a chance to give open feedback in terms of causes they find likely to be the most important, but is not covered by the predefined alternatives. This secures that the respondents can express their real opinion. It

⁵ The survey was designed and performed using ConfirmIT Professional web-based system. More info on <http://www.confirmit.com/>

will also give more feedback and ideas for further work. This was an important aspect in the development of the questionnaire; it is highly possible the predefined alternatives would not fit the opinion of the respondents. Defining the answers puts a lot of responsibility on the researcher. Through a systematic development of alternatives within the framework of the OECD evaluation criteria as described above, the risk of omitting important answer alternatives was reduced. The responses show very limited use of the 'other' option. This will be discussed later.

A potential criticism against this way of designing a questionnaire is that pre-defined alternatives limits the focus of the respondents and leads them into a few possible answers. Generally this is a viable critique. The answers are influenced by the way the questions are formed. Apart from the obvious opportunity for respondents to use the open text answer alternative if they find the alternatives does not fit, this weakness is acknowledged and accepted for this survey. The systematic development of answer categories are not aimed at pointing specifically to narrowly defined problems with a specific solution or simple cause. On the contrary, it is crafted to identify broad problem areas and connect it to one of the cross cutting issues. The task of improving a governance framework will always include a broad set of issues and the changes made will have many consequences. There is no reason to go into details that are case specific to each project at this level.

5.2 Panel of respondents

Several considerations were made at the time the document study/data analysis was abandoned for a survey design:

- This research design would not give the researcher direct access to project data. The data will be secondary and thus less specific and controllable.
- The assessment of importance would not be on the hands of the researcher, but at the hands of the respondents. This also reduces control with the result.
- The realistic number of respondents with competence to answer this kind of questions will not be large, even if there were no limits to time and resource use and with the most efficient of survey systems. The survey by nature had to be highly directed towards a specific group of respondents.
- Asking the respondents to focus on one specific project in their answers would be considered to increase the precision of each individual's answer. Still, this survey is not about improving individual projects but the wider framework. Therefore it is relevant to ask for experience in a wider perspective, drawing on the individual's accumulated experience. This fits the purpose best.
- The number of respondents expected was low from the outset, and thus the ambitions for the analysis were kept down. Statistical analysis of the material was never intended and is not attempted. The results are considered as indications, not proof.

To make sure the respondents had the necessary competence and awareness to answer the questions, several actions were taken: The respondents were picked only from countries or corporations which was known to have an established governance framework.

The respondents were identified by several recruitment strategies: through personal networks established through 20 years of practice working with major public projects, through international contacts reaching out to other networks, through scientific publications on relevant topics, contacts at conferences and through identifying people in relevant formal positions. Some of these recruitment strategies obviously have inherent bias in possibly choosing people of a certain type, interest and attitude. By combining these strategies the total panel of respondents covers a broad spectrum of interests and experiences. See Table 5.1.

Table 5.1 Summary of respondents in the survey (N=80)

Gender:	male	91,3%	female	8,8%								
Age:	<35 years	2,5%	35-50 years	50,0%	>50 years	47,5%						
Country:	Anglo-American	29	Nordic	47	Others	4						
Sector:	Public	56,3%	Private	38,8%	NGO's	5%						
Expert role:	Project managers	38,8%	Project evaluators	22,5%	Project planners	6,3%	Decision makers	17,5%	Researchers	15,0%		
Experience:	<5 years	3,8%	5-10 years	13,8%	>10 years	82,5%						
Type project:	Building & Construction	42	Organizational change & ICT	34	Procurement & Defence	24	Industry & Offshore	22	International aid	6	Research	17

The panel of respondents are a high level senior group of experts with relevant experience. They are CEO's, civil servants, professors and senior consultants. The rate of response was 54,8% (80 out of 146 invitations). This is considered to be somewhat low, but given the sort of positions these respondents are in, one has to acknowledge what is possible to achieve within reasonable limits of time and effort.

The group is dominated by experienced men. Almost half of them are older than 50 years and more than 80% of them have more than 10 years of experience in their expert role. There is good balance between private and public sector and between different expert roles. They have experience from all relevant types of projects.

The geographical dimension was decided to cover two specific groups: Anglo-American countries (UK, USA, and Australia) and Nordic countries (Norway, Sweden, Denmark, Finland, and Iceland). Most of the respondents invited come from these countries. In these two areas the issues covered in this paper is known to have been in focus over the last years, and the available network of potential respondents were also better in these countries. The Anglo-American group represents large, world dominating economies, whereas the Nordic group represent small, rich countries. Respondents from a wide selection of other countries were invited too, but as expected the response rate was low outside the two focus-areas.

Some of these recruitment strategies may seem close to convenient sampling, but they were balanced by other non-convenient strategies. The main consideration was

identifying individuals competent to answer the questions and representative for the role they represent. There is nothing in the answers to suggest the recruitment strategy has imposed any tendency in answers. There is probably a bigger influence in the fact that governance of projects has had a lot of attention in some of the countries, giving a larger number of answers from these countries.

After the survey the analysis and conclusion was challenged by doing in-depth interviews with 6 experts in the same target group as the survey was directed at, 5 of the interviewees were also respondents and 1 of them had not taken part in the survey. Three of the respondents work in the UK and three in Norway. They cover a wide range of positions as consultants and civil servants on a high organisational level. Their experience covers public sectors like health, education, transport, defence, oil & gas etc. The interviews were performed as semi-structured interviews ranging from 1 hour to 3 hours. The interviewees had access to the results of the survey before the interview. Some of them had prepared by looking at the results before the interview. Each interview was in two parts:

1. The interviewee explaining, without interference by the interviewer, what he thinks is the most important challenges and what to do with them. There was no imposed link back to previous answers given in the survey.
2. The interviewer presenting the result of his analysis of the survey results and the interviewee challenging the analysis, questioning the analysis and results.

The purpose of these interviews was to check on respondents understanding of the questions, check if their direct response to my questions face to face was consistent with those given in the survey (not individually by the interviewees, but the whole panel), giving nuances to explanations and analysis and to have feedback on the survey as such. The results of these interviews are included in the discussion in the consecutive chapters.

5.3 Nature of the survey

Given the thorough process behind the questions asked in the survey, and the very strong profile of the respondent group, the answers given is considered to be highly credible. The number of respondents is low, which means there will be strong restriction on how far these findings can be divided in sub-categories during analysis, and how far the conclusions can be stretched. The potential for generalisation is still expected to be good. This will be discussed further in section 8.

Pollack (2007) says traditionally, project management is deeply rooted in the hard paradigm described as '*positivist epistemology, deductive reasoning and quantitative or reductionist techniques – often associated by rigour and objectivity*'. Lately this is challenged and supplemented by the soft paradigm. Pollack describes this as '*interpretive epistemology, inductive reasoning and exploratory, qualitative techniques with emphasis on contextual relevance rather than objectivity*' (p.267). This report may from its starting point and choice of methodology for creating the questionnaire seem to be an example of a deductive, reductionist approach. In its analysis it is an example of the new interpretive

epistemology – building on contextual relevance and contextual interpretation. The basis for analysis is available for the reader to interpret. This research belongs to the category of holistic research initiatives categorized as Sensemaking Research (Delisle & Thomas 2002, p 192). Challenges to this author’s analysis are most welcome.

From the feedback of the interviewees there are three evident problems to be considered in the use of these results:

1. The degree to which the respondents are representative and the bearings this has on our ability to generalize the findings. This is discussed further in chapter 8.
2. The respondents’ understanding and interpretation of the questions. Potentially a language problem, leading back to the quality of the questionnaire and the information included.
3. The respondents’ understanding and choice of individual starting point (what role they choose to answer from and what they put emphasis on in this setting).

The feedback from respondents on the survey as such and the questionnaire in particular is positive, but with three clear messages:

- The language was a problem (especially for Norwegian respondents). This may be representative for many non-native English speaking respondents. The indication has come two ways; many Norwegian respondents was ‘drop-outs’ – they started but did not complete the survey, and several of them has given this feedback directly to the author. Having a multi-language questionnaire was considered but rejected because it would involve much work and introduce a new problem; potential inconsistency between versions of the survey.
- There was not enough information in the questionnaire to make sure the interpretation of the questions always where correct. Some respondents felt uncertain of the meaning of some questions involving nuances. There was initially more information and explanation to the questions in the questionnaire, but this was reduced to make the survey smaller and less time-consuming. This is always a question of putting in the right information and enough of it. There is no easy answer to this. Additional information with explanations and definitions where available in the survey system and the answers do not reveal any serious misunderstandings.
- Some of the words used for the expert roles where not precise enough and should have been explained better (examples are ‘decision maker’ and ‘project planner’). This was feedback from UK respondents. The author has to admit – not being a native English speaker the nuances here was not precisely clear to me. This will be written on the account of learning from the process.

The respondents had to make choices about their starting point in the beginning of the survey. This will include some dilemmas for many respondents. Examples: They where asked to state which sector their experience is from. They may have experience from both private and public sector. They where asked what expert role/profession they have. They may have experience from many roles, like project manager and CEO (decision maker). Both alternatives may be as relevant – and the author expected them to choose the one

they have most experience from – or their current role. Both are OK. For the questions above the respondents were only allowed to choose one. This was chosen by the author to try to make the respondents focus their thoughts on one, not mixing them together. This would expectedly give more consistent answers.

Figure 5.3 show the distribution of respondents on each expert role. The analysis does not include sub-groups based on these answers. Therefore the risk of ticking wrong expert role due to ambiguity is not considered a big problem.



Figure 5.3 Number of respondents in each expert role (N=80).

On the question of what kind of projects the respondents had experience from they were allowed to indicate as many as they would like – covering all their experience. This was the last general question of this kind and the idea was to paint a broad picture of the total experience of the group – see Figure 5.4.

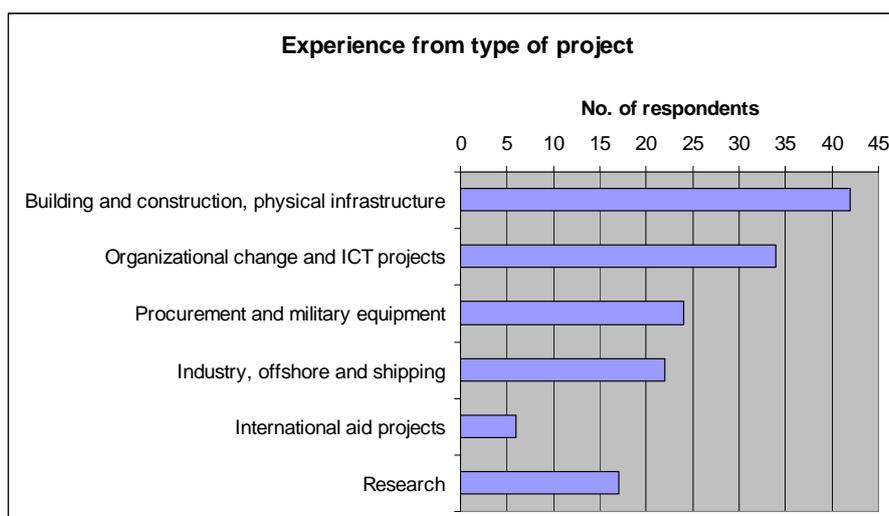


Figure 5.4 Type of project experienced by respondents (N=80). 145 answers given.

6 Why things go wrong in the Front-end

This section of the paper presents results of the survey and interviews on an over-all level. The material is not suitable for advanced analysis and neither would it be useful. The answers of the respondents are simply shown as they are – giving every reader the opportunity to assess and interpret them. Where appropriate, the numbers in the tables are directly numbers of respondents given the specific answer. No sub-division of respondents is attempted.

In the following analyses the intention is not to put a lot of emphasis on the ranking of the reasons. Which one is the most important and which one is second is of no consequence. The aim is to point out the important ones over the ones that are not so important. Remember; from the start problems and corresponding reasons related to the efficiency (the iron triangle), effectiveness and impact is ruled out. There are only problems and reasons connected to relevance and sustainability in this survey. The reason for this is given in the introduction.

6.1 Relevance

Definition: ‘The extent to which the objectives of a development intervention are consistent with beneficiaries’ requirements, country needs, global priorities and partners’ and donors’ policies. Note: Retrospectively, the question of relevance often becomes a question as to whether the objectives of an intervention or its design are still appropriate given changed circumstances.’ (OECD, 2002).

Relevance refers to whether the chosen public investment project is the most appropriate one judged from the owner/financing party’s viewpoint, given there are alternative projects and that no investment is included among the alternatives. Relevance refers to the objectives of the project, and is a matter of to what degree the objectives are in keeping with valid priorities and the users’ needs. Relevance is a question of usefulness. Obviously, if the project is not useful it should be rejected or terminated.

The respondents where asked to indicate which alternatives are the most important problems leading to lack of relevance in major public investment projects by clicking the appropriate boxes and indicate their opinion on degree of importance. The word ‘important’ implies that a particular reason commonly, and with high probability, may lead to selection of a flawed concept. At least one alternative should be ‘most important’. The answers are shown in Table 6.1.

The respondents clearly point out two problems to be more important than the others:

- The users’ needs are unknown, misunderstood or ignored.
- The objectives of the project are unknown or misunderstood.

Table 6.1 Pre-defined alternatives on relevance and the answers from respondents (N=80). The scale ranges from 1 (least important) to 4 (most important). Mode answers are marked.

#	Alternative	1	2	3	4
2.1	The users' needs are unknown, misunderstood or ignored	6	18	21	35
2.2	The users' needs change before the project is executed	8	25	28	19
2.3	The society's priorities are unknown, misunderstood or ignored	18	25	23	14
2.4	The society's priorities change before the project is executed	15	30	22	13
2.5	The objectives of the project are unknown or misunderstood	5	25	18	32
2.6	The objectives of the project do not change according to changed needs/priorities over time	9	31	28	12

Relative importance is shown in Figure 6.1. The weighted score comes from taking the scores multiplied by the corresponding character, adding them and divide by the number of respondents. This gives a more nuanced comparison than the mode in Table 5.

Before we look at the most important problems, note that the society's priorities seem not to be the problem, whether it comes from government officials or politicians. This indicates that the decisions made on a high level are not a big problem for the projects. That is good news for the decision makers. The locking of objectives that over time turns irrelevant does not seem to be a big problem either. Good news for those responsible for developing/executing the project.

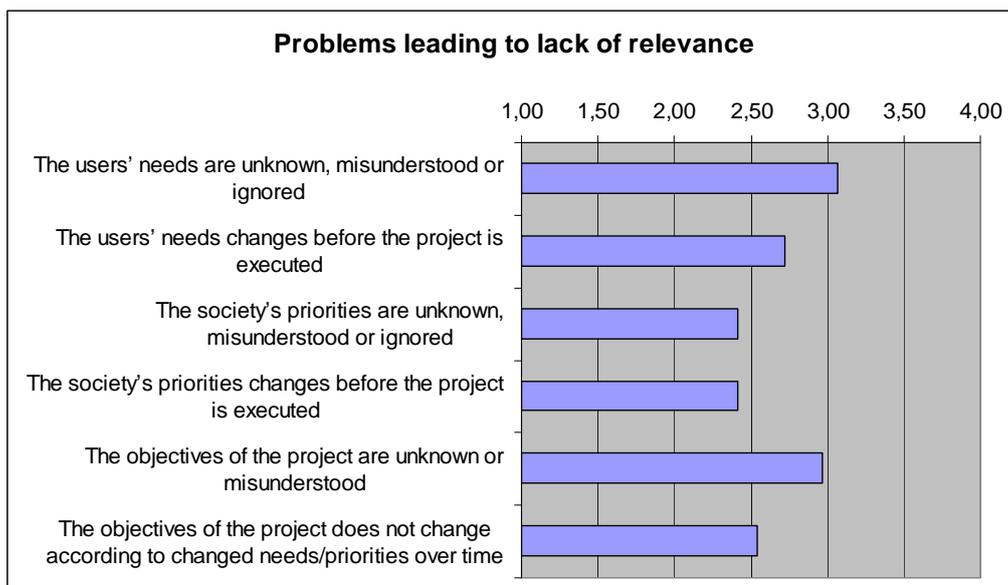


Figure 6.1 Result of the survey; relative importance of each problem in Table 6.1.

The *users needs are unknown, misunderstood or ignored* is the most important problem leading to lack of relevance. The panel of respondents indicate this is a common problem and that it has high probability to lead to the choice of a flawed concept. The formulation of the problem allows several varieties leading to the same result: The user's needs may not have been asked for, the answer never came, it was interpreted wrongly or ignored etc. The respondents indicating this problem was of high importance was asked to elaborate. The answers are shown in Table 6.2.

Table 6.2 Reasons for users' needs being unknown, misunderstood or ignored

a	The users have not been asked	15
b	The way the users are asked/participate in the planning process gives the wrong answers/does not unveil the needs	17
c	The users do not know/can not express what they need	14
d	The planners are not competent enough in understanding the users needs/answers	14
e	Users' needs are ignored by planners and decision makers due to political or personality reasons	25
f	Other (please indicate the reason in your own words)	2
Number of respondents		35

Other:

Users needs presented in the form of definite solutions instead of functional requirements, and thus ignored because of conflicts with other issues

A powerful elite considers itself more knowledgeable and able to decide. Personal aspirations and visions replace objective assessments.

The most important underlying reason is that *users' needs are ignored by planners and decision makers due to political or personality reasons*. This is not a surprising finding, but it is a disappointing one. This indicates that the planners and decision makers

- a) consider themselves better able to assess the needs than the users and thus overrides the users' stated preference
- b) consider political goals and priorities more important than the users'
- c) consider own goals and priorities more important than the users'

The second 'other' category answer is another phrasing of the same phenomenon.

- a) can be seen as a legitimate reason for planners (the professional part) to use professional judgement over users (laymen) when there is a real difference in level of expertise on causality and effects, but in many cases the users are the experts on the business they are running. Decision makers falls in two categories; one professional to which the same caution should be directed, and one political which basically are laymen in judgement concerning the business and needs and thus should be even more careful.

- b) can be seen as legitimate when there are prevailing political decisions and regulations with which the consequence of identified needs (the solutions) are found to be in conflict. In some cases this will be the case, in others not, but the main point here is that planners and decision makers should not define a project that is not in keeping with the users' needs, but instead reject the whole initiative. They should not start an irrelevant project.
- c) can never be seen as legitimate, whether their personal ambitions are hidden or not. The role of planners and decision makers are not to pursue their personal goals and priorities but those of society.

One of the interviewees pointed out the local politicians are by definition representing the users in public projects, but what the politicians think the users want is not always in accordance with reality. This indicates the importance of involvement. Several interviewees pointed out that the users not having their will is not the same as being ignored. This is of course correct and should be noted. There is always the possibility that what the users want is not affordable, does not comply with political decisions etc. This point back to b) above. It is important to have a formal decision making entity making the trade-offs needed to conclude the best possible solution, limitations taken into consideration. This corrective function in the process is vital. Many users see the public project as 'a chance of a lifetime' to influence their situation. This balancing can not be done by a poll in a democratic process.

The other reasons for users' needs being unknown, misunderstood or ignored in Table 6.2 have just about the same number of votes. It is therefore not useful to point at one or other as more important. They are all important (less so than the previous) and relatively self-explaining.

The reason with the second most votes are '*the way the users are asked/participate in the planning process gives the wrong answers/does not unveil the needs*'. This statement points to the need for better ways of including the users in the process, and to the need for more knowledge on the hands of planners and decision makers in how to obtain these better answers. One of the interviewees where also preoccupied with this problem, pointing out the dilemma and conflict raised by superiors mandating processes not in accordance with good methodology and prevailing procedure. Another of the interviewees pointed out that having good methodology is one thing – choosing the right people to perform these methods are equally important. Their position and experience decides whether they are able to ask the right critical questions.

The objectives of the project are unknown or misunderstood is indicated to be the second most important problem leading to lack of relevance. The respondents indicate this is a common problem and that it has high probability to lead to the choice of a flawed concept. The respondents indicating this problem was of high importance was asked to elaborate. The answers are shown in Table 6.3.

Table 6.3 Reasons for objectives of the project being unknown or misunderstood

a	The objectives of the project are not stated at all, or are expressed in a very unclear manner	26
b	The objectives of the project are not available to decision makers	4
c	The objectives of the project are deliberately formulated to mislead the decision makers	8
d	The decision makers do not understand the planners' formulation of goals and objectives	16
e	Other (please indicate the reason in your own words)	1
Number of respondents		32
Other:		
The process to formulate the objectives are underestimated or even neglected.		

The most important reason for project objectives being unknown or misunderstood is that the *objectives of the project are not stated at all, or are expressed in a very unclear manner*. Again, having seen quite a few project proposals and plans over many years, this is not surprising but still disappointing. This indicates the project planners and promoters

- a) does not want to formulate the objectives for some reason
- b) are not able to formulate the objectives

Neither a) nor b) is found to be legitimate in any situation. Planners and promoters are supposed to be professionals. This author is the first to confess formulating objectives are difficult. There is a lot of literature and guidelines in this field but still the process of defining and formulating goals and targets are a challenging task. The Norwegian interviewees pointed out there have been a distinct improvement in this field over the last years⁶, coinciding with the period of implementing a new Quality Assurance Scheme (Magnussen & Samset 2005).

An instrumental interpretation looking for the advantage of having none or unclear objectives could point out that this gives room for adjustments and alternative actions later. Knowing the situation changes regularly and fast this might seem like a rational line of thought, but it is not a good idea. The objectives are vital in explaining the purpose and intended effect of the project. Not having a good explanation on purpose and intended effect should be an obvious reason to reject the whole project. It would leave the resources following the decision to go on open for just any use available. It would represent the complete absence of governance. As an interviewee expressed this; the expectations should be clarified at an early stage.

However, it should also be noted the importance of maintaining the flexibility during the whole process of defining, designing and executing a public project.

⁶ Looking at the answers divided in a Nordic and an Anglo-American group of respondents indicates a quite clear difference – this problem is uniform in the Anglo-American group but disputed in the Nordic group.

The survey also clearly indicates the *decision makers do not understand the planners' formulation of goals and objectives*. This may be interpreted at least two ways:

- a) the decision makers do not understand – do not have relevant competence
- b) the planners are not able to formulate well – do not have the competence

There is no evidence in the present survey to decide which direction this critic should go. In combination with the previous, most important reason, it is obvious to point in direction towards planners. They are the professional part and should have the competence to formulate clear objectives. This builds up to be the primary concern.

It does not set the decision makers free of responsibility, even though they are considered laymen in this field (at least the political decision makers). The decision makers have a job to do, and they should be expected to take the necessary actions to qualify themselves for the job. It could be argued that they are qualified through being elected, but this author finds that a little too easy. It is in their own interest to try to understand better the basis for the decisions they are elected to make. They are elected to serve the society, and it is obviously an advantage to society to reveal the irrelevant projects in the making and stop them as early as possible.

This is not an argument for letting the planners and project promoters make the real decisions. The decisions should be made by the appropriate decision makers according to the institutional framework. They are free to conclude on a wide set of information sources, values and convictions (rational and intuitive). The point made here is that they should understand the main consequences of the decision before making it.

Four of the six interviewees mentioned the lack of competence in all levels of public decision making and projects. This adds to the concern about this point. However, this author does not believe this problem is limited to the public sector. It is probably less of a problem in private sector only because the decision criteria often are simpler here. The complexity of the public sector is a factor to consider in all criticism and analysis of this sector.

Similar questions about the reasons for things going wrong in the front-end of projects were asked corresponding with all the six problems in Table 6.1, but in the spirit of this report – teasing out the most important reasons, the author chooses to stop here.

One issue of a superior nature appearing from this section of the survey is pointed out by interviewees – the political dimension of the decision making in public projects. Seen from the project there is a political interference, seen as a decision making process it is politically driven. Seen from the users and local politicians the solution IS the need, therefore the fundamental questions are not asked, and there is little understanding for the need for analysis. As one interviewee put it; *'politicians and residents are not interested in maximum benefit for the society in the long term, they want maximum benefit for themselves on short and medium range term'*. They obviously have other values and priorities.

6.2 Sustainability

Definition: *'The continuation of benefits from a development intervention after major development assistance has been completed. The probability of continued long-term benefits. The resilience to risk of the net benefit flows over time'* (OECD, 2002).

Sustainability refers to whether the positive effects of the chosen public investment project will be maintained after the project has been concluded. Note that this definition and the intention of this study is not limited to the environmental sustainability.

The definition of sustainability goes beyond the project itself. It is a matter of economic, institutional, social, and environmental effects in a longer term perspective. It depends on whether (to what degree) the positive impact justifies investment – whether future revenue exceeds costs, whether users' support and ability will continue the intended process after the investment, and whether authorities provide policy support and resources to continue the process. If the project is not viable – if it is not supported by society and users in the future – it should be rejected or terminated.

The respondents were asked to indicate which alternatives are the most important problems leading to lack of sustainability in major public investment projects by clicking the appropriate boxes and indicate their opinion on degree of importance. The word 'important' implies that a particular reason commonly, and with high probability, may lead to selection of a flawed concept. The scale ranges from 1 (least important) to 4 (most important). At least one alternative should be 'most important'. The answers are shown in Table 6.4.

Table 6.4 Pre-defined alternatives on sustainability and the answers from respondents (N=80). The scale ranges from 1 (least important) to 4 (most important). Mode answers marked.

#	Alternative	1	2	3	4
3.1	Lack of commitment to the project from key stakeholders	4	21	27	28
3.2	The chosen technological solution is not viable under the prevailing conditions	21	31	20	8
3.3	Conflict over objectives and/or strategies concerning the project	3	19	30	28
3.4	Economic and financial benefits are low, compared to investment and operational costs	6	30	16	28
3.5	Lack of conformity with prevailing policy or by legislation	27	29	20	4
3.6	There are negative ethical issues connected to the project	40	27	10	3
3.7	Business or other conditions change between concept stage and final delivery	8	23	27	22

Looking only at the mode answers, *lack of commitment to the project from key stakeholders* seem to be the dominant problem. As we will discover, the picture is a bit more complicated than that.

Relative importance is shown in Figure 6.2. The weighted score comes from taking the scores multiplied by the corresponding character, adding them and divide by the number of respondents. This gives a more nuanced comparison than the mode in Table 6.4.

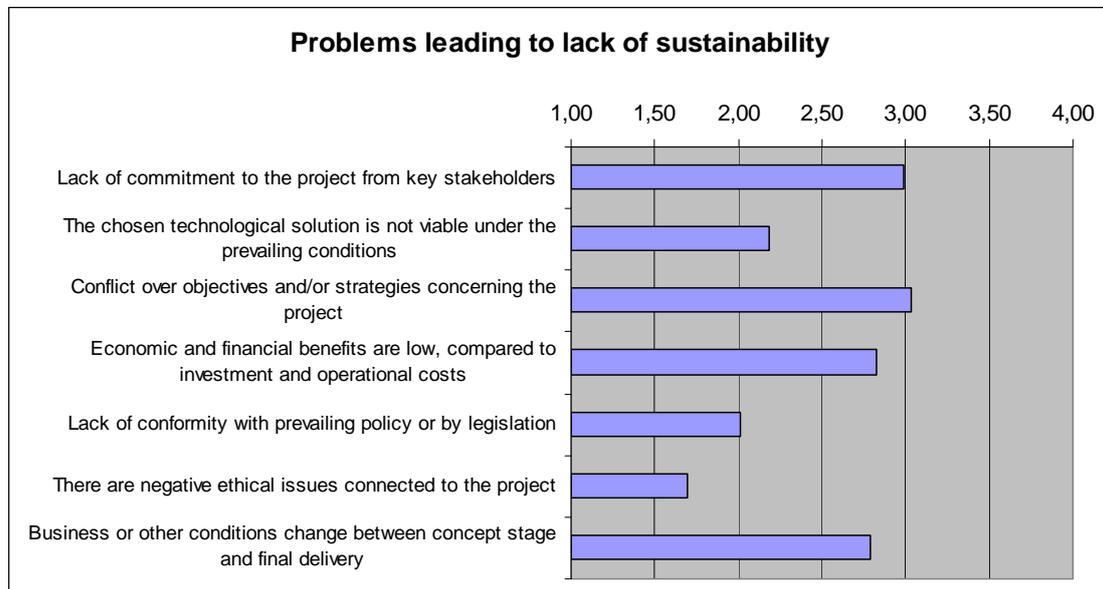


Figure 6.2 Result of the survey; relative importance of each problem in Table 8.

The respondents point out four problems to be more important than the others:

- Lack of commitment to the project from key stakeholders
- Conflict over objectives and/or strategies concerning the project
- Economic and financial benefits are low, compared to investment and operational costs
- Business or other conditions change between concept stage and final delivery

What are the less important problems? Choosing technological solutions viable under the prevailing conditions – this seems reasonable taking the geographical distribution of the respondents into account. In some geographical areas this would certainly be expected to be challenging enough. Lack of conformity with prevailing policy of legislation seems not to be a problem. Nor does negative ethical issues (corruption etc.) – this corresponds nicely with the findings of Transparency International (TI, 2007): almost all respondents to this survey are from countries where corruption is low.

There is not a lot of respondents giving high priority to the same (all) reasons. Only three respondents indicated top score on both alternative number 1, 3 and 4, none to all four.

Conflict over objectives and/or strategies concerning the project is the most important problem leading to lack of sustainability. The respondents indicating this problem was of high importance was asked to elaborate. The answers are shown in Table 6.5.

Table 6.5 Reasons for conflict over objectives and/or strategies concerning the project

a	Neglecting/not solving conflict over priorities among key stakeholders	23
b	Neglecting powerful interacting organizations/individuals in opposition to the project	16
c	Objectives/strategies are too complex/unclear to avoid conflict	10
d	The project design lacks conformity with key stakeholders interests and priorities	11
e	Other (please indicate the reason in your own words)	2
Number of respondents		28

Other:

Hostile stakeholders... they will NEVER agree to any connected scheme. They will ultimately be by-passed at great cost and delay

Clear responsibility and organizing (relate to the activities of responsible director of the project/program) for solid execution towards the purpose

The most important underlying reason is *neglecting/not solving conflict over priorities among key stakeholders*. This is not surprising. It indicates that it is easier to neglect the problem and go on without facing it, than it is to sort it out before continuing. Of course, this is the human nature – avoiding conflict, hoping it goes away or that someone else takes the heat. In the front-end of a project it is not a good strategy. In the short term facing the conflict over priorities may be a risk to the project, but the risk of ending up with a non-sustainable project has far worse consequences than having to go back to square one and start finding a better platform for the project. One interviewee supported this point wholeheartedly and pointed out there is strong bearing on the process when key people are in conflict, outside the project organisation, and even more so within. There is often no easy way of solving personal conflicts by replacing individuals in the public sector. Conflict reduces the enthusiasm and persistence among the people involved during execution and also the operational phase. Maintaining this enthusiasm is important. This indicates the importance of the people issues in the search for success in public projects.

The second most important reason is *neglecting powerful interacting organizations/individuals in opposition to the project*. Whereas the previous reason concerned stakeholders positive to and part of the initiative, this concerns stakeholders in opposition and not part of the initiative. The nature of the problem is still much the same; facing conflict and opposition is not the strongest side to the human nature. In this case the balance of power is also highly relevant. When the opposition is in a relatively powerful position the warning signs are certainly up. The first answer in the ‘other’ category answers point to the same problem.

The remaining reasons are also important, although not commented on here.

Lack of commitment to the project from key stakeholders is the second most important problem leading to lack of sustainability. The respondents indicating this problem was of high importance was asked to elaborate. The answers are shown in Table 6.6.

Table 6.6 Reasons for Lack of commitment to the project from key stakeholders

a	Neglecting that users do not approve/do not like the outcome of the project	14
b	Not identifying that the project outcome has weak support in its owner- and financing organizations	18
c	Neglecting that the project outcome has weak support in management or accepting weak leadership	15
d	Neglecting weak support in interacting institutions, or opposition by other institutions	10
e	Other (please indicate the reason in your own words)	2
Number of respondents		28

Other:

For big prestige projects it is often important to be 'seen to be onboard'. Support waivers as the realities and difficulties become apparent.

Very important to get commitment from stakeholders at the political level.

On this question the respondents are not very clear in pointing out any reason to be more important than others; they have all got quite a few supporters. This may come as a result of being equally important, or that the alternatives may seem to be formulated similarly. However, all alternatives point to different groups of stakeholders and are thus different.

The most important underlying reason is indicated to be *not identifying that the project outcome has weak support in its owner- and financing organizations*. To this author, this came as a surprise. If the owner/financing party, which is the ones putting their money into the project in the first place, has no commitment – who should then be expected to be committed? But by combining with the result of the previous question where the conclusion was that conflicts are not addressed and solved – it makes sense: When the conflicts are not solved, the platform for long term support and commitment ends up being too weak. When the conflict finally comes to the surface, the commitment breaks down or slowly fades away. It is this author's believe that this is a combined effect that makes this into one of the most important reasons for failure (with the previously mentioned avoidance of conflict as the basic reason).

One of the interviewees pointed out that the two problems 'conflict over objectives and/or priorities' and 'lack of commitment' is a 'chicken and egg problem'. They are obviously interlinked (as shown above) and may cause each other or coincide. Which one comes first is not obvious. The same thing may probably be said about other problems and reasons in this survey.

The other reasons in Table 6.4 speak for themselves.

Economic and financial benefits are low, compared to investment and operational costs are the third most important problem leading to lack of sustainability. The respondents indicating this problem was of high importance was asked to elaborate. The answers are shown in Table 6.7.

Table 6.7 Reasons for economic and financial benefits are low, compared to investment and operational costs

a	Planning optimism (overestimated benefits) misleads the decision makers, deliberately or not	24
b	Bad cost effectiveness is accepted	15
c	There is no (not sufficient) market or willingness to pay for the use/outcome	10
d	Alternative use of the money is not analyzed	14
e	Other (please indicate the reason in your own words)	2
Number of respondents		28

Other:

Difficulty of factoring in all economic, near economic, socio-economic, environmental and societal factors.

Public sector investment includes a notion of fairness and equality, facilities are created to avoid claims of exclusion and to placate local aspirations

The most important reason is planning optimism (overestimated benefits) misleads the decision makers, deliberately or not. This was certainly no surprise, but a confirmation of what several researchers have pointed out; planning optimism is a serious problem. The alternative is formulated to include both deliberate optimism (strategic misrepresentation) and not deliberate (mistakes). Proving the problem to be deliberately or not has to be studied another way than this survey approach.

The other explanations are less important according to this panel of respondents. If there were a large number of economists in the panel, there might be more emphasis on the lack of market/willingness to pay. The effect of the two last alternatives accepting bad cost effectiveness and not considering alternative use of the money is not a sign of good quality in planning. This can be seen as an indication of a need to educate planners and decision makers.

The answers to this question reveal an interesting polarity. As seen in Table 6.4 the mode answer is '2', meaning less important. Still there are so many respondents pointing it out to be the most important, indicated by answering '4', that the weighted score shows it climbs up in the 'most important' group of problems, see Figure 6.2. A detailed analysis of the responses revealed that the Nordic group, and within it especially the project managers, dominantly gave the answer '2'. The Anglo-American group tended to give the answer '4', and within it especially the evaluators and researchers. Project managers in the Anglo-American group generally followed the Nordic group.

Reasons for *business or other conditions change between concept stage and final delivery* are the fourth most important problem leading to lack of sustainability. The respondents indicating this problem was of high importance was asked to elaborate. The answers are shown in Table 6.8.

Table 6.8 Reasons for business or other conditions change between concept stage and final delivery

a	Planning optimism (underestimated costs) mislead the decision makers, deliberately or not	18
b	Business changes very fast by nature	7
c	The political and administrative setting is changing regularly	13
d	Learning occurs, new possibilities arise – changing the priorities of decision makers and users	10
e	Other (please indicate the reason in your own words)	0
Number of respondents		22

Also here is the message concerning planning optimism very clear – this time focussing the cost side. In addition there is a substantial focus on the changing in political and administrative setting, as well as changing priorities of decision makers and users. The general uncertainty in naturally fast changing business does not seem to be an important problem in this perspective.

The interviewees supported the main picture of the problems and reasons concerning sustainability and also confirmed the complexity of this issue making it a more difficult one to handle. Superior issues identified by the interviewees to supplement the ones given in the questionnaire were as follows:

The ‘people issues’ and ‘personality factors’ should be elevated to an important position. Several of the interviewees mentioned this, directly or indirectly. Sustainability is dependant on people working together, pulling in the same direction. Strong leadership is needed to show the way out of conflict and maintaining enthusiasm and a supportive mode in the organisation and beyond, avoiding demoralization and discontinuation. Finding the right sponsors, selecting the right representatives for the owner (SRO) and programme/project manager as well as business change manager (BCM) to make sure the delivery is taken into business. On the discontinuity factor was mentioned NIMTO (Not In My Term of Office) – pointing to the fact that there is always someone else to blame. There is a high level of turnover in public sector and people once responsible has ‘always’ moved on when the problems are identified. The same has been said about politicians on several occasions.

One interviewee concluded: the fundamental cause is often not taking time to stop and think! Another conclusion was that relevance is the key issue, because the fundament for sustainability is that the project is relevant to the users, and that this is a key issue in making people want to change.

6.3 Summary of findings – problems and causes

The message is clear: From a strategic perspective, some problems are more important than others. As shown in the introduction; the problems leading to lack of relevance and sustainability are the most important ones. These are superior criteria for the owner and financing party.

Having concluded that, there is a need to find out what is the most important problems leading to lack of relevance and sustainability, and what are their dominant root causes. The answers from this panel of international experts are given in Table 6.9.

Table 6.9 Summary of answers in the survey – the most important problems and root causes leading to lack of relevance and sustainability.

The most important problems	The most important reasons
RELEVANCE	
The users' needs are unknown, misunderstood or ignored	<ul style="list-style-type: none"> - Users' needs are ignored by planners and decision makers due to political or personality reasons - The way the users are asked/participate in the planning process gives the wrong answers/does not unveil the needs
The objectives of the project are unknown or misunderstood	<ul style="list-style-type: none"> - The objectives of the project are not stated at all, or are expressed in a very unclear manner - The decision makers do not understand the planners formulation of goals and objectives
SUSTAINABILITY	
Conflict over objectives and/or strategies concerning the project	<ul style="list-style-type: none"> - Neglecting/not solving conflict over priorities among key stakeholders - Neglecting powerful interacting organizations/individuals in opposition to the project
Lack of commitment to the project from key stakeholders	<ul style="list-style-type: none"> - Not identifying that the project outcome has weak support in its owner- and financing organizations
Economic and financial benefits are low, compared to investment and operational costs	<ul style="list-style-type: none"> - Planning optimism (overestimated benefits) misleads the decision makers, deliberately or not
Business or other conditions change between concept stage and final delivery	<ul style="list-style-type: none"> - Planning optimism (underestimated costs) mislead the decision makers, deliberately or not

The problems shown in Table 6.9 are the problems and the causes for each one which should be fixed first. Focussing too strongly on other problems before having a solution to these, will be a less effective strategy in improving the major public projects.

Adding to the complexity is the fact that many of these problems and causes will be present simultaneously and interact. In addition – making change to handle one cause will change the dominance among other causes. No-one should be led to the conclusion that this gives the one and only answer once and for all.

7 What can we do about it?

As shown in Appendix B Original free-text answers, there were a large number of responses to the free-text section concerning counter-measures. This was an optional part of the survey – the respondents did not have to use time answering this part of an already comprehensive questionnaire. Still, 54 respondents did supply answers to these questions, and in general the same respondents answered all three free-form questions in this part of the survey. This leads this author to conclude these respondents have great will to share experience and this indicates their appreciation of the importance of the matter. This puts a lot of responsibility on the researcher to use the material well and to contribute to transferring the knowledge.

The first impression of the original answers where a massive amount of contributions, pointing in many directions. By holding every single answer up to the basic definition of relevance it was possible to assess whether the answer was really directed towards relevance or not. The answers where divided in three groups: Relevant first order, Relevant second order and Not relevant. The last group was transferred to the general section; ‘other corrective actions’. A few suggestions to relevance where found relevant to sustainability and thus transferred there. After this assessment the relevant contributions where sorted and compiled to avoid overlap, and to sort out the answers containing more than one element (some of the original answers contains several different answers).

First order actions directly affects the level of relevance, enforcing the consistency with needs, requirements and priorities. Second order actions support by making enforcement of relevance possible – they are enablers. The actions are sorted in categories to make the relations clearer. There is no direct connection from 1. order to 2. order on the same row.

The categories are a mix of ‘levels’ and special focus areas. Levels include in ascending order; project level, governance level and political level. The client level links the project level to the governance level (only used for the general corrective actions). Special focus areas are; Users and stakeholders and Methodology. The categories could also be interpreted as areas of responsibility, indicating who should initiate improvements needed.

The same operation as described above was done for the corrective actions to obtain sustainability. The last category – general corrective actions where only sorted and compiled since there is no excluding criteria here. The results are shown in the following.

All the actions are reformulated during the analysis process. This was necessary due to the many overlapping answers and an attempt to make the result clearer and more consistent. Many of the original answers had two to four different elements in them. Some of the suggestions from the original answers may still be possible to recognize. During this process the author did not intend to change, add or subtract to the meaning of the suggestions from the respondents, but by interpreting and reformulating the answers this may be a consequence.

7.1 Actions to obtain relevance

Table 7.1 Corrective actions to obtain relevance

Category	1. order corrective actions	2. order actions - enablers
Users and stakeholders	Involve users and stakeholders in a democratic process. Listen carefully to their needs, challenge them, and document the result	Greater real democracy - people actively participating in the debate
	Design the participation process well and prepare users and stakeholders to participate	Know your beneficiary - in all aspects
	Formulate clear objectives. Inform users about the intentions with the project. The purpose the project can serve and which needs it will fulfil.	
	Continuity: The same users' representatives should participate both in planning and delivery / implementation processes.	
Methodology	Improve methods for mapping of user needs and political needs.	More sophisticated rules to decide the need for thorough front-end planning.
		Improve planners' competence in producing high quality front end decision support documentation.
		Improve collection of relevant facts, use objective empirical data.
		Optimization of projects to maximize benefits to all.
Project level	Use relevance as evaluation criteria in deciding the best alternative action	Open, transparent planning
	Explain the choice of criterions of evaluation.	Spend more time at the front-end.
	Ensure the maintainers and users are part of the projects assessment team	Involve cross sector-disciplinary experts, technical and policy experts as well as informed broad representation from the community.
		Perform a reliable prognosis or project review from the very beginning, and update this at relevant periods, where new info is available
	Ensure all have common understanding for project goals.	Put in place a comprehensive communications plan.
	Project design: Ensure coherence between needs and high level objectives.	A thorough process to involve users, client and project in defining objectives
	Consider the needs and the alternatives before far going planning activities.	Regularly check the objectives with important stakeholders, identify the effect of changes.
	Anchor the project with stakeholders as well as interested parties and ensure senior managers / decision makers retain ownership & involvement throughout.	Annual reports to the parliament and government.
Discuss any disputes with the Client immediately	Close cooperation with the Client	

Category	1. order corrective actions	2. order actions - enablers
Governance level	Represent relevance as evaluation criteria(s) in deciding the best project alternative	Structured decision making at key stages
	Explain the choice of criterions of evaluation.	Project gateway models
	Clearly defined governance principles, where the key factors are valued against one another	Make the process of cost-benefit analysis as rigorous as possible.
	Balance centralized vs. local aspects	Initial decisions based more on thorough, documented studies.
	Engagement by senior stakeholders and commitment to their governance roles in a meaningful, clearly articulated and comprehensive manner	Critical scrutiny undertaken by powerful (legally/ statutory) independent (e.g. judicial) bodies - take evidence and report publicly.
	Decision timeframes should be adhered to	Bring projects to completion quicker by streamlining the approvals process
		Include user representation on steering boards.
Political level		Make sure distributive policy constraints are clearly set
		Make sure that beneficiaries pay at least half of project costs

From chapter 6 we know the most important challenges leading to lack of relevance are connected with users' needs, society's requirements and priorities, and the consistency of the project objectives with these. Although some contributions were moved over into the general category of corrective actions, there was a considerable consistency in the original answers, linking them to relevance – some directly and others indirectly. It is obvious from studying these contributions they fall in two distinct families:

- Actions of support and critical scrutiny from the Governance level. Many of these will be a natural part of a governance framework.
- Actions which has to be performed by the Project level by project planners and project management. Some of these may be requirements according to a governance framework as well and points to professional standards.

The special category Users and stakeholders is included due to these stakeholders position as important to the question of relevance and to the fact that one of the main problems identified in chapter 6 is that the users' needs are unknown, misunderstood or ignored. Responsible for taking action is the project and governance levels. In addition there is a group concerning methodological challenges. Actions towards these may be taken at any level, or by researchers.

Most of the proposed corrective actions seem intuitively reasonable, but have to be considered carefully in each situation. See Klakegg et al (2008) and Klakegg (undated) for discussions of how such considerations may be done.

Assessing the whole result and Table 7.1, three major corrective actions logically seems to be the most important to secure relevance:

- Project choice: Relevance has to be made criteria for evaluation.
- Project design: Ensure coherence between needs and high level objectives (the action is installing independent control).
- Process: Involve all key stakeholders.

All of these actions are the basis for succeeding in obtaining relevance and points directly to the definition of the phenomenon we are looking at. This would be the most important ones if starting with 'blank sheets', without a history or established practice. In real life, however, what are actually the most important actions is dependant on the starting point. This has to be carefully considered in each case.

Compared to the most important problems leading to lack of relevance (Users' needs being unknown, misunderstood or ignored, and The objectives of the project are unknown or misunderstood) many of the proposals seems potentially important, but as one would expect from open-text contribution, the perspective here are wider.

Table 7.2 shows a direct link between the most important reasons for lack of relevance and the most important corresponding 1. order corrective actions above.

Table 7.2 Linking proposed actions to most important problems: Relevance

Problem	Reasons	Actions
User needs are unknown, misunderstood or ignored	Users' needs are ignored by planners and decision makers due to political or personality reasons	Improve methods for mapping of user needs and political needs.
	The way the users are asked/participate in the planning process gives the wrong answers/does not unveil the needs	Design the participation process well and prepare users and stakeholders to participate. Involve users and stakeholders in a systematic process.
Objectives of the project are unknown or misunderstood	The objectives of the project are not stated at all, or are expressed in a very unclear manner	A thorough process to involve users, client and project in defining objectives.
	The decision makers do not understand the planners formulation of goals and objectives	Formulate clear objectives. Inform users about the intentions, the purpose the project can serve and which needs it will fulfil. Ensure all have common understanding of the project goals.

The proposed actions correspond nicely to the problems and the underlying reasons for lack of relevance. Knowing the result of part 1 of the survey, it seems obvious that two strategic actions are lacking in the responses, ref. Table 7.2:

1. Make sure there is no accept or room for ignoring users' needs. This is naturally done by establishing a governance framework including critical scrutiny as mentioned in Table 7.1. The suggestions here are focused on control, but also

- positive incentives and information should be considered. This is covered by the suggestions under general corrective actions.
2. Educate the decision makers to understand the planners' formulation of goals. This is not pointed out by any of the respondents at this stage, but is mentioned among the general corrective actions.

The interviews supported the findings in this section with the important supplements that the involving process where users and stakeholders develop an understanding of needs and objectives needs a corrective function – someone to make decisions and manage expectations so that the output of the project is affordable. Several respondents used the term 'democratic' to describe the involvement and representation in the process, but the necessary trade-offs can not be done by polls. They also underlined that if the solution which the users want is not affordable and thus the solution is reduced or changes – this does not mean the users' needs are ignored. The interviewees also supported very strongly the notion that there is a need for more competence about these issues on all levels and in all sectors of public domain.

Although there seems not to be 100% consistency in linking problems (relevance) and corrective actions, the result seems good. Looking at the whole complex of answers including suggestions for general corrective actions, the necessary actions to obtain relevance is covered, and the most important actions are identified.

Again – remember that what is most important is dependant on the starting point in every case. The identified most important corrective actions build on the presumption there is already an existing decision making process or governance framework in place. Some of the suggestions should not be used together, and some may be non-recommendable in given situations.

7.2 Actions to obtain sustainability

From Chapter 6 we know the most important challenges leading to lack of sustainability are connected with conflict over objectives, lack of commitment or economic conditions. Compared to the results for relevance above, these challenges are more multi-faceted. The results mirror this and give a more complex and general impression of the corrective actions.

Some of the corrective actions suggested in Table 7.3 could improve any aspect of the project, including sustainability of course. This author finds this observation interesting for two reasons:

1. It shows the complex nature of the sustainability question itself and the fact that it does include elements of 'every aspect' of the problem or project in question (so do 'relevance' but without showing the same weakness, at least not to the same degree).
2. It indicated that the professionals (well represented in the panel of respondents) are not able to give very precise advice concerning sustainability.

Table 7.3 Corrective actions to obtain sustainability

Category	1. order corrective actions	2. order actions - enablers
Users and stakeholders	Consult the users regarding their long term needs.	Understand the end user environment and particularly if that is the general public.
	Attribute appropriate weights to the stakeholders through a participatory process.	Stakeholder involvement in planning processes. Make sure all stakeholders participate, including the users.
	Explain and argue the choice of criterions used to evaluate.	Implement a thorough stakeholder procedure and analysis.
	Clarify objectives concerning sustainability	Discuss conflicts between goals and interests early in the planning process.
	Ensure all stakeholders understand (up front) what success looks like, and how that success is to be maintained and increased	Adequate investment in competency of stakeholders
	Secure commitment from the policy-makers, government leaders, community (business community and lay person) and investors/financiers.	Those who represent the community and other stakeholders in these discussions should genuinely express the views of the community in an 'informed way' and not represent narrow interests and agendas.
	Continuity: The same "user's" representatives should participate both in planning and delivery / implementation processes.	
Methodology	Sustainability scenarios should be well investigated in terms of future benefits and trade-offs	Have a clear model which sustainability can be measured against
	Life cycle cost: Make sure maintenance is affordable and through life costs are understood.	Improve cost/benefit analysis; ensure sufficient robustness
	Analyze scale of throughput and avoid unnecessary complexity.	Improve risk assessment methodology
Project level	Contextual holistic planning; weighing of sustainability and its bearing on the bottom line.	Realistic planning, honesty in calculation
	Inform decision makers about maintenance and environmental cost	Communication: selecting project managers with good diplomatic skills.
	Continual review of expected benefits in the planning stage considering all relevant stakeholder concerns	Design more flexible means of including, testing, measuring, and monitoring stakeholders
	Plan for resources needed to maintain and operate the investment in the future	Check your project's conformity to societal trends, possible future legislation, and economical development.
	Build in flexibility to change the extent of project during delivery and the possibility of covering more or other objectives after delivery.	Implement dynamic project management to ensure flexible adaptation and optimization
	Resist scope creep because of technological improvements - avoid delay's	Include sustainability as a control parameter in the project's management basis.
	Consult the users on an ongoing basis during	Build an innovative culture; choose the creative

Category	1. order corrective actions	2. order actions - enablers
	project execution.	subcontractors, use incentives
	Keep the risk with the ones best able to handle it	Ensure contracting arrangements have built in flexibility.
	Provide for the best technology available at the time within the funding available.	Meet all the Client's requirements. Complete the project in time and within the budget.
	Keep service relation on proper level.	Discuss any disputes with the Client immediately
	Make sure there are clear implementation and follow up procedures	Implement full cost accounting
		Use relevant project management methods and tools, make sure people know how to use them.
Governance level	Represent sustainability as evaluation criteria(s) in deciding the best project alternative.	Implement continuous evaluation processes. Greater scrutiny and reporting.
	Require an independent view on sustainability before major projects are funded beyond key gateways.	Clear decision gates aligned with benefits delivery plan.
	Implement longer payback periods	Firm Governance Focus on quality in solutions
	Holistic marketing approach from the perspective of economic, social and personal benefits.	Make sure the second level of management ('selling in' level in the organization) 'know' the projects well.
		Whole of system approach including government, organizational and individual commitment.
		Successfully achieving relevance will mean that user actually want to use the system
		Adequate investment in development of effective decision-making
		Include user representation on steering boards
		There must be a closer connection between strategic planning (for example the National Transport Plan in Norway) and political decision making on a year to year basis
Political level	Generate more awareness and more open, honest discussion of investments and the allocation of funds	Assure honest cooperation between politicians and project governance.
	The active co-involvement (ideally co-ownership of the decision and its consequences) of communities and users should ensure that investments that generate lasting benefits are favoured.	Make projects private sector as far as possible and limit the state's role to the issuing of finite grants.

Compared to Table 7.1 (relevance), the answers in Table 7.3 (sustainability) give a far more confusing first impression. The perspective is wider, the aspects more diverted and it points in many directions. It is also more difficult to identify the direct link between the actions and the problem.

Assessing the whole result and Table 7.3, three major corrective actions logically seems to be the most important to secure sustainability:

- Project choice: Sustainability has to be made criteria for evaluation.
- Project design: Be realistic about investment and operation cost and future benefits (the action is installing independent control).
- Process: Address and solve conflicts over objectives or priorities among key stakeholders.

All of these actions are the basis for succeeding in obtaining sustainability and points directly to the definition of the phenomenon we are looking at. This would be the most important ones if starting with 'blank sheets', without a history or established practice. In real life, however, what are actually the most important actions is dependant on the starting point. This has to be carefully considered in each case.

Since the 'Brundtland Report' in 1987 (WCED, 1987) the word 'sustainability' has been closely connected to the environment among members of the general public. Literature on sustainability today accepts the concept to cover environmental, economic and social aspects. This 'triple bottom line', defined in the Elkington (1994), has since become important in public life⁷ and dominates also in the perspective of Corporate Social Responsibility.

In this report the concept of sustainability includes elements of all cross-cutting issues in the OECD evaluation model (see Chapter 5); this includes economic and financial aspects, institutional aspects, socio-economic aspects, technological aspects, environmental aspects and policy support measures. This could be seen as even wider perspective. It is probably expanded more than just dividing the economical dimension in more parts.

It is reasonable to assume no one is able to have full knowledge and overview of a complex issue like this. The definition of sustainability, as given in Chapter 6.2, gives some help by making clear the focal point is the long term continuation of benefits after the project result is delivered. Still it is complicated, not only because of complexity and lack of overview – but also because of ambiguity and uncertainty. To non-experts the information available is difficult to understand and it seems filled with seemingly contradictions and opposite positions.

The result of this survey indicate that even the most skilful and experienced of experts in roles relevant to the project is not able to see a clear picture of what kind of actions would clearly strengthen the sustainability of projects. This is still true, despite the continuous effort of 'sustainability experts' (environmentalists, economists and researchers) during the last 30 years. There is an enormous literature and multiplicity of methods etc. trying to give good answers to sustainability questions. The answers have obviously not been good enough – or have not been communicated well enough. There is a need for some

⁷ ref. United Nations ICLEI (Local Governments for Sustainability)

sort of 'bridge' between the 'sustainability-experts' and the experts and decision makers working with major public projects.

It is hard to find patterns in the suggested corrective actions. They cover improvement of methods, increasing awareness, strengthening communication, enhanced scrutiny and other measures. The main things seem to be more holistic planning and strengthening the long term view of the project (needs, throughput, results, maintenance, costs and benefits). Again – it is reasonable but not very precise.

Some examples show interesting seemingly contradictions: One suggestion is 'build in flexibility to change during execution'. Another suggestion is 'resist scope creep to avoid delay'. The way to combine these is probably to plan for flexibility so that adaptation and optimization is possible without causing delay. Nils Olsson has studied this in his doctoral thesis (Olsson, 2006) – go there for more details. Improved planning is undoubtedly helpful when facing the unavoidable changes during the long planning and execution phases of major public projects.

Another major group of actions suggested in Table 7.3 is the enforcement of a governance framework with firm governance focus, continuous evaluation processes, clear gateways and reporting.

There is a strong request for increased awareness and competence (improved education) of the people in all levels of the game, from the task force up to senior administrative personnel and politicians and development of common language to improve communication.

Another important notion in the responses is making the users and stakeholders co-responsible or even co-owners of the project to increase the focus on sustainable, long term solutions and ownership to the results.

The large number of suggestions and the rather 'general' formulation of them indicate lack of precision. Still the results seems reasonable and covering a large share of the problem area. The general impression is that this field is still a young one, not well established in the project world.

One of the very interesting suggestions among those concerning sustainability is the notion that if you achieve relevance, this will also be an important step towards sustainability because the results will then surely be wanted. This is in fact an argument to say relevance is the superior criteria to sustainability. The same view was expressed in one of the interviews. In the starting point of this report, these two criteria are considered to be the two most important criteria without ranking them. Following this line of argument, such ranking is possible.

Table 7.4 shows a direct link between the most important reasons for lack of sustainability and the most important corresponding 1. order corrective actions above.

The actions list is not complete, and actions may influence more than one reason and problem.

Table 7.4 Linking proposed actions to most important problems: Sustainability

Problem	Reasons	Actions
Lack of commitment to the project from key stakeholders	Not identifying that the project outcome has weak support in its owner- and financing organizations	Inform decision makers about maintenance and environmental cost Secure commitment from the policy-makers, government leaders, community (business community and lay person) and investors/financiers.
	Neglecting that the project outcome has weak support in management or accepting weak leadership	Continual review of expected benefits in the planning stage considering all relevant stakeholder concerns
Conflict over objectives and/or strategies concerning the project	Neglecting/not solving conflict over priorities among key stakeholders	Clarify objectives concerning sustainability Explain and argue the choice of criteria used to evaluate. Ensure all stakeholders understand (up front) what success looks like, and how that success is to be maintained and increased
	Neglecting powerful interacting organizations/individuals in opposition to the project	Build in flexibility to change the extent of project during delivery and the possibility of covering more or other objectives after delivery.
Economic and financial benefits are low, compared to investment and operational costs	Planning optimism (overestimated benefits) misleads the decision makers, deliberately or not	Contextual holistic planning; weighing of sustainability and its bearing on the bottom line. Require an independent view on sustainability before major projects are funded beyond key gateways.
	Bad cost effectiveness is accepted	Continual review of expected benefits in the planning stage considering all relevant stakeholder concerns
Business or other conditions change between concept stage and final delivery	Planning optimism (underestimated costs) misleads the decision makers, deliberately or not	Plan for resources needed to maintain and operate the investment in the future Require an independent view on sustainability before major projects are funded beyond key gateways.
	The political and administrative setting is changing regularly	Generate more awareness and more open, honest discussion of investments and the allocation of funds

The problems/reasons on one hand and proposed actions at the other do not link easily. Some of the actions are obviously relevant but not very clearly pointed towards the most important problems. Together they are expected to have a substantial influence on the problems in question.

Clearly the proposed actions are better aimed at improving the first reason (A) than the second one (B) in all problem areas. Except for main problem no. 1, this is consistent with a clear indication in the material that reason (A) is much more important than (B).

Looking at Table 16 there are remarkably few suggestions directed towards the economic and financial aspects, and the ones present are not very well pointed towards the identified underlying reasons. In this section (financial sustainability) some of the 2. order actions seems just as good as the 1. order ones in improving the underlying reasons. The responsibility for this may of course lie on the author responsible for the sorting in 1. and 2. order. One example is the 2. order action ‘Realistic planning, honesty in calculation’ which would easily be identified as an improvement against planning optimism. Although it is a good ideal and a necessary assumption for optimal results, it is not a concrete action – it is considered an enabler in this analysis. How do we achieve it? That question still stands unanswered. The answer may be found in the general improvements in the ‘other’ category.

The interviewees all recognized the over-all impression of Table 7.4. Their additions on sustainability had a more general character. They suggested realism in planning; having a realistic, achievable, workable strategy, signed up by senior management; base the decisions on thorough work and ask critical questions; having clarity in who is THE decision maker; flexibility in planning and execution to be able to add value during the process; maintaining the enthusiasm among stakeholders; reduce turnover in public sector; consider more severe consequences of bad performance; improve methods and experience transfer; shift from focus on Cost/Benefit fraction to Net Benefit; increase competence at all levels, and not least; take time to stop and think!

One interviewee used this illustration to explain the sustainability problem and related it to objectives and ambition levels:

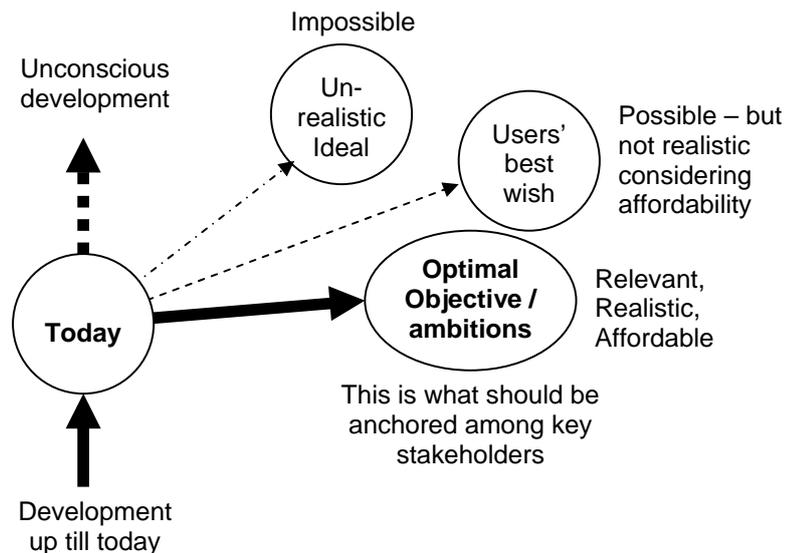


Figure 7.1 Illustration of sustainability in objectives/ambitions.

Another interviewee gave this example on how the individual position and values influence negatively on sustainability: “*It is more important for decision makers (politicians) to initiate new projects than to maintain what we already have. The focus is on ‘new roads’ not on ‘good roads’*”. His suggestion was to increase the emphasis on measuring the effect (real benefits) of the projects and current infrastructure.

A comment on methods was; it is more important to implement well the important and principal things we already have, than perfecting small details in the methods and rules. The interviewee also added; when introducing new procedures – make sure the ongoing processes are considered. To make people go back to start frustrates them, creates criticisms and destroys potentially the enthusiasm over the good sides of new procedures.

7.3 General corrective actions

In this category we find corrective actions not directly aimed at obtaining relevance and sustainability. These suggested actions may improve the probability of success in major public investment projects in a wider sense. Some of these will also be supportive in the work for enhanced relevance and sustainability. These are put in the 1. order category. This table is by definition more of a supporting structure to the findings in the two previous sections. Some of the proposed actions are already represented above because they are mentioned more than one place and needed here to make up the whole picture.

Table 7.5 General corrective actions to increase probability of success

Category	1. order corrective actions	2. order actions - enablers
Users and stakeholders	Develop a clear vision of the short- and long-term user needs.	Include all relevant stakeholders from the beginning of the planning process.
	Express a single clear vision of the purpose of the project	Involve stakeholders and user-groups early in decision-making process and throughout the project.
	Enhance the development of shared understanding.	Pay attention to public involvement in the form of factual information.
	Ensure commitment of key stakeholders	Use competent people in an inclusive manner.
Methodology	-	-
Programme and project level		Communicate the importance of using time in the front-end to project owner and major interested parties/stakeholders.
		Secure open communication.
	Planning	Make sure objectives are clear and shared.
		Spend more time and money in the early planning.
	Challenge all statements made early in the process.	Secure good understanding of requirements and political environment - the context of the project.
	Calculate the costs and benefits to reflect what really can be done and what really can be	Select and apply tools to stimulate divergent thinking and understanding to generate multiple

Category	1. order corrective actions	2. order actions - enablers
	achieved	and robust solutions and solution-pathways.
		Apply verifiable methods with clearly defined outcomes.
		Avoid unnecessary complexity (Keep it simple)
		Establish a reference to define appropriate project goals
		Be realistic about resources and effects
		Ensure risk analysis and - management is implemented and communicated at the front end.
Management		Create a realistic plan of actions and follow it.
		Ensure risk management & analysis is implemented and communicated, starting at the front-end and throughout.
		Keep track on progress and report honestly.
		Clarify responsibilities in organizing.
		Ensure flexible adaptation and optimization with respect to changing requirements and context.
Client level	-	Agree on key risks during contract negotiations.
		Avoid off loading risk to a prime contractor when it could be retained with lower costs.
Governance level	Governance framework	Install a framework for quality assessment of large public investments
		Base the decisions on rational choices
		Include break points, assess results and be ready to 'pull the plug' when necessary.
		Consider the incentive structures of the institutional framework carefully.
	Governance principles	Know probable future development, both in same area and in other areas than the project's.
		Invest sufficient money and time in early planning.
		Improve the front-end assessments with requirements on economic profitability
		Implement high professional standards
		Keep the flexibility; accept that changes will occur during lifetime of project.
		Be clear on how to evaluate the success of the project

Category	1. order corrective actions	2. order actions - enablers
		Reveal and debate external pressures on projects/ programmes.
		Insist that public projects must take into consideration all cost, incl. project completion, operating and maintenance regimes.
	Fundamentals	Improve executive interest and ability to provide effective oversight.
		Design training programs at all levels (incl. senior managers/decision makers, client and employer's staff) to start 'speaking' in common language.
		Keep policy making outside the project.
		Remove politically expedient elements in decision making.
		Continuous research to balance project people issues, processes and technology.
Political level	Hold the decision makers accountable for the results of their decisions.	Reduce the domination of the political dimension.
	Establish a powerful second chamber evidently self-interested in and concerned with sustainability.	Do not follow the fashions blindly (economical development, productivity, environmentalism, etc.)

The most interesting part of Table 7.5 is perhaps the part indicating actions on the governance level. There is very strong indication of support to the necessity of developing a governance framework to secure success in these projects. By nature this part is not 1. order. The *governance framework* is a formal supporting structure, normally installed by the project owner and/or financing party to support the projects. The definition is (Klakegg et al, 2008):

'A governance framework for investment projects comprise the processes and rules established to ensure the project meets its purpose.'

Other authors with strong contributions in this field are Miller & Lessard (2000) and Flyvbjerg et al (2003). This part indicates strong support to the relevance of their studies.

Table 18 includes corrective actions on all levels and most of the important areas of the project and formal structures. Obviously these are very general and address the decision making process, planning and execution of projects. Based on this structure one could probably write a whole text-book on project governance and project management. Most of the actions could be labelled 'good practice' requirements or indications of professional standards. This may be useful, even though not very detailed and precise.

There are even more details in the original answers – see Tables 7.6 and 7.7.

Table 7.6 Detailed additional suggestions for the programme and project level
– 2. order actions

2. order actions - enablers	2. order actions - enablers
Planning	Management
Split up and keep projects smaller if possible.	Perform good project planning with clear objectives, Work Breakdown Structure, Schedules and Budget.
Ensure each stage of the programme can deliver a useful element.	Implement accountable and transparent project / programme change control.
Avoid big bang solutions that do not deliver benefits until the very end.	Decide on regular reporting of progress and problems from the beginning.
Review history data of similar projects and get benchmark data for each type projects.	Define the scope and the responsibilities of each function clearly as the project progresses.
Use personnel not too heavy involved in one particular solution to perform studies.	Use systematic project management methods like PRINCE2 etc.
Demand good understanding of estimation methods.	
Conduct full Value Management Assessments of the projects perceived functionality.	

Table 7.7 Detailed additional suggestions for the governance level
– 2. order actions: Governance principles

2. order actions - enablers	2. order actions - enablers
Be clear on mission, vision, values, priorities, stakeholders, objective data	Avoid the attitude "easier to obtain forgiveness than permission".
Ensure structures exist to give early warning that projects/ programmes are in trouble.	Avoid repeating the so called decision cycle.
Put key people on important programmes early, not when it has to be recovered.	Beware of rent seeking behaviour; those who will benefit have to pay enough to make sure it's worthwhile.
Make the process of cost-benefit analysis as rigorous as possible.	Implement multi criteria decision analyses in the most important decisions.
Include uncertainties in decision basis.	

Table 7.6 and 7.7 may serve as part of a ‘toolbox’ or source of additional ideas in the process of designing improved programme- and project management (Table 7.6) and improved governance of projects (Table 7.7). This material is only documented, not analyzed or used further in this study.

7.4 Corrective actions in the mega-project literature

In this section we shall return to the six books on mega-projects presented in chapter 4. From these the main suggestions for improvements or corrective actions are extracted. The purpose is to construct a reference for comparison against the findings in this survey. The summary of proposed improvements is shown in Table 7.8.

Peter Hall's book 'Great Planning Disasters' (Hall 1981) includes the identification of several decision making problems in mega-projects and suggestions on how to improve these. Some of these suggestions are very specific, pointing to theories and methods available for planners and decision makers. He has a clearly rationalistic, instrumental approach to the problems he observes. Consequently his answers are analytical and focussed on methods. Still, he does emphasize that judgement will be needed every step of the way. The question – '*should we accept that political behaviour is there?*' is explicitly left open by Hall.

Morris and Hough (1987) 'The Anatomy of Major Projects' is still one of the best books on project management. It is a comprehensive interpretation of 8 mega-projects in search of the explanations for success. The book is summed up like this (p. 246): '*Guided by organizational structures and controls of considerable sophistication, with their strong goal orientation, multi-organizational framework and emphasis on teamwork, projects are accomplished through personal and collective enthusiasms often only liberated by the very challenge of undertaking a truly exceptional task.*'

David Collingridge's book 'The Management of Scale' (Collingridge 1992) is summed up like this: '*The message for decision makers is that any steps taken towards the ideal standards of trial-and-error learning will lead to choices that are better for the people taking them; better in the sense that they will be more closely tailored to the world's uncertainties.*'

Miller and Lessard's book 'The Strategic Management of Large Engineering Projects' (Miller & Lessard 2000) includes a wide range of discussions and suggested improvements. It is impossible to give a fair impression of the whole book here. Table 21 includes just a few chosen suggestions. From the books introduction: '*Projects become successful not because they have been optimally selected, but because sponsors and partners commit to sharing risks, shaping choices in turbulent environments, and embracing residual uncertainties. Both the state and the sponsors can take actions that significantly increase the probability of success.*' (p17)

Flyvbjerg et al (2003) 'Megaprojects and Risk' is another example of a book with more contributions than I am able to fit in here. Just a few main points are included. Just like Miller & Lessard, this book includes very strong arguments for developing institutional frameworks to support the success of mega-projects.

Table 7.8 Summary of this authors interpretation of important books on mega-projects, ref. Table 4.1. Suggested improvements.

Author	Category	Problem areas	Most important improvements
Peter Hall (1981)	Decision making	<ul style="list-style-type: none"> - Forecasting the future - Trade-offs between groups 	<ul style="list-style-type: none"> - Use more resources in early phases, systematic analysis. - Independent specialists, rational methods and techniques.
Morris & Hough (1987)	Project management	<ul style="list-style-type: none"> - Human errors - Project objectives and their validity - Influence of politics - Government as sponsor, champion and owner - Financial matters - Implementation of results 	<ul style="list-style-type: none"> - Comprehensive investigation - Political sponsorship, Government commitment - Clear owner, framework giving clear criteria, consistency and stability - Estimation of actual turn-out costs, properly reflecting all sides - Organisational structures and sophisticated control measures
David Collingridge (1992)	Decision making	<ul style="list-style-type: none"> - Limitations in human capacity to control and understand complexity - Inflexibility in technologies (projects) - Changes are costly and painful – inhibiting critical scrutiny 	<ul style="list-style-type: none"> - Incremental trial-and-error learning - Use independent sources of expert advice and technical skills - Government exerting genuine control
Miller & Lessard (2000)	Governance of projects	<ul style="list-style-type: none"> - Handling turbulence in project environment - Opportunism and omission - Decision making not fully rational - Coordination and cooperation - Design of institutional frameworks 	<ul style="list-style-type: none"> - Coherent and well-developed institutional arrangements - Stabilization of the long-term future to enable investments - Flexibility to face turbulence. - Enhancing the legitimacy of projects, organizations, and agreements. - Instilling governability in project organization.
Flyvbjerg et al (2003)	Governance of projects	<ul style="list-style-type: none"> - Applying the wrong method - Poor data - Discontinuous behaviour and influences not included in predictions. - Unexpected changes of exogenous factors. - Unexpected political changes or missing realisation of policy - Implicit appraisal bias of the consultant. - Appraisal bias of the project promoter. 	<ul style="list-style-type: none"> - Increase transparency - Decide performance specifications up front - Formulate an explicit regulatory regime for projects - Demand at least one third private financing
Altschuler & Luberoff (2003)	Politics and urban development	<ul style="list-style-type: none"> - Lack of competence and experience transfer - Handling complex networks of practices and roles - The public sector leadership role - Handling harmful side-effects - Conflict between local support and central financing - Project financing models - Cost escalation and underestimation 	<ul style="list-style-type: none"> - Seek balance between multiple perspectives - Representative democracy - Local plurality - Critical public approval of all mega-projects

Altschuler and Luberoff's book 'Mega-projects: The Changing Politics of Urban Public Investment' (Altschuler & Luberoff 2003) is the last contribution included here. It is quite different than the others in that politics is part of the theoretical basis – a natural fact, not a challenge which has to be dealt with. Their summary of findings conclude with: *'the more general conclusion that we take away from this study: while private rent-seekers and public entrepreneurs are invaluable sources of energy and ingenuity in the evolution of urban mega-projects, local champions of environmental protection, of neighborhood preservation, and of fiscal sobriety have no less valuable roles to play. Further, in seeking the wisest balance among these multiple perspectives, there are no good substitutes for representative democracy, empowered and required to approve all major projects, and a vibrant local pluralism.'* Their book is excellent in explaining trends and effects, but is not focused on identifying problems and suggesting improvements. They say explicitly (p289): *'We do not have a strong position on precisely which model is best.'*

Comparing the general findings in my survey in Table 7.5 and the main suggestions from mega-project literature in Table 7.8 shows good compatibility between the two. All the main points in Table 7.8 are covered in Table 7.5 as well, and to some degree also in the more detailed tables 7.6 and 7.7. Comparing with the more specialized Tables 7.1 and 7.3 is less interesting since these are very specifically aimed at relevance and sustainability and thus less comparable by definition. There is, however, no conflict between them. All in all, the conclusion to this comparison is that the findings in part 2 of my survey are strongly supported by mega-project literature. This adds to the credibility of the survey.

It should be noted that the works of Morris and Hough, Miller and Lessard, as well as Flyvbjerg et al is very well known among people interested in projects. They have had a lot of attention, the two latter over the last years. This may have influenced the respondents since they are expected to be well aware of these contributions.

7.5 Conclusion – what to do about relevance and sustainability

The possible actions to obtain relevance and sustainability are shown in previous tables 7.1 to 7.4. These findings are supplemented by general improvements in Tables 7.5 to 7.7 supported by findings in literature in Table 7.8. The results are consistent and cover the main challenges identified in previous chapters. All in all the credibility of the survey and consequently its results are good. In this chapter the results are analyzed and most important improvements are shown in Table 7.1 Relevance and Table 7.3 Sustainability. See also the discussions of these in the text for some important supplements.

The most important corrective actions to secure relevance and sustainability in a case where no previous governance framework exist are shown in Table 7.9.

Table 7.9 Important actions where no previous governance is installed

	Relevance	Sustainability
Project choice:	Relevance has to be made criteria for evaluation.	Sustainability has to be made criteria for evaluation.
Project design:	Ensure coherence between needs and high level objectives – have independent control.	Be realistic about investment and operation cost and future benefits – have independent control.
Process:	Involve all key stakeholders.	Address and solve conflicts over objectives or priorities among key stakeholders.

Also in cases where the governance of public projects shows signs of weakness, there should be a consideration of the actions in Table 7.9. In most western countries there is a governance framework of some sort already installed. In these cases the identification of corrective actions or improvements should be based on identifying the most important problems still not solved by these governance frameworks.

The most important corrective actions in a general case (in accordance with the survey documented here) are the ones directed towards the most important challenges in the front-end of major projects. These are presented in the following. Remember that in each actual case, what is really most important depends on the starting point – the status from which the improvements is proposed. This may give very different results in specific cases.

The most important corrective actions to obtain RELEVANCE:

Main problem no. 1: User needs are unknown, misunderstood or ignored.
 Underlying reasons: (A) Users’ needs are ignored by planners and decision makers due to political or personality reasons. (B) The way the users are asked/participate in the planning process gives the wrong answers/does not unveil the needs.

Most important actions:

- Improve methods for mapping of user needs and political needs.
- Design the participation process well and prepare users and stakeholders to participate.
- Involve users and stakeholders in a systematic process.
- Make sure there is no accept or room for ignoring users’ needs.

Main problem no. 2: Objectives of the project are unknown or misunderstood.
 Underlying reasons: (A) The objectives of the project are not stated at all, or are expressed in a very unclear manner. (B) The decision makers do not understand the planners’ formulation of goals and objectives.

Most important actions:

- A thorough process to involve users, client and project in defining objectives.
- Formulate clear objectives. Inform users about the intentions, the purpose the project can serve and which needs it will fulfil.

- Ensure all have common understanding of the project goals.
- Educate the decision makers to understand the planners' formulation of goals.

These suggestions are consistent with the problems and causes they aim at.

The most important corrective actions to obtain SUSTAINABILITY:

Main problem no. 1: Lack of commitment to the project from key stakeholders.

Underlying reasons: (A) Not identifying that the project outcome has weak support in its owner- and financing organizations. (B) Neglecting that the project outcome has weak support in management or accepting weak leadership.

Most important actions:

- Inform decision makers about maintenance and environmental cost.
- Secure commitment from the policy-makers, government leaders, community (business community and lay person) and investors/financiers.
- Continual review of expected benefits in the planning stage considering all relevant stakeholder concerns.

Main problem no. 2: Conflict over objectives and/or strategies concerning the project.

Underlying reasons: (A) Neglecting/not solving conflict over priorities among key stakeholders. (B) Neglecting powerful interacting organizations/individuals in opposition to the project.

Most important actions:

- Clarify objectives concerning sustainability.
- Explain and argue the choice of criteria used to evaluate.
- Ensure all stakeholders understand (up front) what success looks like, and how that success is to be maintained and increased.
- Build in flexibility to change the extent of project during delivery and the possibility of covering more or other objectives after delivery.

Main problem no. 3: Economic and financial benefits are low, compared to investment and operational costs. Underlying reasons: (A) Planning optimism (overestimated benefits) misleads the decision makers, deliberately or not. (B) Bad cost effectiveness is accepted.

Most important actions:

- Contextual holistic planning; weighing of sustainability and its bearing on the bottom line.
- Require an independent view on sustainability before major projects are funded beyond key gateways.
- Continual review of expected benefits in the planning stage considering all relevant stakeholder concerns.
- Calculate the benefits to reflect what really can be achieved

Main problem no. 4: Business or other conditions change between concept stage and final delivery. Underlying reasons: (A) Planning optimism (underestimated costs) misleads the decision makers, deliberately or not. (B) The political and administrative setting is changing regularly.

Most important actions:

- Plan for resources needed to maintain and operate the investment in the future.
- Require an independent view on sustainability before major projects are funded beyond key gateways.
- Generate more awareness and more open, honest discussion of investments and the allocation of funds.
- Calculate the costs to reflect what really can be done.
- Challenge all statements made early in the process.

The problems/reasons and proposed actions to obtain sustainability does not link easily. The proposed actions are obviously relevant but not very clearly pointed towards the most important problems. The proposed actions are better aimed at improving the first reason (A) than the second one (B) in all problem areas. Except for main problem no. 1, this is consistent with a clear indication that reason (A) is much more important than (B).

Many of these suggestions leave questions about ‘how?’ open. There are answers to this question in the material as well. Most of the actions can be included in and has to be supported by a governance framework including a structured decision making process and critical scrutiny. The suggestions from this survey are focused on control, but also positive incentives and information should be considered.

8 Generalization of findings from this survey

8.1 The challenges in generalizing

The observant reader will notice that the findings in this survey support main findings by all the books on mega-projects referred in Chapter 4. Not only when it comes to suggested corrective actions shown in Chapter 7.4, but also concerning what are the most important challenges in major projects. The immediate reaction is that the respondents are supporting (to the degree the basic assumptions of the different analysis is comparable) the conclusions concerning:

- Hall: Trade-offs between groups
- Morris & Hough: Project objectives and viability, government as sponsor, champion and owner, influence of politics
- Collingridge: Humans limited ability to understand complexity
- Miller & Lessard: Opportunism and omission
- Flyvbjerg et al: Lack of accountability, appraisal bias
- Altshuler & Luberoff: Lack of competence, complexities of networks of parties & roles, conflicts between stakeholders

Since these books is built on empirical data from cases from all over the world, some of their data can be of questionable quality (partly old, from very unequal settings, reported by very different parties with different understanding and motivations to do so etc.). On the other hand, all of these sources are presenting results of well known, acknowledged researchers and experts. In addition they have all considerable focus on documenting a theoretical and empirical basis for their conclusions. These books have been inspirational sources of knowledge and ideas for improvement of decision making processes and project management in many countries and settings. They have received much attention from a large number of media and other researchers. Some critique has been raised, but no-one has given reason to doubt the 'big picture' these sources present.

It has to be acknowledged, these authors do not have the same starting point and they do not look for answers to the same question. Their findings are taken out of their original context and put into my setting – the search for the most important challenges in the front end of major public investment projects. In doing so, I have made them more general than they perhaps was intended from the author. This has to be done carefully. Recognizing that my use of these findings is not more generalized than the way the original sources are used in the first place. I find it acceptable to do this. There is no attempt to interpret their conclusions further into detail.

The coinciding conclusions increase the credibility of my findings as general conclusions. However, we need to look closer at this. There are many pitfalls in generalizing findings from a survey. The data includes information which can be used to assess to what degree the conclusion has important limitations.

Influence of common sources of knowledge: Could it be that all the respondents are influenced by the same knowledge, indoctrinated with the same models and ways of thinking? All the authors of the referred books on mega-project are well known, and they have had much attention both in media and professional communities. It is expected that they are well known among several respondents, but only a small number of respondents are expected to be directly influenced by single sources. These are very senior, experienced experts with a multitude of influences behind them, and mainly based on their own experience. Other potential common sources of thinking are project management communities like PMI, IPMA, APM etc. Many of the respondents knows the books of knowledge published by these organisations, but the answers to the survey shows comprehensive understanding in a much wider area than execution of projects. Consequently this influence is of minor importance. A more important influence is probably the common way of western rational thinking embedded in all business and government in the west. This is accepted as a part of the basis for this report as well.

General geographical considerations: Almost all the respondents represent either Anglo-American countries or Nordic countries. These two geographical areas are well represented. The rest of the world is not. This means only highly developed, politically stable, rich, western, democratic, Christian dominated countries are covered. The common western business and government mode of thinking is mentioned above. Other indications of limitations are the answers that rules out chosen technical solution, negative ethic issues and changing society's priorities as less important. The answers to these questions may be expected to be different in other parts of the world.

This means anyone trying to transfer these conclusions to other regions of the world should exercise very careful considerations as to what interpretation the findings should have in the concrete setting. Supplementary surveys in these other regions of the world should be performed to document the differences in other geographical areas and cultural- and economic settings.

8.2 Comparison of survey results to literature on mega-projects

In the following we will look more in detail at the results of the survey compared to the six excellent books on megaprojects presented in Section 4.3, specifically the presentation in Table 4.1.

Table 8.1 Links between most important problems identified in survey and problems identified in mega-project literature

Problem identified in survey	Appurtenant problems/problem areas suggested in books on mega-projects (ref. Table 4.1)
Users' needs are unknown, misunderstood or ignored	<ul style="list-style-type: none"> - Trade-offs between groups (Peter Hall 1981) - Appraisal bias of the consultant and the project promoter (Flyvbjerg, Bruzelius & Rothengatter 2003)
The objectives of the project are unknown or misunderstood	<ul style="list-style-type: none"> - Project objectives and their validity (Morris & Hough 1987)
Conflict over objectives and/or strategies concerning the project	<ul style="list-style-type: none"> - Trade-offs between groups (Peter Hall 1981) - Influence of politics (Morris & Hough 1987) - Conflict between local support and central financing (Altschuler & Luberoff 2003)
Lack of commitment to the project from key stakeholders	<ul style="list-style-type: none"> - Opportunism and omission (Miller & Lessard 2000) - Government as sponsor, champion and owner (Morris & Hough 1987) - The public sector leadership role (Altschuler & Luberoff 2003) - Discontinuous behaviour (Flyvbjerg, Bruzelius & Rothengatter 2003)
Economic and financial benefits are low, compared to investment and operational costs	<ul style="list-style-type: none"> - Financial matters (Morris & Hough 1987) - Inflexibility in technologies (projects) (David Collingridge 1992) - Changes are costly and painful – inhibiting critical scrutiny (David Collingridge 1992) - Missing realization of complementary policies (Flyvbjerg, Bruzelius & Rothengatter 2003) - Cost escalation and underestimation (Altschuler & Luberoff 2003)
Business or other conditions change between concept stage and final delivery.	<ul style="list-style-type: none"> - Forecasting the future (Peter Hall 1981) - The problem changes over time (David Collingridge 1992) - Handling turbulence in project environments (Miller & Lessard 2000) - Unexpected changes of exogenous factors (Flyvbjerg, Bruzelius & Rothengatter 2003)

As Table 2 shows; mega-project literature has already indicated all the problems ranked as most important in the survey. However, none of the authors of these important books indicated all the most important problems and none of them indicated which ones were the most important ones. They all had different starting points and perspectives that made them focus some issues and omit others⁸. This also influenced the choice of words in all these books, which is why the connection is sometimes not obvious. The examples given in Table 2 are only some of the most obvious.

The problems leading to lack of relevance are indicated in the 'trade-off' problem identified by Hall, the 'appraisal bias' problem addressed by Flyvbjerg et al. and the 'validity of objectives' problem pointed out by Morris and Hough. The connection is clear and the identification of problems is precise.

⁸ This is not intended as criticism. Similar comments may of course be given to the current piece of work too.

The problems leading to lack of sustainability are indicated in a wide set of issues and typically less precisely formulated. Again, this confirms the more complex nature of the problem and the difficulty in giving precise answers on how to handle it. The conflict over objectives or strategies problem is linked to the ‘trade-off’ problem discussed by Hall, the ‘influence of politics’ identified by Morris and Hough and the ‘conflict’ issue addressed by Altschuler and Luberoff. The lack of commitment problem is linked to the ‘opportunism and omission’ problem in Miller and Lessard’s book, the ‘discontinuous behaviour’ problem shown in Flyvbjerg et al.’s book as well as the ‘public leadership role’ problem pointed out by both Morris and Hough, and Altschuler and Luberoff. Low economical and financial benefits is connected to ‘financial matters’ as pointed out by Morris and Hough, the ‘inflexibility in technologies’ problem combined with ‘costly changes’ found in Collingridge’s book, the ‘missing realization of complementary policies’ pointed out by Flyvbjerg et al., and ‘cost escalation and underestimation’ argued by Altschuler and Luberoff. Changing business conditions are connected to the ‘forecasting’ problem identified by Hall, the ‘problem changing over time’ as pointed out by Collingridge, ‘handling turbulence’ as argued by Miller and Lessard and ‘unexpected changes in exogenous factors’ according to Flyvbjerg et al.

This survey has confirmed the importance of these known problems and added clarity to the explanation of why these problems are important. The many connections between the survey and the literature on mega-projects also seem to support the notion that the answers in the survey are credible and viable.

But what about the problems indicated in literature on mega-projects which did not come up as the most important in the survey? Table 8.2 sums up the remaining issues from Table 1 not linked to the most important problems in Table 8.1.

Table 8.2 Summary of other problems identified in mega-project literature

Most important problems/problem areas suggested by books on megaprojects not identified in survey
- Human errors (Morris & Hough 1987)
- Implementation of results (Morris & Hough 1987)
- Limitations in human capacity to control and understand complexity (David Collingridge 1992)
- Decision making is not fully rational (Miller & Lessard 2000)
- Coordination and cooperation (Miller & Lessard 2000)
- Design of institutional frameworks (Miller & Lessard 2000)
- Applying the wrong method is a minor reason for forecasting failures (Flyvbjerg, Bruzelius & Rothengatter 2003)
- Poor data is a more important reason for predicting failures than methodology (Flyvbjerg, Bruzelius & Rothengatter 2003)
- The influence of complementary factors not included in predictions (Flyvbjerg, Bruzelius & Rothengatter 2003)
- Unexpected political activities (Flyvbjerg, Bruzelius & Rothengatter 2003)
- Lack of competence and experience transfer (Altschuler & Luberoff 2003)
- Handling complex networks of practices and roles (Altschuler & Luberoff 2003)
- Handling harmful side-effects (Altschuler & Luberoff 2003)
- Project financing models (Altschuler & Luberoff 2003)

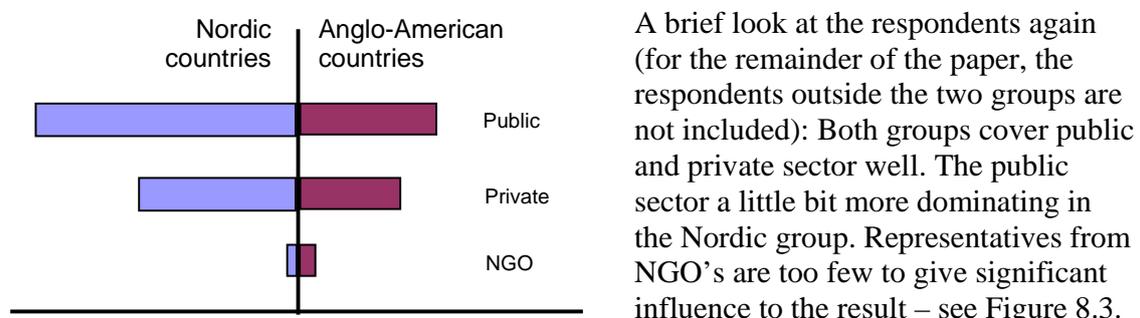
It is interesting to see what fell outside the result of the survey and consider why. One subject in Table 8.2 is too specific to be identified in the survey; 'project financing models'. All the others are represented in one or more answer alternative in the survey. Naturally they are formulated differently in the questionnaire and in some cases they come with other aspects attached. These just did not come up as the most important problems leading to lack of relevance and sustainability.

The remaining issues in Table 8.2 are typically crammed together in wide categories⁹. 'Human errors' and 'coordination and cooperation' are examples. These categories are too wide and loosely defined to be included in the questionnaire, they also cover cross-cutting issues which will influence all other aspects. They are absolutely relevant as explanation to why projects fail, but not useful as specific explanation to why we do not achieve relevant projects with sustainable effect.

In this research the problems in Table 8.2 are considered either too fundamental to be identified as the cause of specific effect we are looking for here, or just not the most important problems leading to lack of relevance or sustainability. Still; the problems in Table 8.2 are very important issues and has to be considered carefully when forming an improvement strategy for a governance framework.

8.3 Generalizing within the developed western countries

Next question is whether there are limitations to the use of these findings within the geographical area covered by the panel of respondents. The respondents are divided in the two mentioned groups because of the characteristics of the countries in question. The Anglo-American group represents large, world dominating economies. In this geographic area, the market-orientation is the characteristic of the public sector and shareholder value models are the characteristic of corporate governance. The Nordic group represents small, rich countries. In the Nordic region responsibility of the state characterize the public sector and communitarian models characterize corporate governance. The two groups are considered to be adequately homogeneous.



A brief look at the respondents again (for the remainder of the paper, the respondents outside the two groups are not included): Both groups cover public and private sector well. The public sector a little bit more dominating in the Nordic group. Representatives from NGO's are too few to give significant influence to the result – see Figure 8.3.

Figure 8.3 Respondents divided in sectors.

⁹ The keywords in Table 1 are chosen by this author and can not give full justice to the excellent work of the authors of six books. In the original sources there are plenty of details and considerations.

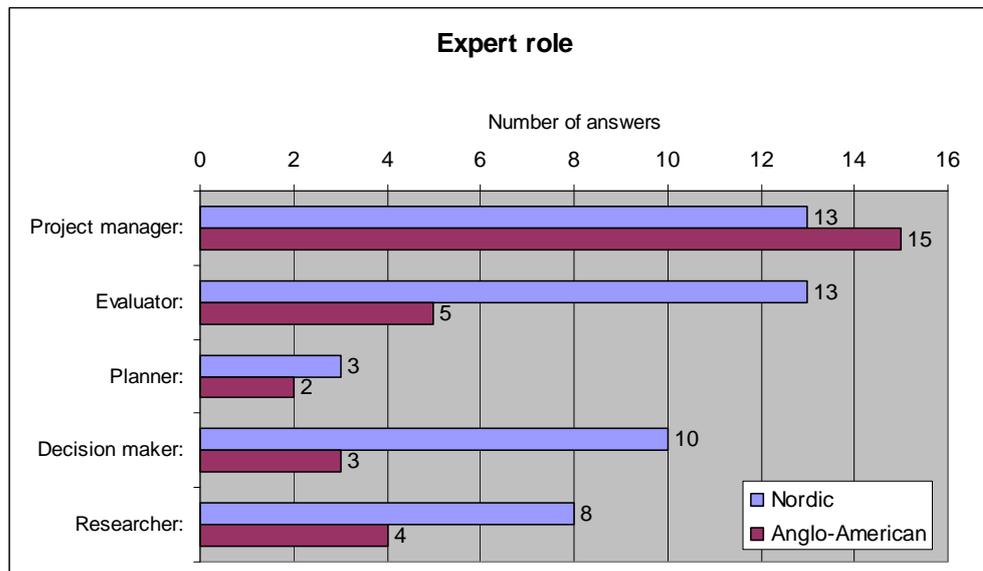


Figure 8.4 Representation of expert roles in the respondent panel

Looking at the representation from different expert roles in Figure 8.4, there are some important features. The most important is that there is not enough decision makers in the Anglo-American group to draw any conclusions based on this group alone. This is the weakest point in the survey. The project planners are also too few in both groups, but this is considered of less importance. The Nordic group is balanced between respondents directly involved in projects (project managers and project planners) and respondents assessing projects from the outside (evaluators and researchers). The balance in the Anglo-American group is skewed towards a dominance of project managers. This tendency is not strong enough to obstruct the comparison between the groups, but it is an indication that further sub-division does not give strong conclusions.

The answers shown in Chapter 7 of this report have been systematically compared between the two groups in order to identify any significant differences between the two geographical groups. The purpose is to find any indications available that the judgement of the questions in the survey is different according to which area or sub-group the respondents come from.

The findings are summed up in the following (details shown in Appendix B):

Relevance:

- The same problems are considered most important. Identical profiles in the answers from the two groups.
- The same reasons are considered to be most important, but with the Anglo-American group giving a more uniform (clear) priority to which reasons are most important. This is believed to be due to the dominance of project managers in this group.

Sustainability:

- The same problems are considered important, but clearly there is more emphasis on ‘financial benefits are low compared to investment and operational cost’ and ‘changing business conditions’ in the Anglo-American group, maybe also towards a more dynamic, faster changing economy in these countries. This is believed to come from the stronger market/shareholder perspective in these countries. The Nordic group is more uniform in pointing towards lack of commitment from key stakeholders. The differences are just nuances; it does not imply genuine differences between the groups.
- The same reasons are considered to be the most important as well, but also here are some differences. The Anglo-American group has a uniform priority of neglecting/not solving conflict over priorities and planning optimism (overstating benefits) misleading the decision makers. The Nordic group is similarly clear on the issue of planning optimism (understating costs). See also comments given in Chapter 6.

Dividing the answers into sub-groups according to expert role is also done. This gives indications that the decision makers tend to see things a bit different than the others. This is hardly surprising, but the numbers of respondents in the decision maker group is too small to give any strength to this conclusion. The same sub-analysis show indications that the two other groups; respondents directly involved in projects can be seen as the other extreme, as opposed to the decision makers, and that the respondents looking at projects from the outside gives answers somewhere in between the two previously mentioned groups. Everything looks exactly like we would expect. But, again I make clear reservations. These are credible indications, but not strong enough to prove how these groups think. By performing supplementary surveys in the same respondent groups, it will be possible to strengthen the body of evidence.

9 Challenges – a practical interpretation

The most important problems are identified as the following:

Relevance:

- The users' needs are unknown, misunderstood or ignored
- The objectives of the project are unknown or misunderstood

Sustainability:

- Conflict over objectives and/or strategies concerning the project
- Lack of commitment to the project from key stakeholders
- Economic and financial benefits are low, compared to investment and operational costs
- Business or other conditions change between concept stage and final delivery.

Underlying reasons for these problems are also identified and discussed above. In this section, a practical interpretation and discussion is included. The background for this discussion is the authors own experience and the contribution from 6 experienced respondents in interviews.

9.1 On the issue of Relevance

Users' needs

The survey clearly says the users' needs are unknown, misunderstood or ignored. The most important reasons are shown in Table 4 to be;

- Users' needs are ignored by planners and decision makers due to political or personality reasons
- The way the users are asked/participate in the planning process gives the wrong answers/does not unveil the needs

A majority of respondents point to needs being ignored. 'Ignored' implicates planners and decision makers do know about them, but they do not take them into consideration. As interviewees correctly pointed out; it does not apply when the planners and decision makers, for the sake of affordability or other matters of society, plans and decides something else (typically a scaled down or reduced solution). Ignoring the users' needs for political reasons may be interpreted like this: there may be political considerations; economy, prevailing priorities or previous decisions made which influence the project. Taking this into consideration would not be ignoring – this is an important function of the decision making process – a necessary control of planning assumptions. The important question here is how clear the process is; who should actually exercise this function? Should it be down to the planners, reviewers or decision makers? Such transparency of the process is important. The nature of the individual roles is not discussed further here.

To be realistic – some of the respondents may have been mistaken and pointed to the situation where users wishes (identified as needs) are over-ruled in the planning process. This may be felt as a major problem to respondents in direct contact with end users. In this group of respondents the project managers are the most likely to be in such a position. Similar signals may also come through from the lower level of administration where this contact is stronger, up to the level of the individuals in the respondent group. However, the material does not include any pattern suggesting one group of respondents (representing any particular role) gives this answer – they all do. There is no reason to believe many respondents made a mistake. They actually think users' needs are ignored.

How is it possible that users' needs actually are ignored? The immediate interpretation of the survey is that planners and decision makers DO ignore users, because of political or personal reasons. This conclusion is disappointing but not unrealistic. The words political and personal may both indicate egoistic motivations. It may be due to the planner or decision maker putting more emphasis on achieving their own political or personal objectives than those of society and the users. This is not legitimate and should be met with control measures and/or sanctions.

This situation indicates roles are mixed up. There are difficult grey zones between personal conviction and societies prevailing priorities – for instance in planning projects with large environmental impact. The planner 'ignoring' the users stated preference in order to save a piece of the environment may be convinced he or she is right, and even objectively be correct about it. When are the individual to be considered a concerned citizen, an objective planner or a political individual? Again, the way to avoid it probably goes through clearer roles and process.

This line of reasoning should also question the correctness of the users' needs as they are measured, defined or described in the needs analysis or other documents. Maybe the planner or decision maker is the one with the best information, knowledge or perspective? How good or accurate is this important basis for planning? The problem may stem from a faulty measurement, misinterpretation or other misunderstandings. This brings us to the second most important reason for users' needs being unknown, misunderstood or ignored: The way the users are asked/participate in the planning process gives the wrong answers/does not unveil the needs.

In order to have a good basis for planning relevant projects, there is obviously a need to know the users' and society's needs. Failure to achieve this, opens up for at least two possible processes; the faulty needs are used for planning – resulting in a less than optimal project – or the problem of getting the basis right is left to the planners. The last option may come out good in some cases.

There is obvious reasons to look at the participation process, how users and the society is invited to take part in the planning process. There are indications in the material that the users are not even asked about their needs. In some countries and situations this may be the case. They should be. The projects in question are of a nature that certainly calls upon listening to the user and their needs, and those of society at large. This participation may

be limited to stating their individual opinions in general elections, polls on issues relevant to specific topics or projects, responding to public planning document hearings or more extensive participation on the planning process like being part of user groups etc. In further discussion only participation directed towards the specific project is included. The need to increase awareness of this user participation and to improve the participation processes are strongly confirmed in the survey.

The most important indication in the material is probably the message that the process is badly designed (gives wrong answers). The key is probably found in the message that the users are not able to express what they need – and that the planners are not competent enough in understanding the users needs/answers. These two combined tells a story of a wide communication gap.

There are three ways to contribute to closing this communication gap: educating the planners, educating the users' representatives and designing a better process. All these strategies probably have to be used to close the gap completely. One of the answers given in the free text part of the survey on this question illustrates an important aspect of the problem: *'Users' needs are presented in a form of definite solutions instead of functional requirements, and thus ignored because of conflicts with other issues'*. How can the process be designed to make sure the functional requirements comes out as a result, given the users' inherent wish (and 'need') to discuss the definite solutions? The decision makers will surely be confronted by users and project vendors selling the definite solution, not the underlying needs – how can the process be designed to handle this well? What kind of education/information do the users need in order to be constructive participants in the planning process? How can the planners make sure the decision makers (and users) understand the 'other issues' mentioned by the respondent? These challenges to the planning community should be subject to further research.

Objectives

The second biggest problem concerning relevance is; the objectives of the project are unknown or misunderstood. Behind this problem a couple of important reasons are found. The most important one is that the objectives of the project are not stated at all, or are expressed in a very unclear manner. This describes the typical situation in Norway before the QA Scheme was introduced in year 2000. The described situation is highly realistic where similar actions have not yet been taken. However, the majority of respondents are from countries where such measures are actually taken a few years ago (Norway, UK) and this survey says the problem has not gone away. This can be seen as slightly surprising.

Definition and formulation of goals is a very difficult task. This may be the most common reason for this problem. Maybe it is just a too difficult task for the ones responsible for doing the job? There are many guidelines available on how to do it, but the practical performance is still not satisfactory. In this case the answer probably lies in better education of planners to be able to define and formulate better goals. In this case the problem is probably also related to the 'understanding the needs' issue above. How

can good objectives and goals be formulated if the understanding of underlying needs is not satisfactory?

The above covers the situation where the objectives are existing, but unclear by lack of competence. Maybe the most common problem, but is it the most important one? What about situations where the objectives and goals are non-existent or unclear by intention? What may be the motivation behind not expressing the objectives clearly?

One suggestion might be that an unclear goal gives room for interpretation. Room for interpretation gives room for many meanings and consequently is easier to agree upon than clear goals. This is obviously a factor in the political decision making process. After all, the proposal to make an investment in a public project is a part of the fight over limited resources. In the political process of prioritizing issues and funding of new initiatives, there is a need for winning the debate and finding allies to back up the decisions with enough votes. Normally that means, in a democratic system, to ally with other parties. For an ally to be possible, the objectives have to be open enough to comprise solutions that both parties want. In practical terms a similar force is found in the network of allied stakeholders backing up an initiative for a new public project. They also have to find or build a common platform.

Being too specific about the objectives and effects may cause the process to slow down or even stop while the differences are discussed and a way ahead is found. Due to the human nature it is always a tempting alternative to skip this process and instead put the project forward without clear objectives, letting every stakeholder interpret the initiative in their own image. This keeps 'everybody' happy – for the time being. It is a short-sighted strategy – but not uncommon. Facing the differences early may wake conflicts and risk that the project faces problem at the outset. We will get back to this later, but for now; this is probably the most important reason why objectives are missing or left unclear and thus misunderstood.

There is also the 'hidden agenda' issue. If the stakeholders behind the project initiative have other objectives than the ones acceptable or purposeful on public display, they might prefer not to express them openly. This may be the case both on organisational and individual level. It may be perceived as less deceitful not to express clear goals than to express clear goals only to build an acceptable facade behind which the real agenda can be hidden. Anyway – there is a need for critical scrutiny in the planning process to make sure the real agenda is revealed as far as possible.

Could there be other motivations behind leaving the objectives hidden or unclear? From an operational point of view this may be seen as a way of increasing the probability of success; if the goals are unclear or missing, you have a good chance of not being accused of failing to deliver. This kind of bent logic is the one that is easy to fix, and has been successfully removed by the Norwegian QA Scheme and other governance frameworks where goal formulations are controlled by external reviewers.

The second most important reason for objectives being unknown and misunderstood is that the decision makers do not understand the planners' formulation of goals and objectives. This is a question of competence both on the decision makers' side and the project planners' side. The planners must be made competent to express and formulate clear goals and communicate them well, as mentioned above.

The decision makers also have to be made competent to understand the goals and objectives presented to them. This raises two important issues: How much specific knowledge can we demand the decision makers to have? And if there is limits in the decision makers ability to understand the objectives and goals – are they then the right people to make the decisions?

The answer to the first question is that there are limits to the decision makers' specific competence. As far as political decision makers go, this will always be the case, and there is nothing wrong with that. The objectives are after all the easy bit – not the technically specific and complex part of the project description. They are supposed to discuss effects and priorities – not the technicalities of the solution. But if they have difficulties even in understanding this level of the discussion, they are not qualified for the job they are elected to do. In such case the question is how to make the political decision makers able to understand – what kind of educational or information measures should be taken? This might be an interesting issue for further research.

As far as professional decision makers and project planners go, these are personnel in a professional organisation and have to be qualified both in a theoretical and practical understanding of the relevant issues. In this case this is a question of qualification within the organisations area of responsibility. This would certainly be a responsibility of the upper level management and HR department of the organisation. This subject is not pursued further here. It is obvious the professional parts have to qualify for the tasks they are appointed to perform, and their education has to cover relevant issues, including those of defining and communicating goals.

Having said all that; can nothing be done to improve the situation by changing the process in which the objectives are defined and goals developed, making the communication easier for both project planners and decision makers? Surely there has to be, depending on what state the current process is in of course. The following comments are based on experience from Norway where the openness of these processes is well developed and involving the stakeholders is normal procedure.

Starting with the project planning process; involving users and stakeholders is pretty obvious given these are the ones that hold the basic needs and priorities on which the project should be based. Bringing the decision makers closer to the process so that they are able to understand better the background of what they are presented is one option. This strategy is effective on the problem described above, but has its disadvantages. Experience show that the decision makers are reluctant in order not to commit themselves before the real decision is to be made. This is a relevant concern. Only where the roles and the process are very clear will it be advisable for decision makers to be closely in

contact with the planning process at all. Another experience from such processes is that the users and project vendors do not handle the situation well when being involved in a process where decision makers also appear. Instead of contributing to the identification of needs and development of goals they start selling solutions to the decision makers. Even in well designed processes with well qualified facilitators these processes are difficult and often fail.

There are two separate and important processes here: The project planning process and the decision making process. A main issue is NOT to MIX these. Mixing or confusing these processes are a fatal flaw in any system. This point back to the practical problems mentioned above; when decision makers come too close to the planning process the other stakeholders tend to forget that this is planning; testing alternatives and optimizing assumptions – not making decisions. Therefore they start acting like project vendors in the planning process. In some cases this may be the only time they actually meet and can influence the decision maker, and they grab the opportunity.

This points to the importance of stakeholders, users and the general public having an opportunity to participate in the decision making process as well. It is as important for them to know they are heard in this process as in the planning process. But let's face it; what is the most common practice when inviting the stakeholders and general public to involve in the planning of public projects? It is inviting to some sort of public hearing and mass meeting where both project planners and decision makers appear. Intended or not – this creates an unclear situation. The participants does not know whether they take part in a planning process or a decision making process, and to them it does not really matter, because they are not much interested in the options but very much in the result. To them this is an opportunity to influence the development and be heard. It creates an arena where project vendors have an easy mach against the decision makers – anything they say in such settings are perceived as a binding commitment. Any failure by the politician or public leader to follow up on what they say in such meeting will be used by the public to criticise them later. There is obviously a need for better definition and understanding of the different roles and processes if this is going to work. Methodological development to overcome these difficulties would be a good contribution in any setting.

Means of improvement to achieve relevance

As mentioned above, one main improvement issue for achieving relevant alternatives being developed is the strengthening of the governance framework including clarification of processes and roles, increased scrutiny and control. In the survey this is identified as supporting means to improve the probability of success in public projects.

The corrective actions proposed in Table 11 are directed specifically towards relevance and are well aligned with this practical interpretation. The respondents seem to have a similar practical experience as the author. This is also confirmed by the interviews. Two examples from the free text answers illustrate a) a structural rational approach, and b) a process focussed approach. This sum up how to improve the relevance of projects:

- a) *'More comprehensive studies of the user's real needs. More initial decisions based on thorough, documented studies and less on management decisions taken in meetings based on Power Point presentations. More sophisticated rules to decide the need for thorough front-end planning.'*
- b) *'Spend more time at the front end sharing understanding, objectives, agendas to reduce ambiguity in goals and goal-paths, reveal existing power structures and achieve stakeholder buy-in. Spend more time generating multiple robust solutions rather than allowing analysis of few solutions too early in the process'.*

9.2 On the issue of Sustainability

Conflict over objectives and/or strategies

The survey says that conflict over objectives and/or strategies concerning the project is the most important problem related to lack of sustainability. The most important reasons are shown in Table 7 to be;

- Neglecting/not solving conflict over priorities among key stakeholders.
- Neglecting powerful interacting organizations/ individuals in opposition to the project.

These two issues are clearly related but still somewhat different. The first one concerns conflict within the core group of stakeholders – the ones that are positive to the project and a part of its supporting network. The second one concerns stakeholders in opposition to the project, and specially those in a powerful position. These are of course the ones able to do something to cause problems for the project.

This problem complex goes down to effects of human nature. Most people do not like to be part of a conflict. Avoiding conflict is for most people the more favourable strategy over facing it openly. To some people this may seem to be a personality weakness – but it is not. Of course it is useful to be able to face the conflict, but it has to be done with caution. A strong, forceful strategy may be able to solve the conflict in some cases, but in most cases this will make as much damage as it solves problems. The key to success is to understand how to avoid conflict and make the different parties meet in a process to develop the best possible strategy for the way forward. There is great improvement potential in implementing good processes and role models for handling this.

There is a need for processes and tools supporting strategies based on careful considerations of each stakeholder, their attitude towards the project and their position in relation to power and influence. These processes and tools exist. Stakeholder analysis and stakeholder management is not a new invention – but it is still not fully utilized in practice. Implementing such methods improves the chance of avoiding the conflict and build a common platform for the project. If there is a deep conflict over priorities, most people will be able to act constructively in accordance with a well designed and purposeful dispute resolution process. Such methods exist too, and should be

implemented when appropriate. Systematic methods and tools are useful. However, the choice of persons to represent the different parties is an important influence on how the conflicts are initiated, develops and can be handled. Improved methods and tools to put together the right people in these processes may be an interesting research issue.

Both the two important reasons for conflicts threatening sustainability are unnecessary and should be dealt with professionally. Both are signs of system failure. The first one is the most dangerous and critical because it threatens the project from within. When there are conflicts over objectives and/or priorities among the key stakeholders, this has to be sorted out before the project proceeds. If the conflict is neglected it will not go away, but resurface later in an even stronger form. The roots of the conflict have to be dealt with before the conflict has a chance of growing into ungovernable proportions. It is much easier to handle early before too much prestige is invested in the solution. The risks of having an early conflict are; one or more stakeholder withdraws from supporting the project, the project may have to go back to the start to find a stronger fundament losing progress but gaining other qualities, like sustainability. The risks of not taking the necessary time to solve it in the start is; devastating conflicts at a later stage taking focus and resources away from the planning and execution, stakeholders leaving the project at a later stage leaving a hole in its fundament that is difficult to repair, and worst of all; the risk of ending up with an output that the stakeholders does not like and may even abandon it. This way the long-term commitment breaks down or fades away. This risk is much more severe to the success of the project than the minor risk of facing the conflicts early.

The second reason is pointing towards stakeholders external to the project and thus has to be handled differently. This may point towards a political conflict where the power basis of the different stakeholders may be decisive. In other cases the conflict can be solved by compensatory measures. Such should be planned into the project early – if not they will be costly and cause delay when they come as changes. Methodological measures mentioned above may of course be useful also in this context, but the solutions to these conflicts are highly situational and difficult to handle with methods like the ones described above. In this case the solution primarily lies in having capacity and skills to handle the tactical and communicative challenges that arise.

Lack of commitment to the project from key stakeholders

The main reason for lack of commitment is not identifying the project has weak support in its owner- and financing organisations. This may be the result of a conflict as described above, or it may have other underlying reasons. These can be described as changing focus in the owner and financing organisations over time, the strong urge always to make new initiatives.

The first issue points to the basic difficulty of handling the changes occurring in a long time perspective. Even when there is no conflict over the project objectives, strategy or solution, the stakeholders are always moving on. Their business strategies and technological possibilities always develop further. They grow out of the projects they

have invested in earlier. This is a natural development and should thus be an important issue when deciding on future projects. In this field improved methods to look into the future and foretell trends and developments will be most helpful. Other strategies may include building flexibility into the result of the project so that it is able to develop with the changes and stay relevant also in a changed situation. How to do this is an interesting research task which has been studied in several types of projects like for example hospitals. The third way is to lock the stakeholders to the mast and throw away the key. This may be seen as a way of saving the current investment project, but it would risk the stakeholders to go down with the ship as it sinks. It would certainly not stand out like a good strategy for developing good, lasting relations. It is a short-sighted strategy.

The second issue here is the fact that some decision makers (and other stakeholders) do not have the long term effect as their real objective. One of the interviewees gave this example, referring to the situation in Norway; *'they [politicians] do not care about having best possible roads – they want to build new roads'*, suggesting that if they did care for best possible roads they would spend more money on maintaining the ones already built. New roads have much larger potential of attracting voters. This kind of effect creates a situation where the stakeholders hastily move from one initiative to the next one, before even considering whether the effect of the previous one was as intended. The initiation of new projects becomes a means of achieving a self-centred goal, not primarily a means of reaching the objective of society. Building monuments over them selves is a metaphor that springs to mind. Developing better knowledge about the real objectives and how to identify those would be important contributions to improved governance of public projects.

Economic and business assumptions

There are two problems pointed out to be the most important economic and financial issues when considering sustainability. Here these two will be discussed together since their root causes are similar:

- Economic and financial benefits are low, compared to investment and operational costs
- Business or other conditions change between concept stage and final delivery

The most important underlying reason for both is the planning optimism, Tables 9 and 10. The overestimation of benefits and the underestimation of costs are a major cause of projects not being sustainable. Many researchers and practitioners have pointed this out based on their own experience and prove from empirical data. This problem has been subject to studies and methodical development for many decades, but still it refuses to go away.

Previous studies have pointed to the decision making process as a main explanation. Costs are underestimated and benefits are overestimated in order to convince that this project is better use of investment funds than the alternatives. All projects have their sponsors and project vendors arguing hard to make sure their project is accepted and

chosen over others. In a way one could say that the most successful liar wins the game. This is probably still the case in some cases and in some countries. The explanation is still credible, even though this issue has had lots of attention and certainly some corrective actions have been made. There are room for more methodological development to be done to prohibit deliberately misleading estimation. The optimal structure of and motivation in the decision making process to avoid this problem is also interesting research topics.

Accepting most people actually want to do the right thing and the fact that most individuals know planning optimism is a bad thing, there is reason to believe much of the planning optimism is not deliberate. Research has pointed out several psychological effects that can be associated with the planning optimism. It is human to make mistakes and this will continue also in the future. Improved estimation methods and better education of the individuals making the estimates are key elements in improving this situation. Stronger control measures may also be an important contribution. The research in this field has developed several suggestions for improvements that are still not implemented fully – there still is great potential for further development. However, there is no reason to believe the problem will disappear in the near future.

The answers to this question of the survey (See Table 9) reveal two other important issues; bad cost effectiveness (efficiency) is accepted. This is also highlighted through the following statement from the free text answers: *‘Public sector investment includes a notion of fairness and equality, facilities are created to avoid claims of exclusion and to placate local aspirations.’* This describes both the building of monuments mentioned above and the fact that other criteria may over-rule the effectiveness as decision criteria. This is important to understand. Society’s objectives may not always be measured in effectiveness – as this work is also an advocate for; holding relevance and sustainability to be the most important criteria over efficiency, effectiveness and impact.

A more critical comment is needed to the observation that alternative use of the money is not analyzed. The reason for this is not studied in this material but may include that the decision makers and planners may have decided upon which alternative to promote before analyses are made. This is against good practice of planning and rational decision making. The respondents in this survey to a large degree advocate for increased use of rational models, analysis and assessments. As long as there is still room for approving projects without considering alternatives, there still is a lot to be done to clarify requirements and expectations in the planning and decision making process.

One comment made by interviewees also point to the quality of analyses made in major projects, specifically the Life Cycle Cost estimations and Life Cycle Profit analyses. The interviewee stressed that *‘everyone says they put lots of emphasis on them, and they say they are good at it – but when you look closely, they are not good at all.’* This authors experience points in more or less the same direction, although not quite as sharply as the interviewees comment. Lack of good data from the operation phase is one problem, but even more critical is the lack of analysis of how good the basic assumptions of the

estimation might change; how robust the analysis is. Just by putting more effort into these existing analyses improvement could be found.

One interesting aspect of reality in this problem complex (see Table 10) is that handling the external uncertainty – like the changing business setting or changing political and administrative setting is concluded to be less important than the relatively technical and internal problems related to planning optimism. This gives some cause for optimism. These are problems for which there is a significant degree of possibility to cure.

Means of improvement to achieve sustainability

As mentioned above there is significant improvement potential in utilizing methods and tools that already exist, together with the improved gathering and use of data. It is, and will always be, a challenge to foresee what is going to happen in the long time perspective. This will never be an easy task. This discussion is not taken further here.

The interesting observation when studying the answers from 80 senior experts responding to the survey is that they are not able to be specific about how to improve sustainability. Their suggestions are general in form and give a lot of good, but ordinary, almost self evident suggestions. It seems like they are just as uncertain about sustainability as any person. To this author this is not surprising – the problem is so complex that nothing will sort this out alone and everything is relevant somehow. The leader of the 1987 UN World Commission on Environment and Development, Gro Harlem Brundtland, once said something like *‘everything is connected to everything’*. This describes the fundamental challenge. The answers to the survey fit well into this setting.

Here are some examples from the original answers:

- *‘Plan from a contextual holistic standpoint, include all stakeholders, make sure there are clear implementation and follow up procedures.’*
- *‘Understand the end user environment and particularly if that is the general public. Look at scale of throughput and avoid complexity unless we understand it is a specialist environment and training can be provided. Make sure maintenance is affordable and through life costs are understood.’*
- *‘Greater scrutiny and reporting should generate more awareness and more open, honest discussion of investments and the allocation of funds (i.e. different investments) to communities or interest groups. The active co-involvement (ideally co-ownership of the decision and its consequences) of communities and users should ensure that investments that generate lasting benefits are favoured.’*

The original answers to the question what to do to achieve sustainability mostly point to the strengthening of the governance framework: taking more time to think and analyse, strengthening scrutiny and control, openness and clarity of processes and roles, having a long time, holistic perspective. These are obviously important and relevant to sustainability (as well as all other success criteria).

Table 12 shows the more specific answers pointing directly towards sustainability. Summed up briefly the conclusion would be something like this:

- Contextual, holistic planning must be the norm, and sustainability has to be made an important criteria.
- Make sure all costs and benefits are realistically assessed and known to all stakeholders from the beginning.
- Clarify the objectives with all stakeholders in a thorough, involving process from the beginning and make reviews of the objectives and expected benefits through the whole process.
- Build in flexibility to change during execution and operation and continuously look for opportunities to include added benefits.

Not to forget the main point from the discussion above; face the conflicts early to make sure the basis for long term commitment is strong enough among key stakeholders.

Another important point made by several respondents; achieving relevance will also promote sustainability because it makes the stakeholder willing to commit more.

10 Conclusion and further research

The most important challenges in the front-end of major public investment projects

Achieving relevance and sustainability is considered to be more important than any other criteria in this strategic perspective. Success is to develop relevant projects with sustainable effect. In order to do that, governance of projects has to include instruments to make sure the following problems are handled well in the front-end of projects:

Relevance:

- The users' needs are unknown, misunderstood or ignored
- The objectives of the project are unknown or misunderstood

Sustainability:

- Conflict over objectives and/or strategies concerning the project
- Lack of commitment to the project from key stakeholders
- Economic and financial benefits are low, compared to investment and operational costs
- Business or other conditions change between concept stage and final delivery

The root causes of these problems have to be challenged, and should call for improved ways to define and design major public projects. When these matters are tended to, other matters deserve top-priority.

What to do about them

Public projects have to be planned and executed within a governance framework which includes a structured decision making process and critical scrutiny as well as professional standards for management. The suggestions from this survey are focused on control, but also positive incentives and information should be considered. The proposed actions from this study should be included in developing the governance framework for public projects, or in processes to improvement existing frameworks.

Relevance

Most important actions to avoid users' needs are unknown, misunderstood or ignored:

- Improve methods for mapping of user needs and political needs.
- Design the participation process well and prepare users and stakeholders to participate.
- Involve users and stakeholders in a systematic process.
- Make sure there is no accept or room for ignoring users' needs.

Most important actions to avoid objectives of the project are unknown or misunderstood:

- A thorough process to involve users, client and project in defining objectives.

- Formulate clear objectives. Inform users about the intentions, the purpose the project can serve and which needs it will fulfil.
- Ensure all have common understanding of the project goals.
- Educate the decision makers to understand the planners' formulation of goals.

Sustainability

Most important actions to avoid conflict over objectives and/or strategies:

- Clarify objectives concerning sustainability.
- Explain and argue the choice of criteria used to evaluate.
- Ensure all stakeholders understand (up front) what success looks like, and how that success is to be maintained and increased.
- Build in flexibility to change the extent of project during delivery and the possibility of covering more or other objectives after delivery.

Most important actions to avoid lack of commitment from key stakeholders:

- Inform decision makers about maintenance and environmental cost.
- Secure commitment from the policy-makers, government leaders, community (business community and lay person) and investors/financiers.
- Continual review of expected benefits in the planning stage considering all relevant stakeholder concerns.

Most important actions to avoid economic and financial benefits being low compared to investment:

- Contextual holistic planning; weighing of sustainability and its bearing on the bottom line.
- Continual review of expected benefits in the planning stage considering all relevant stakeholder concerns.
- Calculate the benefits to reflect what really can be achieved

Most important actions to avoid business or other conditions changing between concept stage and final delivery:

- Plan for resources needed to maintain and operate the investment in the future.
- Require an independent view on sustainability before major projects are funded beyond key gateways.
- Generate more awareness and more open, honest discussion of investments and the allocation of funds.
- Calculate the costs to reflect what really can be done.
- Challenge all statements made early in the process.

These are the most important corrective actions in a generic case. In each actual case, what is really most important depends on the starting point – the status from which the improvements are proposed. This may give very different results according to the specific setting and context.

Credibility of the findings

The results shown in Chapter 6.3 on the most important problems and root causes leading to lack of relevance and sustainability' and Chapter 7.5 on what to do with it are concluded to be credible and reliable. The rigid systematic development of the questions, the strong response group in the survey and the verification by comparing with the findings of major books on mega-projects gives basis for this conclusion.

The results are viable for developed, stable, democratic countries of the western world. Transfer of these conclusions to other regions of the world should only be exercised very carefully, and considering the concrete setting in each case.

There are some nuances and small differences between the answers from the Anglo-American group and the Nordic group, but these are minor. The conclusions stand for both groups and the answers are representative for both groups.

The conclusion covers major public investment projects and focuses front-end challenges expected to be important across all kinds of projects. Also private sector is strongly represented in the response group. They were all asked to use their experience to answer in the context of public projects, but there is no reason to believe the conclusions can not be, to a large extent, transferred also to private sector.

The special organizational and governmental arrangements in public sector differs from private sector, thus some caution should be taken.

To what extent the results can be viewed as permanent, stable over time is unknown. The identified reasons and appurtenant actions do not seem to be based on short term problems or initiated by special events or developments. There is reason to believe these conclusions are relatively stable.

Further research

This survey has given some interesting and valuable supplements to previous research in this field. But there is more to be done. As shown in Chapter 8 the answers in this survey does not necessarily apply to countries or regions outside the western developed countries. It would be interesting to do similar surveys in countries clearly different from the ones represented in this study. Developing countries in the third world, the emerging economic super-economies (China, India, Brazil, Russia, South Africa etc.), the Central and Southern Europe could also give interesting views on the same matters. As mentioned before – different answers are expected to some of the questions. Other answers are expected to be verified in such surveys.

The analysis of sub-groups, different expert roles etc., would also be interesting. Given a larger group of respondents from some of the expert roles in the survey – especially project planners and decision makers, it would be possible to prove the intuitively

sensible difference in opinion about some of these questions, due to the respondents degree of involvement in the projects.

A third important line of further research points further down into detail on the reasons for failure and corrective actions proposed in this survey. Any of the main aspects touched upon in the answers from this survey may be of interest. The following potential issues should be considered, based on the findings in this survey;

- the interaction between politics and public projects,
- the design and establishment of governance frameworks,
- understanding long term user- and society needs,
- the definition and use of objectives in projects,
- realism in estimation and planning,
- the balancing of rigidity and flexibility in management,
- handling of complexity and uncertainty,
- contracts and conflict handling,
- realization of benefits and values from projects.

Within these areas there will be a multitude of detailed questions and effects still not well understood in all settings and situations actually experienced in real life – in major public investment projects.

A concluding remark

As pointed out by Remington & Crawford (2004) - referred in Pollack (2007) – there is an emerging discomfort with notions of control through pre-determined outcomes. The result of this study adds to this discomfort if it is interpreted to say needs are impossible to analyse, objectives are too fluctuating to be of any help, conflicts can not be solved etc. This is not the intention. By the help of these findings a targeted improvement is possible and realistic.

The discomfort may be interpreted even wider – as a critique of the very basis of western business thinking; the rationality and causality which business and government are based on. This author acknowledges the flaws and shortcomings of this basis, but will argue there is no known better platform for further improvement. Actors are dominantly rational and without some causality successful governance would be impossible. We should not throw away the good sides of this basis, but build on them.

On the other hand we need to acknowledge the fact that there is, and always will be, elements of irrationality and complexity we can not comprehend no matter how well we analyze and how deep our knowledge goes. Therefore supplementary perspectives and alternative actions should always be considered.

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Appendix A: The questionnaire (part 1 and 2 of 3)

14/09/2007

A survey:

Challenges in the Front-end of Major Public Projects

This survey is a part of a PhD research project which includes examining problems in the front-end planning of major public projects. Creating maximum value from the available resources and funds is an important but difficult task. What can be done to achieve this, and avoid or counteract common problems?

This PhD project is supported by the Concept Research Programme at NTNU (Trondheim, Norway). The Concept Research Programme is initiated and financed by the Norwegian Ministry of Finance.

The results of this survey will be used in several studies and published internationally. By answering these questions, you also accept that I may use your answers in the scientific analyses and that I also reserve the right to publish the findings. All respondents will be kept anonymous.

The survey will take approximately 20–30 minutes to answer.

Thank you for your time

Ole Jonny Klakegg

Introductory texts and questions follow on the next pages.

Printed version:
Printed on both sides of the paper

Please return completed questionnaire to:

Ole Jonny Klakegg
School of Management
University of Southampton, Highfield
Southampton
SO17 1BJ
UK

General information

Information about the respondent (Tick the relevant box – only one in each category, except 1.6):

1.1	Gender	Male:	
		Female:	

1.2	Age	Below 35:	
		35 – 55:	
		Over 55:	

1.3	Main sector of experience	Public:	
		Private:	
		Non-governmental organizations	

1.4	Your expert profession/role	Programme - /Project manager:	
		Project evaluator:	
		Project planner:	
		Decision maker:	
		Researcher:	

1.5	Number of years experience in your expert profession/role	Below 5:	
		5 – 10:	
		More than 10:	

1.6	Main experience from what type of projects	Building and construction, physical infrastructure	
		Organizational change and ICT projects	
		Procurement and military equipment	
		Industry, offshore and shipping	
		International aid projects	
		Research	

1.7	Country (fill in)	
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Part 1: What are the most important problems that occur when a major public investment project is defined and designed?¹⁰

Major public investment projects are often large and complex compared to other projects. This survey covers the early (front-end) planning and decision making. By focusing on the most important problems in the front-end phase, it is hoped that we will be able to identify the most important reasons behind unsuccessful projects.

From the start, every public project should be based on the needs of the users and the society at large, and should aim at gaining intended benefits or effects after completion. In order to cast light on this, the present survey is investigating important aspects of the decision making process. The survey is not aimed at management issues in the operational phase. This survey focuses on two key issues: relevance and sustainability. Definitions/explanations of terms used are found in Appendix A: Definitions.

Relevance

Relevance refers to whether the chosen public investment project is the most appropriate one judged from the owner/financing party's viewpoint, given there are alternative projects and that no investment is included among the alternatives.

Relevance refers to the objectives of the project, and is a matter of to what degree the objectives are in keeping with valid priorities and the users' needs. Relevance is a question of usefulness. Obviously, if the project is not useful it should be rejected or terminated.

Please indicate which alternatives are, in your opinion, the most important problems leading to lack of relevance in major public investment projects.

Tick in the appropriate boxes and indicate your opinion on degree of importance. The scale ranges from 1 (least important) to 4 (most important). Please indicate importance for all alternatives. At least one alternative should be 'most important'.

#	Alternative	1	2	3	4
2.1	The users' needs are unknown, misunderstood or ignored				
2.2	The users' needs change before the project is executed				
2.3	The society's priorities are unknown, misunderstood or ignored				
2.4	The society's priorities change before the project is executed				
2.5	The objectives of the project are unknown or misunderstood				
2.6	The objectives of the project do not change according to changed needs/priorities over time				

In the next section you will be asked to elaborate more on the alternative(s) you have pointed out to be most important ones, i.e. only those you rated as 4 on the scale.

¹⁰ See more information to this question on page 87 if you find it unclear.

2.1 You indicated the users' needs are unknown, misunderstood or ignored. Please elaborate on the most important reasons why this happens.

(Tick in the appropriate boxes – you can indicate as many alternatives as you find appropriate. Remember that 'important' implies occurs often and leads to wrong choice of project.)

2.1.1	The users have not been asked	
2.1.2	The way the users are asked/participate in the planning process gives the wrong answers/does not unveil the needs	
2.1.3	The users do not know/can not express what they need	
2.1.4	The planners are not competent enough in understanding the users' needs/answers	
2.1.5	Users' needs are ignored by planners and decision makers due to political or personality reasons	
2.1.6	Other (please indicate the reason in your own words): _____	

2.2 You indicated the users' needs change before the project is executed. Please elaborate on the most important reasons why this happens.

(Tick in the appropriate boxes – you can indicate as many alternatives as you find appropriate. Remember that 'important' implies occurs often and leads to wrong choice of project.)

2.2.1	The users' needs change very fast by nature	
2.2.2	The users change their minds due to changes in society or other external influence	
2.2.3	The users change their minds because the decision to execute the project opens for new possibilities	
2.2.4	The users learn more about their needs as time passes	
2.2.5	Other (please indicate the reason in your own words): _____	

2.3 You indicated the society's priorities are unknown, misunderstood or ignored. Please elaborate on the most important reasons why this happens.

(Tick in the appropriate boxes – you can indicate as many alternatives as you find appropriate. Remember that 'important' implies occurs often and leads to wrong choice of project.)

2.3.1	The society's priorities have not been investigated	
2.3.2	The society's priorities are very complex – it is impossible for planners to grasp/get the whole picture	
2.3.3	The society's priorities are deliberately formulated unclearly by decision makers/politicians to give room for alternative courses of action	
2.3.4	Society's priorities are ignored by planners and decision makers due to political or personality reasons	
2.3.5	The society's priorities are impossible to express clearly	
2.3.6	Other (please indicate the reason in your own words): _____	

2.4 You indicated the society's priorities change before the project is executed.

Please elaborate on the most important reasons why this happens.

(Tick in the appropriate boxes – you can indicate as many alternatives as you find appropriate. Remember that 'important' implies occurs often and leads to wrong choice of project.)

2.4.1	The society's priorities change very fast by nature/because of the dynamics of politics	
2.4.2	The society's priorities are very complex – different aspects dominate at different points in time	
2.4.3	The society's priorities are often/regularly changed to give room for alternative causes of action	
2.4.4	The society's perception of priority changes over time according to who is in power	
2.4.5	Other (please indicate the reason in your own words): _____	

2.5 You indicated the objectives of the project are unknown or misunderstood.

Please elaborate on the most important reasons why this happens.

(Tick in the appropriate boxes – you can indicate as many alternatives as you find appropriate. Remember that 'important' implies occurs often and leads to wrong choice of project.)

2.5.1	The objectives of the project are not stated at all, or are expressed in a very unclear manner	
2.5.2	The objectives of the project are not available to decision makers	
2.5.3	The objectives of the project are deliberately formulated to mislead the decision makers	
2.5.4	The decision makers do not understand the planners' formulation of goals and objectives	
2.5.5	Other (please indicate the reason in your own words): _____	

2.6 You indicated the objectives of the project do not change according to changed needs/priorities over time. Please elaborate on the most important reasons why this happens.

(Tick in the appropriate boxes – you can indicate as many alternatives as you find appropriate. Remember that 'important' implies occurs often and leads to wrong choice of project.)

2.6.1	The objectives of the project are perceived as a locked position/should not be changed	
2.6.2	The priorities of the decision makers are not known/available to the project management/planners	
2.6.3	The needs of the users are not known/available to the project management/planners	
2.6.4	The project management is not allowed to change the objectives of the project	
2.6.5	Other (please indicate the reason in your own words): _____	

Sustainability

Sustainability refers to whether the positive effects of the chosen public investment project will be maintained after the project has been concluded.

The definition of sustainability goes beyond the project itself. It is a matter of economic, institutional, social, and environmental effects in a longer term perspective. It depends on whether (to what degree) the positive impact justifies investment – whether future revenue exceeds costs, whether users’ support and ability will continue the intended process after the investment, and whether authorities provide policy support and resources to continue the process. If the project is not viable – if it is not supported by society and users in the future – it should be rejected or terminated.

Please indicate which alternatives are, in your opinion, the most important problems leading to lack of sustainability in major public investment projects.

Tick in the appropriate boxes and indicate your opinion on degree of importance. The scale ranges from 1 (least important) to 4 (most important). Please indicate importance for all alternatives. At least one alternative should be ‘most important’.

#	Alternative	1	2	3	4
3.1	Lack of commitment to the project from key stakeholders				
3.2	The chosen technological solution is not viable under the prevailing conditions				
3.3	Conflict over objectives and/or strategies concerning the project				
3.4	Economic and financial benefits are low, compared to investment and operational costs				
3.5	Lack of conformity with prevailing policy or by legislation				
3.6	There are negative ethical issues connected to the project				
3.7	Business or other conditions change between concept stage and final delivery				

In the next section you will be asked to elaborate more on the alternative(s) you have pointed out to be most important ones, i.e. only those you rated as 4 on the scale.

3.1 You indicated lack of commitment to the project from key stakeholders is an important problem. Please elaborate on the most important reasons why this happens.

(Tick in the appropriate boxes – you can indicate as many alternatives as you find appropriate. Remember that ‘important’ implies occurs often and leads to wrong choice of project.)

3.1.1	Neglecting that users do not approve/do not like the outcome of the project	
3.1.2	Not identifying that the project outcome has weak support in its owner- and financing organizations	
3.1.3	Neglecting that the project outcome has weak support in management or accepting weak leadership	
3.1.4	Neglecting weak support in interacting institutions, or opposition by other institutions	
3.1.5	Other (please indicate the reason in your own words): _____	

3.2 You indicated that the chosen technological solution is not viable under the prevailing conditions is an important problem. Please elaborate on the most important reasons why this happens.

(Tick in the appropriate boxes – you can indicate as many alternatives as you find appropriate. Remember that ‘important’ implies occurs often and leads to wrong choice of project.)

3.2.1	Not identifying that the chosen technology is more expensive to maintain than the value of benefits gained	
3.2.2	Neglecting that the chosen technology is not able to produce within satisfactory health, safety and environmental standards	
3.2.3	Not identifying that the chosen technology will not work under the prevailing physical conditions, climate, etc.	
3.2.4	Neglecting that the users do not have the competence/experience to operate the outcome of the project	
3.2.5	Other (please indicate the reason in your own words): _____	

3.3 You indicated conflict over objectives and/or strategies concerning the project is an important problem. Please elaborate on the most important reasons why this happens.

(Tick in the appropriate boxes – you can indicate as many alternatives as you find appropriate. Remember that ‘important’ implies occurs often and leads to wrong choice of project.)

3.3.1	Neglecting/not solving conflict over priorities among key stakeholders	
3.3.2	Neglecting powerful interacting organizations/individuals in opposition to the project	
3.3.3	Objectives/strategies are too complex/unclear to avoid conflict	
3.3.4	The project design lacks conformity with key stakeholders interests and priorities	
3.3.5	Other (please indicate the reason in your own words): _____	

3.4 You indicated economic and financial benefits are low, compared to investment and operational costs is an important problem. Please elaborate on the most important reasons why this happens.

(Tick in the appropriate boxes – you can indicate as many alternatives as you find appropriate. Remember that ‘important’ implies occurs often and leads to wrong choice of project.)

3.4.1	Planning optimism (overestimated benefits) misleads the decision makers, deliberately or not	
3.4.2	Bad cost effectiveness is accepted	
3.4.3	There is no (not sufficient) market or willingness to pay for the use/outcome	
3.4.4	Alternative use of the money is not analysed	
3.4.5	Other (please indicate the reason in your own words): _____	

3.5 You indicated that lack of conformity with prevailing policy or by legislation is an important problem. Please elaborate on the most important reasons why this happens.

(Tick in the appropriate boxes – you can indicate as many alternatives as you find appropriate. Remember that ‘important’ implies occurs often and leads to wrong choice of project.)

3.5.1	Policy on important issues (environmental, economic, social, etc.) is not known to project planners/project management	
3.5.2	Incentives and regulatory measures concerning environmental effects are too complex (and thus misunderstood)	
3.5.3	Laws and regulations not respected by project planners/project management	
3.5.4	Policy and legislation changes between the concept stage and final delivery	
3.5.5	Pressure groups and/or coalitions influencing single decisions (on investment projects)	
3.5.6	Other (please indicate the reason in your own words): _____	

3.6 You indicated that negative ethical issues connected to the project are an important problem. Please elaborate on the most important reasons why this happens.

(Tick in the appropriate boxes – you can indicate as many alternatives as you find appropriate. Remember that ‘important’ implies occurs often and leads to wrong choice of project.)

3.6.1	Negative social impact on individuals, groups or society are not taken into account	
3.6.2	Future possibilities for employment and income for certain groups is not taken into account	
3.6.3	The rights and benefits of certain groups are not represented in the planning process	
3.6.4	Corruption or other forms of hidden and/or unethical practices influence decisions	
3.6.5	Planners and project promoters deliberately misguide the decision makers	
3.6.6	Other (please indicate the reason in your own words): _____	

3.7 You indicated that business or other conditions change between concept stage and final delivery is an important problem. Please elaborate on the most important reasons why this happens.

(Tick in the appropriate boxes – you can indicate as many alternatives as you find appropriate. Remember that ‘important’ implies occurs often and leads to wrong choice of project.)

3.7.1	Planning optimism (underestimated costs) mislead the decision makers, deliberately or not	
3.7.2	Business changes very fast by nature	
3.7.3	The political and administrative setting is changing regularly	
3.7.4	Learning occurs, new possibilities arise – changing the priorities of decision makers and users	
3.7.5	Other (please indicate the reason in your own words): _____	

Part 2: What can we do to avoid or counteract problems when a major public investment project is defined and designed?

Corrective actions

In your opinion, what is the best way to improve the planning and decision making process in the front-end phase of major public investment projects? Elaborate in your own words (optional).

4.1	Suggestions for improvements to achieve relevance	
4.2	Suggestions for improvements to achieve sustainability	
4.3	Suggestions for other important ways to improve front-end planning and decision making	

Part 3 of the survey (on objectives) is not included here

End text:

Thank you for your time and cooperation!

Please find references to the results as soon as they are published on Concept's homepages on the Internet: www.concept.ntnu.no.

Ole Jonny Klakegg
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Appendix A to the Survey: Definitions

The following definitions are from: OECD. 2002. Glossary of Key Terms in Evaluation and Results Based Management. Development Assistance Committee.

Purpose

The publicly stated objectives of the development program or project.

Goal

The higher-order objective to which a development intervention is intended to contribute. Related term: development objective.

Development objective

Intended impact contributing to physical, financial, institutional, social, environmental, or other benefits to a society, community, or group of people via one or more development interventions.

Outputs

The products, capital goods and services which result from a development intervention; may also include changes resulting from the intervention which are relevant to the achievement of outcomes.

Outcome

The likely or achieved short-term and medium-term effects of an intervention's outputs. Related terms: result, outputs, impacts, effect.

Impacts

Positive and negative, primary and secondary long-term effects produced by a development intervention, directly or indirectly, intended or unintended.

Effect

Intended or unintended change due directly or indirectly to an intervention. Related terms: results, outcome.

Effectiveness

The extent to which the development intervention's objectives were achieved, or are expected to be achieved, taking into account their relative importance.

Efficiency

A measure of how economically resources/inputs (funds, expertise, time, etc.) are converted to results.

Relevance

The extent to which the objectives of a development intervention are consistent with beneficiaries' requirements, country needs, global priorities and partners' and donors' policies. Note: Retrospectively, the question of relevance often becomes a question as to whether the objectives of an intervention or its design are still appropriate given changed circumstances.

Sustainability

The continuation of benefits from a development intervention after major development assistance has been completed. The probability of continued long-term benefits. The resilience to risk of the net benefit flows over time.

The following explains the use of different perspectives and terms for stakeholders/roles used in the survey.

Perspective	Stakeholder	Time frame	Focus
Strategic perspective	Owner	Long term	Project purpose – the outcome
Tactical perspective	Users	Medium - Long term	Project goals – the effect
Operational perspective	Operator	Short term	Project output – the result

Figure 1 Different perspectives

Owner

This is a term for the organization which owns and administers the results of the project. Being an owner includes many different roles. Initiating the project and being the financing party are two of the important roles in the perspective of this survey. This survey focuses on major public investment projects in which the owner is the state. Government officials administer the results of the project. The decision makers (often politicians) make decisions on behalf of the owner.

User

This is the term for the primary user of the product or services produced/delivered by the project. Users are often defined as the target group of the project. Examples are drivers, pedestrians and cyclists in a road project, teachers in a new school project.

Users may be represented indirectly by a governance agency on behalf of the society. This is usual in major public investment projects. In this role the governance agency is often responsible for operation of the result. In this role the governance agency is responsible for the realization of benefits from the project.

Operator

This term means the government agency or corporation responsible for implementing the project, either on their own behalf or under contract. The management of the government agency or corporation is an important stakeholder on behalf of the organization.

The operational perspective includes also the project organization. The stakeholders mentioned in the survey are project management and task leaders. Project management is used to denote the person responsible for delivery of the result (often called programme manager, project director or project manager). The task leader is an operative leader, responsible for a task within the project.

Other roles

Project promoter/Project vendor. This term denotes the role of promoting the project to the decision makers. The project promoter(s)/vendor(s) can be representatives for any of the above-mentioned stakeholders (or any others). The task performed is convincing the decision makers to acknowledge the project or the purpose.

Project planner. This refers to the planners preparing information/documents/plans, on the basis of which the decision makers are invited to make their decision.

Part 1 Precise definition of the initial question (page 3)

What are the most important problems that occur when a major public investment project is defined and designed?

The term ‘major’ imply that these projects are big (costly) and complex. In Norway the lower cost limit is set to NOK 500 million / GBP 41 million / EUR 60 million. The category includes, but are not limited to, ‘mega-projects’. Mega projects tend to be even bigger and more complex, more unique and with high level of public attention or political interest because of substantial direct and indirect impacts on the community, environment, and budgets. The cost limit between ‘other projects’, major projects’ and ‘mega projects’ depends on the context.

The term ‘investment’ should not be confused with operations of a purely financial character (trading a large asset of shares, etc.).

Public projects are identified by being owned and financed (mainly) by a public entity, typically the state.

The term ‘define’ means the process of defining the objectives of the project.

The term ‘design’ means the process of defining the means of obtaining the objectives.

These processes (definition and design) include development and selection of the best alternative concept for the project in a strategic perspective.

The word ‘important’ implies that a particular reason commonly, and with high probability, may lead to selection of a flawed concept. In this strategic perspective, ‘unsuccessful’ is used for projects that are not useful and/or not viable in the longer time perspective.

Appendix B: Original free text answers

Original answers - corrective actions to obtain RELEVANCE:

Make better investigations and listen to the public opinion.
By preparing the users for the user sessions carefully and challenging their statements
Consult the users and record the conclusions for the future. All design aspects should be checked against the record of users' needs to ensure they are relevant.
convaincre les décideurs politiques d'expliquer et d'argumenter leur choix non seulement sur une vision politique mais aussi sur les divers critères techniques et économiques qui ont été évalués.
English translation: Convince political deciders of explaining and arguing their choice not only about a political vision but also about the diverse technical and economical criterions which have been evaluated.
To specify goals and corresponding performance measures clearly, including goals that are in conflict.
1. Close cooperation with the Client 2. Create realistic plan of actions and follow it 3. Discuss any disputes with the Client immediately
To the extent that relevance only applies to development interventions (app A), it is a matter of know your beneficiary, know your beneficiary and know your beneficiary - in all aspects, history, present society, geography, demography, natural conditions, probable future development both in same area and in other areas than the project's.
Improve the front-end assessments where requirements on 1) economic profitability under 2) distributive policy constraints are clearly set. The framework for quality assessment of large public investments is a good way to proceed.
Make the process of cost-benefit analysis as rigorous as possible.
Insist that public projects have fully costed project completion, operating and maintenance regimes, allowing for a range of scenarios.
Improved collection of relevant facts around the objective of the project, what purpose the project can serve and which needs it will fulfill.
Improve methods for mapping of user needs and political needs. Improve planners competence in producing high quality front end decision support documentation. Ensure coherence between needs and high level objectives.
Take all politics out of the picture
more formal documentation and review. lengthening the planning cycle by providing time for formal review and informal discussion. Applying a more rigorous methodology to ferret out risks issues and problems. selecting project managers with good diplomatic skills.
A thorough process to involve users, client and project in defining objectives
A team must be formed which includes representative of all the functions that will be part of the project over its life-cycle. This includes the users, contract management, maintainers, cost estimaters, technical experts, legal, earned value specialists, risk manager. This team must clearly define the scope and the responsibilities of each function as the project progresses.
We have to consider the needs and the alternatives before fargoin planning activities.
Its a problem within the cultural hierarchies of some UK institutions... there's a conflict in the scale needed in public sectors to make a real difference. Centralised the programmes lose their relevance to communities, and suffer from alternative political perspective/ stakeholder viewpoints. Divested to local communities they lose their scale effect, and user influence can become idiosyncratic. It needs to be much more carefully designed into the programmes, and management approaches.
Anchoring of the project with stakeholders as well as interested parties. A thorough dialogue is needed. Regularly check the objectives of the project with important stakeholders. For very large projects annual reports to the parliament and government. Regular auditing.
Ensure the maintainers and users are part of the projects assessment team and part of the project board throughout its life
Use objective empirical data and clarify the purpose of the project for all stakeholders
Seek to know benefiting society needs and an understanding of priorities of those needs. Remember that the Maslow theory applies in society.
Ensure that the needs and requirements of all stakeholders are explored, understood and that the project is optimized to maximise benefits to all
Establish drivers, risk, degree of maturity and alignment in the value chain between the stakeholders
Be clear why we are doing it and what we want to do. What are the objectives and can we achieve them by the chosen route. Be realistic about costs and resources.
Decision timeframes should be adhered to and as such the potential change in relevance will be minimized.
Include User representation on steering boards
Project Gateway models to ensure that the right people are involved, the right questions are answered in each state of the project and that responsibilities are clear. Suggested phases: 1. Need/marked, 2. Business and strategic perspective, 3.

Project planning, 4. Detailed engineering and execution.
Structured decision making at key stages - where fundamental conditions change, to identify the effect this will have on the project/ programme.
Engagement by senior stakeholders and commitment to their governance roles in a meaningful, clearly articulated and comprehensive manner
Better identification and analysis of user needs. Represent relevance as evaluation criteria(s) in deciding the best project alternative Include relevance as a control parameter in the project's management basis. Implement dynamic project management to ensure flexible adaptation and optimization wrt. changing requirements and context
The same "user's" representatives must participate both in planning and delivery / implementation processes. These is often changed in project with long duration.
Obtain broadest possible input from all users of the outcome.
Inform users about the intentions with the project and conduct surveys to gauge users' attitudes toward projects. In the way, we get to know more about projects relevance.
To use project management methods like PRINCE2 or get external consultants to evaluate the project like you do in Norway.
Bring projects to completion quicker by streamlining the approvals process
Focus groups
Clearly defined governance principles, where the key factors are valued against one another, and economy/payback focused in very clear terms.
Far greater critical scrutiny, especially of major projects and always where subjective values and benefits are implied or evoked (e.g. national pride, status, image, showcase) since these reflect the promoters' aspirations rather than the users/ public's. The promoters rarely have to pick up the cost but usually secure their personal and corporate advantages. The scrutiny needs to be undertaken by powerful (legally/ statutory) independent (e.g. judicial) bodies required to take evidence and report publicly. The UK systems of Parliamentary Commissions is suitable but all too often used to effect a 'post-mortem' rather than a 'diagnostic health check'. Clearly, the inquiry need to match the scale and the nature of the investment decision. Experience suggests that most distortions from what might be regarded as an objective assessment of relevance and value occurs on major projects, usually where such an assessment would suggest not going ahead with or terminating a project. Greater real democracy - people actively participating in the debate on major investment decisions - needs to be fostered. Politicians and public officials breed and rely on public apathy.
The front end planning stage needs to involve technical and policy experts as well as informed broad representation from the community. Cross sector-disciplinary experts would bring perspectives on the problem that the project proposes to address and help to define the basket of alternative solutions that fit with the financial, technical, policy, community (that is community immediately effected by the project) and the society at large.
More comprehensive studies of the user's real needs. More initial decisions based on thorough, documented studies and less on management decisions taken in meetings based on Power Point presentations. More sophisticated rules to decide the need for thorough front-end planning.
Involve key stakeholders at the earliest stage. Put in place a comprehensive communications plan. Ensure senior managers / decision makers retain ownership & involvement throughout.
Perform a reliable prognosis or project review from the very beginning, and update this at relevant periods, where new info is available. The Successive Principle is probably the most relevant procedure, as it by far has the largest documentation for reliability.
Involve the users
Clear objectives Look at alternatives in the early phase Open, transparent planning Defined and structured user participation
Use systemic tools to investigate societal requirements more fully and then design project to meet these needs, rather than use dogmatic, politically expedient values to direct design
1. Systematically identify stakeholders and consistently get the updated information for stakeholders' interest, demands to insure all have common understanding for project goals.
Objective criteria for bringing up projects for decision could be desirable. Although a more technocratic approach to the prioritization process involves an inherent conflict with a parliamentary democracy.
Spend more time at the front end sharing understanding, objectives, agendas to reduce ambiguity in goals and goal-paths, reveal existing power structures and achieve stakeholder buy-in. Spend more time generating multiple robust solutions rather than allowing analysis of few solutions too early in the process.
make sure that beneficiaries pay at least half of project costs;
Continuous research to balance project people issues, processes and technology
Responsibilities in organizing
The political dimension is too dominant. Projects are started by politicians to get more votes (sometimes at the cost of relevance).
Set priorities. Calculate the costs and benefits

Original answers - corrective actions to obtain SUSTAINABILITY

Investigate life cycle cost and inform decision makers about maintenance and environmental cost
Improve cost/benefit analysis
Consult the users regarding their long term AND short-term needs.
réponse identique à celle de l'item précédent
English translation: Same answer as the one in the previous item.
To attribute appropriate weights to the stake holders through a participatory process.
1. To complete the project in time and within the budget. 2. To meet all the Client's requirements. 3. Keep service relation on proper level.
Check your project's conformity to societal trends, possible future legislation, economical development. Build in flexibility to change the extent of project during delivery and the possibility of covering more or other objectives after delivery.
Improve the assessment methodology particularly with respect to risk assessment. A challenging task in sectors where non-monetary assessment will play a dominant part.
Make projects private sector as far as possible and limit the state's role to the issuing of finite grants. This will make it one "simple" decision and make sustainability dependent on the market and the participation of stakeholders. It will either get it and continue or fail soon.
Require an independent view on sustainability before major projects are funded beyond key gateways.
Realistic planning and also taking into account portfolio effects: What other large projects in the same sector is in pipeline, which dependencies are between different projects and what are the resources needed to maintain and operate the investment in the futures.
Public involvement in planning process
Take all politics out of the picture
similar to above but also use project management techniques such as cost estimating, cost-benefit analysis and earned value analysis and have people on the program team that know how to use these tools
The project must provide for the best technology available at the time within the funding available. The parties must resist scope creep, because of technological improvements, as the project is being implemented. You can buy the latest state-of-the-art, but with rapid technology changes, you cannot implement the latest state-of-the art. Constant scope changes delay's the implementation of improved services and raised the costs significantly.
We have to discuss conflicts between goals and interests early in the planning process.
This is a problem central to governance itself. Design more flexible means of including, testing, measuring, and monitoring stakeholders... and apply them! It still does not solve the problem of the unstoppable project... sometimes programmes just cannot be cancelled - there is no off switch available once it has really begun! In this case the best option appears to be to build an innovative culture, choose the creative subcontractors, incentives their contribution, and keep the risk with the ones best able to handle it!
Assure honest cooperation with politicians.
Have a clear model that sustainability can be measured against (similar to the efficiency rating of a refrigerator etc.)
Plan from a contextual holistic standpoint, include all stakeholders, make sure there are clear implementation and follow up procedures
Ability to convincingly show to users that the project outcome ties to the lower-medium hierarchy of user needs. Ensuring buy-in of the longer-term stakeholders (esp. users) up-front is most useful. Create some sense of ownership & consequent commitment to sustainability.
Constantly review the long-term business case and where necessary make appropriate changes to the project
360 degree risk evaluation including the weighing of sustainability and its bearing on the bottom line. What do You gain or loose, soft, hard issues. Clarify objectives.
Understand the end user environment and particularly if that is the general public. Look at scale of throughput and avoid complexity unless we understand it is a specialist environment and training can be provided. Make sure maintenance is affordable and through life costs are understood.
Ensure that there is sufficient robustness in the cost benefit analysis that takes account of both cost overruns and use under utilisation and that an agreed mechanism exists to counter such issues
Very clear decision gates aligned with benefits delivery plan.
Same as above.
Continual review of expected benefits in the planning stage, and ensure the means to deliver benefits is in place from the start and continues into the operational phase.
Create broad understanding across all stakeholder groups of what success looks like, and how that success is to be maintained and, hopefully, increased
Better identification and analysis of sustainability. Represent sustainability as evaluation criteria(s) in deciding the best project alternative. Include sustainability as a control parameter in the project's management basis. Implement dynamic

project management to ensure flexible adaptation and optimization wrt. changing requirements and context
The second level of management is the "selling in" level in the organization, often we see that this level does not "know" the projects well enough.
Much the same as 'relevance' - with the added proviso that users are consulted on an ongoing basis during project execution. Should the project no longer be deemed either relevant or sustainable, it should be modified or terminated as appropriate.
Subject the projects to wider impact assessment including benefit costs analysis before implementation. In this way, unsustainable elements will be discovered in time.
?
Ensure the full through life benefit and implications of the project are understood prior to launch
Accept more fuzzy terms for project, with a higher risk, and acceptance that changes will occur during lifetime of project.
Greater scrutiny and reporting should generate more awareness and more open, honest discussion of investments and the allocation of funds (i.e. different investments) to communities or interest groups. The active co-involvement (ideally co-ownership of the decision and its consequences) of communities and users should ensure that investments that generate lasting benefits are favored. and based on a fuller and
Sustainability involves commitment from the policy-makers, government leaders, community (business community and lay person) and investors. Sustainability scenarios should be well investigated in terms of future benefits and trade-offs in other public needs. This discussion needs to occur throughout the project at set periods to make updates on changing circumstances, perspectives, objectives and to ensure all stakeholders understand what is required to ensure successful outcome. The difficulty is that public infrastructure projects take years to complete and often the parties who participate in the discussions over time change, justifiably so. Community and other stakeholder concerns need to be regularly consulted and considered throughout planning and execution. Project planners need to ensure that those who represent the community and other stakeholders in these discussions, genuinely express the views of the community in an "informed way" and do not represent narrow interests and agendas.
Ensure contracting arrangements have built in flexibility. Implement continuous evaluation processes, with key decision points at which changes can be incorporated.
There must be a closer connection between strategic planning (NTP) and political decision making on a year to year basis – e.g. when the yearly financing not is in accordance with the long term strategical plan, this plan must be revised and not still be used for decision making when its assumptions no longer are valid.
A thorough stakeholder procedure and analysis.
Ensure participation from the users
Clear objectives Honesty in calculations Firm governance Focus on quality in solutions
I think successfully achieving relevance will go a long way towards meeting sustainability since the this should mean that user actually want to use the system
1. Use SWOT (Strength, Weakness, Opportunity, Threat) analysis for project technical solution during project plan/design phase to ensure the social & economy goal can be achieved.
Sustainable development requires a whole of system approach including government, organisational and individual commitment. It also requires a holistic marketing approach from the perspective of economic, social and personal benefits. All of the boxes need to be ticked.
full cost accounting; longer payback periods
Adequate investment in development of effective decision-making and competency of stakeholders
Responsibilities
Commitment of the financiers to the project should be longer than it currently is. The do and forget mentality should be discarded.
Relevant analysis on the effects concerning various points. Stakeholder involvement.

Original answers - Other corrective actions

Invest more money in the early planning.
Challenge all statements made early in the process.
There must be a single clear vision of the purpose of the project and its short and long term user needs.
ne pas suivre aveuglement les modes (développement économique, productivisme, écologisme, ...) mais fonder les décisions sur des choix raisonnés en examinant l'ensemble des critères après les avoir le plus possible quantifié.
Do not follow the fashions blindly (economical development, productivity, environmentalism,...) but base the decisions on rational choices by studying the whole criterions after having quantified them as much as possible.
Arrangement of training courses for the Client, Employer's staff in project management to start "speaking" in common language
There seems to be plenty of systems and tools, "none are correct, but some are useful" (this statement is attributable to someone other than me!). Perhaps one should pay more attention to the public involvement in the form of factual information: why - objectives, benefits, consequences of not doing anything how - the possible ways and means, pros and cons the product - visualize different end products the public involvement process can have multiple effects: - process in itself enhances the awareness of the planner/decision maker - someone out there may have a better idea - gauges public support and interested parties' resistance. This in turn can give important input to relevance and sustainability.
A careful assessment of the institutional planning and decision-making framework with respect to incentive structures should be considered.
See 1 above: (Make the process of cost-benefit analysis as rigorous as possible.)
In democracies politicians use power to keep in office by controlling the public purse for short term interests, they have no incentive for long term sustainability of their decisions, particularly with universal suffrage. The answer is a powerful second chamber evidently self-interested in and concerned with sustainability. This should not be appointed by the usual universal suffrage, but by other means such as: 1/ less frequent elections considered purely on sustainable issues, without political party affiliations. 2/ appointment by a non-party political chamber of those with long term interests of the nation, eg representatives of the monarch. 3/ nomination by a new UN institution. For non-democratic or thoroughly corrupt societies of which there are many I have no idea, other than through enfeebling the central power by fragmenting the current nation states.
Improve the estimate of cost
Take all politics out of the picture
Check for realism in cost estimates to ensure that they are not overly optimistic.
executive interest and ability to provide effective oversight and the corporation or government willingness to design training programs at all levels
Avoid the attitude "easier to obtain forgiveness than permission", and secure that an honest picture of the project is presented for the decision makers - in other words present a realistic picture of cost, schedule and possible pitfalls/uncertainties.
All stakeholders have to be included from the beginning of the planning process.
I see planning used as an information process to learn, and enable the decisions. Invest more in finding out before you commit the main resources. If the environment or solution is technically complex delay and test. Invest in testing and prototyping until there is a clear way through (then we are saying risk late delivery rather than large surprises/overspends). Successive Reports on major Military Equipment procurement in the UK have been recommending more front-end spending... (for instance I think Jordan Lee Cawsey suggested up to 25% up front budget before committing to the main programme). Even thirty years later, SMART procurement included, the MoD has not often reached 10%. Now they would argue that COTs and ruggedised commercial kit have removed the need for some of that... it hasn't changed the attitude of off loading risk to a prime contractor... even when it could be retained with lower costs. Monopsony clients can still behave badly, even when shown other best practice behaviours!
Well done project planning with clear objectives, Work Breakdown Structure, Schedules and Budget. From the beginning having decided on regular reporting of progress and problems. Do not rush during the very beginning. It is important to start the right project.
Conduct full Value Management assessments of the projects perceived functionality making sure representatives from all aspects, delivery, maintain and use are incorporated
Be clear on mission, vision, values, stakeholders, objective data and how to evaluate the success of the project
Involves project deliverables user-groups early in decision-making process. Relatively but paradoxically, they often are most neglected.
Involve the end user and other direct and indirect stakeholders throughout the planning and decision -making process
Assemble key people from the complete value chain at start when business case is identified to understand what's in it for me. Do i like it or not.
Do the above to establish a sound reason why we are doing this and is it worth doing. Engage all players early in the cycle so that some level of "concurrent engineering" is achieved to understand the "production" or usage constraints.

Put key people on important programmes early, not when it has to be recovered
Inclusion and speed are key in my view and avoidance of repeating the so called decision cycle
Include break points - ensure each stage of the programme can deliver a useful element, but keep the flexibility to stop the project if necessary. Avoid big bang solutions that do not deliver benefits until the very end.
Accountable and transparent project/programme change control, so that external pressures on projects/ programmes are revealed and can be debated. Be ready to 'pull the plug' where necessary, and ensure structures exist to give early warning that projects/ programmes are in trouble.
Use competent people in an inclusive manner, applying verifiable methods with clearly defined outcomes
Implement multi criteria decision analyses in the most important decisions. Use sufficient time in front-end planning, and communicate the importance of this to project owner and major interested parties/stakeholders. Understand and communicate project uncertainties, and include uncertainties in decision basis
Use reasonable time.
Hold the decision makers accountable for the results of their decisions. The element of 'accountability' is absent in the public sector all too often.
Focus groups
Good understanding of estimation methods etc. Good understanding of requirements and political environment within which the project will "happen". Split up and keep projects smaller if possible..
Studies performed by personnel not too heavily involved in one particular solution.
Ensure risk management & analysis is included at the front end, with key risks agreed during contract negotiations. Ensure senior managers / decision makers are fully trained on planning, requirements and risk management.
KISS (keep it simple stupid) Avoid over-optimism Open communication Keep policy making outside the project
Remove politically expedient elements in decision making
1. Review history data of similar projects and get benchmark data for each type projects, this is a reference to define reasonable project goals.
Select and apply tools to stimulate both divergent thinking and understanding in order to generate multiple and robust solutions and solution-pathways. There has been a strong emphasis on analysis tools, which are important, but they are useless unless enough good solutions/ideas have been generated. If the right tools are used both the intellectual and social dimensions can be addressed simultaneously.
The key problem with major projects is rent seeking by those who build projects and landowners who benefit from their presence; therefore those who will benefit have to pay enough to make sure it's worthwhile. best explication of this is in a little known book by Elinor Ostrom on design of water projects in the developing world; see also discussion in Altshuler and Luberoff's book on megaprojects
Ensure commitment of key stakeholders
Clear mission definition & objective definition and calculating the resources/costs to reflect what really can be done and what really can be achieved (and as a side-result: how much does this all cost)
Make sure objectives are clear and shared. Enhance the development of shared understanding.

Appendix C: Analysis of two sub-groups;

Anglo-American vs. Nordic countries

The analysis shown on the following pages are included to illustrate the differences in responses between representatives of two different geographical and economical “regions”. It does not supply any strong conclusions. The number of respondents is too limited for that. The analysis is included to offer the reader a chance to see the results more in detail and consider for themselves what they think of these issues.

My intention with the division between Anglo-American (large, world-dominating economies) and Nordic (small, rich) countries is only to illustrate the potential differences between the responses in these groups respectively. There is good reason to believe a substantial difference can be found, due to the differences in context (economy, scale, culture, law etc.). The material certainly indicates such differences, but the basis is too small to be used as proof. It invites the reader to consider the ideas and thesis forming from this material.

Analysis of two sub-groups: Anglo-American vs. Nordic countries

The response groups:

Nordic countries:	Respondents
Norway	32
Denmark	5
Sweden	3
Finland	4
Iceland	3
Total:	47

← Small, rich countries vs. Large, world-dominating economies. →

Anglo-American countries:	Respondents
UK	18
USA	8
Australia	3
Canada	0
Total:	29

Sector	Nordic	Anglo-American
public:	28	15
private:	18	12
NGO:	1	2
Total:	47	29

Public sector more dominant among the Nordic respondents.
Private sector well represented in both groups. Balance public/private in the A-A one.
Too few NGO respondents to have an important influence on the answers.

Expert role	Nordic	Anglo-American
Project manager:	13	15
Evaluator:	13	5
Planner:	3	2
Decision maker:	10	3
Researcher:	8	4
Total:	47	29

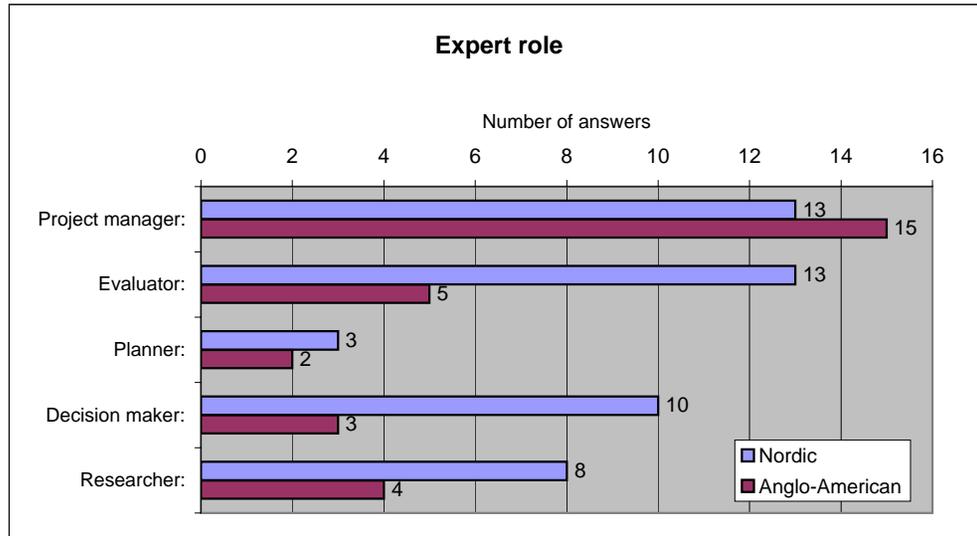
Project- and programme managers are more dominant in Anglo-American group.
Evaluators are consultants evaluation projects on behalf of the owner.
There are too few project planners in both groups to have an influence on the result.
Decision makers are well represented in the Nordic group.
In the researchers group are professors which have published relevant contributions.

Type of projects	Nordic	Anglo-American
Building&Construction	26	14
Org.change & ICT	18	16
Procurement&Defence	10	13
Industry&Shipping	14	7
International Aid	2	3
Research	10	6
Total:	80	59

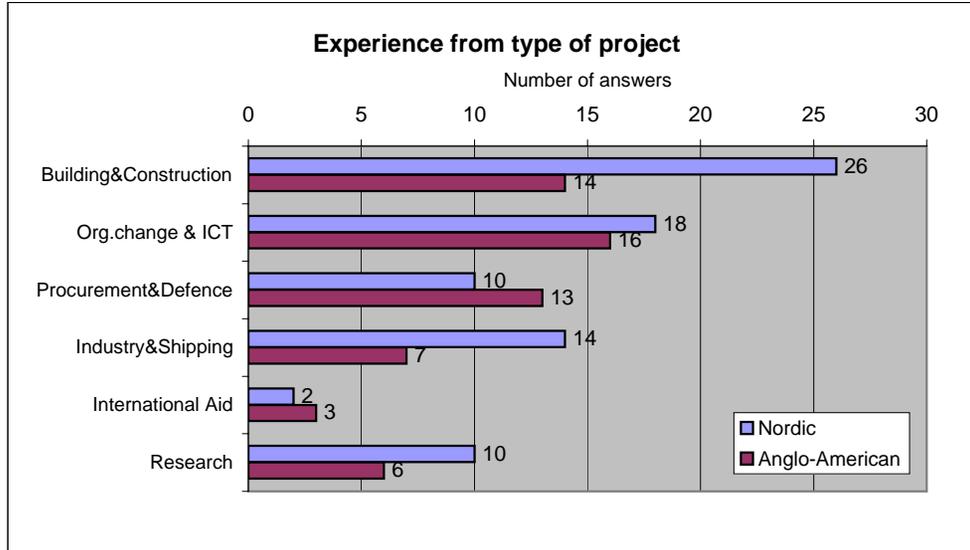
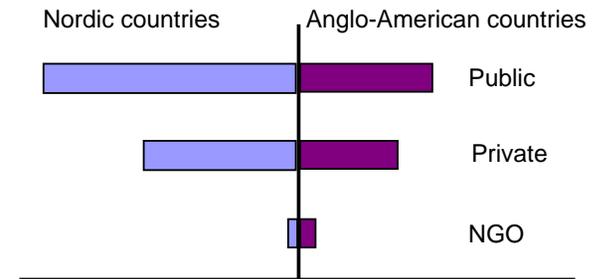
Building and Construction dominating in the Nordic group.
Organizational change and ICT well represented in both groups.
Procurement & Defence is well represented in both groups.
Industry & Shipping is present in both groups, but not in large numbers
There are too few respondents with experience in aid projects to influence results.
A similar proportion of the respondents in each group has research experience.

(Each respondent has experience from more than one type)

Geographical analysis of survey



Sector	Nordic	Anglo-American
public:	28	15
private:	18	12
NGO:	1	2



Geographical analysis of survey

Problems leading to lack of relevance

Problems leading to lack of relevance:

- 1 The users' needs are unknown, misunderstood or ignored
- 2 The users' needs changes before the project is executed
- 3 The society's priorities are unknown, misunderstood or ignored
- 4 The society's priorities changes before the project is executed
- 5 The objectives of the project are unknown or misunderstood
- 6 The objectives of the project does not change according to changed needs/priorities over

Nordic countries
1=least important 4=most important

	1	2	3	4
1	4	16	8	19
2	5	17	17	8
3	15	14	13	5
4	9	18	13	7
5	4	13	11	19
6	5	21	18	3

Anglo-American countries
1=least important 4=most important

	1	2	3	4
1	2	2	12	13
2	3	5	11	10
3	3	10	9	7
4	5	11	7	6
5	0	0	7	10
6	4	9	8	8

The over-all picture is the same in both groups. Differences are small.

There is an interesting polarity in the Nordic group when it comes to answering no. 1. This demands further analysis.

Unknown, misunderstood or ignored user's needs is the most important problem in both groups. More clearly in A-A.

User needs changes before execution seems to be a slightly bigger problem in A-A than in Nordic.

Society's priorities are unknown misunderstood or ignored seem to be less of a problem in Nordic - these are smaller countries, may be easier here.

The society's priorities change seems to have identical proportions in the two groups.

The objectives of the project unknown or misunderstood clearly seems to be a more uniform opinion in A-A.

Non-changing objectives seems to have similar proportions in both groups, but clearly a larger share of respondents in A-A thinks it is a large problem.

The small differences identified is believed to be best explained by the size of the countries and their economy and maybe complexity of society.

Geographical analysis of survey

Reasons for the problems leading to lack of relevance:

Reasons for user needs being unknown, misunderstood or ignored	All *	Nordic	A-A
The users have not been asked	16 44,4 %	10 52,6 %	5 35,7 %
The way the users are asked/participate in the planning process gives the wrong answers/does not unveil the needs	17 47,2 %	9 47,4 %	8 57,1 %
The users do not know/can not express what they need	14 38,9 %	7 36,8 %	5 35,7 %
The planners are not competent enough in understanding the users needs/answers	15 41,7 %	9 47,4 %	5 35,7 %
Users' needs are ignored by planners and decision makers due to political or personality reasons	25 69,4 %	11 57,9 %	11 78,6 %
Other (please indicate the reason in your own words)	2 5,6 %	1 5,3 %	1 7,1 %
	36 45,0 %	19 40,4 %	14 48,3 %

The most important reason is that 'users' needs are ignored due to political or personality reasons'.

The two groups have the same main answer to this question, but the Anglo-American group has a much more uniform (clear) preference for this explanation.

The Nordic group uses all explanations to a large extent and clearly indicate that the reason might be found in the communication process (or lack of this) between planners, decision makers and users. Lack of communication may indicate the Directorates are in a more central position in the Nordic countries.

The Anglo-American group clearly points to weaknesses in the way users are asked.

Interestingly enough the least preferred explanation is to blame the users, even though they are the non-professional part here.

Reasons for users' needs changes before the project is executed	All *	Nordic	A-A
The users' needs change very fast by nature	4 19,0 %	2 25,0 %	2 18,2 %
The users change their minds due to changes in society or other external influence	8 38,1 %	2 25,0 %	6 54,5 %
The users change their minds because the decision to execute the project opens for new possibilities	10 47,6 %	2 25,0 %	7 63,6 %
The users learn more about their needs as time passes	16 76,2 %	6 75,0 %	9 81,8 %
Other (please indicate the reason in your own words)	4 19,0 %	1 12,5 %	3 27,3 %
	21 26,3 %	8 17,0 %	11 37,9 %

The most important reason is that 'The users learn more about their needs as time passes'.

The two groups have the same main answer to this question, but the Nordic group has a much more uniform (clear) preference for this explanation.

The Anglo-American group points to all explanation indicating the users change their mind due to all kinds of influences. This is to some extent paradoxical to the answers in the previous questions where the users were not to blame. (In the Nordic group there is hardly any overlap between those giving answer to the previous question, whereas there is considerable overlap in the A-A group.)

Note that the least preferred reason is the general uncertainty of the naturally changing nature.

Note also that there is a significantly larger share of the A-A respondents indicating this category of reasons than other respondents.

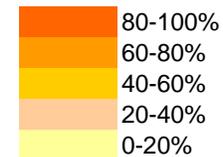
Geographical analysis of survey

Reasons for the problems leading to lack of relevance, continued:

Reasons for objectives of the project being unknown or misunderstood	All *		Nordic		A-A	
The objectives of the project are not stated at all, or are expressed in a very unclear manner	26	83,9 %	15	78,9 %	8	80,0 %
The objectives of the project are not available to decision makers	4	12,9 %	3	15,8 %	1	10,0 %
The objectives of the project are deliberately formulated to mislead the decision makers	8	25,8 %	2	10,5 %	6	60,0 %
The decision makers do not understand the planners formulation of goals and objectives	16	51,6 %	8	42,1 %	7	70,0 %
Other (please indicate the reason in your own words)	1	3,2 %	1	5,3 %	0	0,0 %
	31	38,8 %	19	40,4 %	10	34,5 %

The most important reason is that 'The objectives of the project are not stated at all, or are expressed in a very unclear manner'. The two groups have the same main answer to this question, but the Nordic group has a more uniform (clear) preference for this explanation. However, in both groups 80% of respondents have pointed to this reason. In none of the groups is there indication that the objectives are not available to decision makers. The A-A group points to deliberately misleading goal formulations being a problem, the Nordic group does not. Both groups indicates that the decision makers does not understand the goal formulations, the A-A group more than the Nordic group. A closer look at the answers reveal that all categories of respondents give the same answers - even the Decision makers.

Colour scale:



* All includes also respondents outside the Nordic and Anglo-American region.

Geographical analysis of survey

Problems leading to lack of sustainability

Problems leading to lack of sustainability

- 1 Lack of commitment to the project from key stakeholders
- 2 The chosen technological solution is not viable under the prevailing conditions
- 3 Conflict over objectives and/or strategies concerning the project
- 4 Economic and financial benefits are low, compared to investment and operational costs
- 5 Lack of conformity with prevailing policy or by legislation
- 6 There are negative ethical issues connected to the project
- 7 Business or other conditions change between concept stage and final delivery

Nordic countries
1=least important 4=most important

	1	2	3	4
1	4	10	16	17
2	17	17	12	1
3	3	14	18	12
4	5	21	10	11
5	15	17	11	4
6	26	14	7	0
7	4	18	14	11

Anglo-American countries
1=least important 4=most important

	1	2	3	4
1	0	9	10	10
2	4	13	6	6
3	0	4	11	14
4	1	9	5	14
5	12	9	8	0
6	13	10	3	3
7	4	3	12	10

At first glance, the pictures seem quite different. However, differences are small, so we are looking at nuances.

There is an interesting polarity in the Anglo-American group when it comes to answering no. 4. This demands further analysis.

Looking at all answers together - 'Lack of commitment to the project by key stakeholders', and 'Conflict over objectives and/or strategies' seems to be the most important problems.

The answers pointing to 'Economic and financial benefits are low, compared to investment and operational costs' are specially interesting.

This is one of the areas where the two groups are clearly different.

Changing business conditions are more prominent in the Anglo-American group - as I expected due to the strong marked focus in UK and US.

It seems to be a very strong rejection of the negative ethical issue problems as a main source. This was kind of a surprise to me, but it seems to correspond with surveys from Transparency International stating that the countries in this survey are very low on corruption.

Neither is the problem the technical solution in the countries covered here. This might also have been different given a different setting.

The problem seems not to be connected to politics either. Lack of conformity with prevailing policy or legislation does not have a high score.

The main difference in this section is interpreted to point in the direction of the more dynamic, fast changing economy and market in the Anglo-American area, compared to the relatively stable Nordic countries. I believe this is the reason behind all these small nuances. How to prove that?

Geographical analysis of survey

Resons for the problems leading to lack of sustainability:

Lack of commitment to the project from key stakeholders	All *	Nordic	A-A
Neglecting that users do not approve/do not like the outcome of the project	14 50,0 %	6 31,6 %	7 50,0 %
Not identifying that the project outcome has weak support in its owner- and financing organizations	18 64,3 %	10 52,6 %	8 57,1 %
Neglecting that the project outcome has weak support in management or accepting weak leadership	15 53,6 %	10 52,6 %	4 28,6 %
Neglecting weak support in interacting institutions, or opposition by other institutions	10 35,7 %	5 26,3 %	4 28,6 %
Other (please indicate the reason in your own words)	2 7,1 %	1 5,3 %	1 7,1 %
	28 35,0 %	19 40,4 %	14 48,3 %

There is no obvious favorite explanation for this problem. Many of the suggested reasons have their supporters.

The one pointed out by most respondents are 'Not identifying that the project outcome has weak support in its owner- and financing organization'.

In terms of governance this is a very interesting answer. How can projects be executed without identifying this problem? Where is the responsible governance people?

Neglecting that users do not approve seems to be number two on the list. Where are the project planners and managers?

Neglecting the lack of support from management is number three. Again - what are the project planners and managers doing?

Neglecting weak support from interacting institutions seems less of a problem but may be more important in other settings i guess.

These answers definitely point to the need of a stronger governance function and more awareness among project people.

Reasons for conflict over objectives and/or strategies	All *	Nordic	A-A
Neglecting/not solving conflict over priorities among key stakeholders	25 78,1 %	9 75,0 %	14 87,5 %
Neglecting powerful interacting organizations/individuals in opposition to the project	18 56,3 %	7 58,3 %	9 56,3 %
Objectives/strategies are too complex/unclear to avoid conflict	11 34,4 %	3 25,0 %	7 43,8 %
The project design lacks conformity with key stakeholders interests and priorities	13 40,6 %	2 16,7 %	9 56,3 %
Other (please indicate the reason in your own words)	2 6,3 %	1 8,3 %	1 6,3 %
	32 40,0 %	12 25,5 %	16 55,2 %

At this point the message is very clear: The main reason is neglecting/not solving conflict over priorities among stake-holders.

The A-A group has a stronger affection towards this category of reasons than the Nordic respondents (55,2% vs. 25,5% of respondents).

The same conclusion is clear in both groups, but even stronger in A-A than Nordic countries. This may be affected by the Nordic 'consensus' tradition.

The A-A group seems to point to many explanations, and this may also indicate a complex relationship between these reasons.

Clearly neglecting powerful interacting organizations/individuals in opposition is also an important explanation in both groups.

Geographical analysis of survey

Reasons for the problems leading to lack of sustainability, continued:

Reasons for low economic and financial benefits	All *		Nordic		A-A	
Planning optimism (overestimated benefits) misleads the decision makers, deliberately or not	25	86,2 %	8	72,7 %	14	93,3 %
Bad cost effectiveness is accepted	15	51,7 %	5	45,5 %	8	53,3 %
There is no (not sufficient) market or willingness to pay for the use/outcome	11	37,9 %	4	36,4 %	7	46,7 %
Alternative use of the money is not analysed	14	48,3 %	7	63,6 %	7	46,7 %
Other (please indicate the reason in your own words)	2	6,9 %	0	0,0 %	2	13,3 %
	29	36,3 %	11	23,4 %	15	51,7 %

At this point the message is very clear: The main reason is planning optimism, deliberately or not. The A-A group has a stronger affection towards this category of reasons than the Nordic respondents (51,7% vs. 23,4% of respondents). The same conclusion is clear in both groups, but even stronger in A-A than Nordic countries. Especially the Nordic group seems to point to 'alternative use of the money is not analysed' and thus indicating a bad planning practice. All reasons pointed out in this section has got substantial support by the respondents.

Reasons for business conditions change	All *		Nordic		A-A	
Planning optimism (underestimated costs) mislead the decision makers, deliberately or not	19	82,6 %	9	81,8 %	9	75,0 %
Business changes very fast by nature	7	30,4 %	2	18,2 %	5	41,7 %
The political and administrative setting is changing regularly	13	56,5 %	4	36,4 %	8	66,7 %
Learning occurs, new possibilities arise – changing the priorities of decision makers and users	10	43,5 %	6	54,5 %	4	33,3 %
Other (please indicate the reason in your own words)	0	0,0 %	0	0,0 %	0	0,0 %
	23	28,8 %	11	23,4 %	12	41,4 %

Also here, the planning optimism comes through as a main reason. Very clearly in the Nordic group this time, but also in A-A. The Nordic group points clearly in one direction, whereas the A-A group points in many directions, and there are a substantially larger answer rate in A-A. I was expecting this to be a A-A priority, because of the well-known market based economy in these countries. The least preferred reason is the general changes in business by nature. This yields for the Nordic group. The A-A group is lower on changing priorities of decision makers and users.

* All includes also respondents outside the Nordic and Anglo-American region.

Geographical analysis of survey

Sub-analysis: Illustration of geographic difference

Conflict over objectives and/or strategies concerning the project - A-A countries:

answer	All	MEP	M	E	P	D	R
1	0	0	0	0	0	0	0
2	4	3	1	1	0	0	1
3	11	8	6	1	1	1	2
4	14	11	7	3	1	2	1

Respondents categories:

All = all categories
 MEP = project involved
 M = Project Managers
 E = Project Evaluators
 P = Project Planners
 D = Decision makers
 R = Researchers

In this case the message seems very clear. The Anglo-American groups of respondents all point to this problem. The conflict is well known in all groups.

Conflict over objectives and/or strategies concerning the project - Nordic countries:

answer	All	MEP	M	E	P	D	R
1	3	1	0	1	0	1	1
2	14	11	4	5	1	2	1
3	18	9	6	2	1	6	3
4	12	8	3	4	1	1	3

MEP (contains 'project people'), evaluators and researchers has a different profile from the group as a whole

In this case, there seems to be a larger spread in the answers, showing an interesting polarization in the evaluator group. Also researchers are different, but in the other direction. Groups are too small to make a lot out of this, but the message is - this conclusion is not as strong as the one above.