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Project management in a high-uncertainty situation

Uncertainty, risk and project management in international development projects

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Preface and acknowledgements

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Papers included as part of the thesis


5. Samset, K, Haavaldsen, T. (1997) Uncertainty in development projects Accepted for publication in *Canadian Journal of Development Studies* by the Canadian Association for the Study of International Development and the University of Ottawa


Abstract

This thesis looks at uncertainty and risk in projects implemented in developing countries. The reason why this may be useful is the large scope of resources used internationally on such projects, and the perceived high uncertainty and corresponding failure rate in these projects. If this is true, it could be a considerable potential for improvements, for instance by using uncertainty and risk as key management parameters and applying some of the experience with risk management from industrial countries.

Chapter 1 discusses some of the reasons why studies of uncertainty and risk in development projects may be justified, and suggests a number of issues to be addressed in such studies.

Chapter 2 highlights the absence of relevant studies that could be used to guide studies in this field, and help assert validity of findings. Because of the limited resources and time available, the present study uses an extensive approach to explore some of the major issues involved, rather than looking in-depth at one particular phenomenon. Therefore, the main intention is limited: to explore the field and raise some questions rather than providing answers.

Chapter 3 describes a general model to distinguish between the concepts uncertainty, risk and opportunity. Uncertainty is used as a general, value-neutral concept, and risk/opportunity to signify the effects of uncertainty. Making the distinction between these concepts is necessary to allow an open opportunity-seeking attitude to uncertainty, and not only a risk-averse attitude.

Chapter 4 discusses whether development projects are less successful than similar projects in industrial countries, based on evaluation studies of the two types of projects. There seems to be no simple answer to the question, because success may be measured differently in different types of projects, success can be measured in different perspectives, at different stages, and in absolute or relative terms. Chapter 5 explores the opinions of a small sample of specialists in the field of development assistance, which reveal an exceptionally strong consensus that development projects are more affected by uncertainty than similar projects in industrial countries, and that the uncertainty is different. The attitude seems to be not only risk-averse, but also uncertainty-averse. At the same time there seems to be a tolerance to risk and failure in development projects that could explain some of the
modes of cooperation between donor and recipient that have been preferred in the past.

Chapter 6 presents some empirical evidence about the types of uncertainty that cause major problems in development projects. Contrary to the attitudes and opinions presented in the previous chapter, the data suggest that uncertainty is not very different, and that a large share of the uncertainties could have been predicted at an early stage of the project. If these observations are valid, it could help explain why some of the past strategies in development assistance have failed.

Chapter 7 suggests that empirical data indicate that people overestimate the importance of socio-cultural, political and environmental problems, and underestimate the importance of economic and technological aspects. If this is true, it would imply that the professional focus in international development assistance is biased towards ‘exotic’ determinants and should need to be shifted.

The findings in the previous chapters suggest that there is considerable scope for improvement in planning and design of projects if the necessary information is collected and analysed beforehand. Chapter 8 discusses the usefulness of the information that is collected at an early stage to guide appraisal and design of projects. It suggests that resources could be better used, if the focus was more on what causes the major problems in projects, and the studies were guided by experiences from similar projects elsewhere. A realistic strategy would require a systematic analysis of the probability and the utility of the uncertainties associated with each ambition level in the strategy. A main problem seems to be that such a systematic analyses of probabilities and utilities are seldom done in development projects.

Chapter 9 discusses some of the difficulties encountered on the road to a realistic project design: availability of information, the judgmental problems involved in translating the information into probabilities and utilities, and the analysis and application of the information in the final design. Because of the in-build dynamism and the self-adjusting abilities of social and administrative systems, the present trend in risk assessment of projects is to use simple, subjective and intuitive methods rather than advanced mathematical methods to simulate processes. The problem lies more in identifying the relevant information than devising systems to help aggregate the information. Under this pretext, the method adopted by most donor agencies appear appropriate for identifying and making rough estimated of the probability and utility of major uncertainties, and to consider their possible effect on different project strategies.
Chapter 10 highlights the problem that people over-emphasise the importance of strategy and under-estimate the importance of tactical performance of projects. It concludes that one of the main problems in international development assistance probably is the combination of uncertainty-averseness and the emphasis of strategic planning and adherence to strategic plans - which create rigid systems of non-fulfilable obligations where both the donor and the recipient side will have to compromise to the extent that the authority of agreements are undermined.

In chapter 11, four project cases are described in order to illustrate the importance of strategic and tactical performance. The cases illustrate the importance of a realistic design based on a thorough appraisal, where the main uncertainties are identified - as well as the target-oriented implementation process where there is room for tactical manoeuvre in face on uncertainty. The conclusion is that project failure can be achieved even in a favourable environment if the internal factors are unsuccessful. On the other hand, success can only be achieved if the external factors are favourable. The cases show that there are a few major uncertainties that are critical in determining success or failure. The challenge for the project manager is to apply the appropriate mix between strategic planning to avoid the main stumbling stones while guiding the project in the right direction - and at the same time be able to respond tactically to unforeseen events in order to coach the project towards a successful conclusion.

A main conclusion in this study is that past strategies intended to reduce uncertainty and risk in development assistance has failed, and that more of the same medicine will hardly help solving the problems. In chapter 12 the principle is applied that the responsibility for projects implementation should be vested in those best versed to handle risks and opportunities. It concludes that under presently used contract strategies, donor agencies are left with most of the risk, and the associated costs. Different contract strategies are discussed where there is an effective transfer of risk to the implementing party at a reasonable cost. Finally, the need to introduce different control systems is discussed to reduce the administrative burden of the donor agencies, and allow the implementing party the flexibility necessary to take the responsibility for the project, manage the risks and opportunities encountered, and bring the project to a successful conclusion.
1. Introduction

Summary: This chapter discusses some of the reasons why studies of uncertainty and risk in development projects may be justified - both to improve the success of such projects and to extract lessons that can be applied also to improve projects implemented in industrial countries. On this basis, a number of issues to be addressed in such studies are suggested.

1.1 Uncertainty and risk in developing countries

One of the main forces behind development is man's desire to manage uncertainties. The ancient struggle to conquer enemies, and the transformation of nature to culture by applying technology is all about managing uncertainties: to make food supply reliable, the habitat safe and comfortable, work tolerable, transport reliable, sickness curable, etc. In our complex and unpredictable reality, management of uncertainties remain high on the agenda. This goes both for the gambler and the stock broker who thrive on uncertainties, as well as for the project manager who may see uncertainties as the main threat to success. The technology of project management is to a large extent a technology intended to cope with uncertainties.

It follows from the above that developing countries are many steps behind industrial countries in handling the problems of uncertainty. Transport is less efficient, telecommunication less reliable, institutions are less expedient in providing services, suppliers less capable, manpower is less qualified to do the job accurately, etc. In general terms, things take more time in developing countries. Initiatives to improve efficiency and reduce uncertainty is therefore high priority. The international community assists these countries in this endeavour in different ways, for instance by financing development projects. Such projects are commonly thought to be high-uncertainty projects. They are considered more prone to failure and delays than similar projects in industrial countries. The most common explanations for this are
related exactly to the phenomenon mentioned above: the uncertainties in the project’s context.

For instance, a large integrated rural development programme in Asia is affected adversely by guerrilla activities, which cause target groups to migrate. A donor-supported public institution fails to provide services after external support is terminated, because the recipient government is unable to provide continued support. A project designed to develop commercial fishing in an African lake fails because the water level drops dramatically as the result of climatic conditions. In these cases, factors external to the project affect its outcome: war, political priorities, and climatic conditions. However, how common are such clear-cut examples of contextual disaster affecting development projects? Could it be that the existence of such extreme cases draw the attention away from more subtle explanations of project failure that has to do for instance with the management of the projects?

The current situation is that there is still considerable concern about the track record of development projects, and a general understanding that a main problem is the contextual uncertainty that such projects are exposed to. This has affected the policies, and strategies chosen by development agencies, and the way projects have been planned and implemented. Still, little has been done so far to study these projects from the particular angle of uncertainty and risk, or to use uncertainty/risk as a key management parameter.

1.2 Uncertainty and risk as key parameters in project management

This in itself seems to be a major paradox in international development assistance: development projects are considered high-risk by a majority of the people involved - and still uncertainty and risk seems to be words of taboo. An enquete addressed to some of the major international aid agencies revealed that none of them, with the exception of the British agency (ODA), has developed a policy on risk management. Instead there seems to be a laissez faire attitude regarding risk in the agencies to accept low success rates and failure, cost overrun, time overrun, etc. The anticipation of risk has become an excuse for failure rather than a challenge to overcome.

One important feature of risk management policies is to have procedures for how to handle undesirable developments and be prepared to terminate projects that perform unacceptable. In international development aid there are many examples of projects

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1 The enquete was undertaken as part of the present study and addressed to the aid agencies in the European Union, USA, Canada, UK, Sweden, Denmark, Finland, The World Bank and UNDP.
with a time overrun of 4-500 per cent. When it turned out that they were far behind schedule when their initial target date was reached, the projects were extended to avoid a loss of the assets invested in the projects. This argument was used several times over the next 10-15 years when it turned out that the projects were still behind schedule, or the chance of success was still unsatisfactory - until the cost overrun was many times the original budget. To terminate some of these projects at an early stage would have saved large resources. In fact, some of these projects should not have been started, if a proper study had been done initially to ascertain the relevance of the projects in relation to the needs and priorities of the users - or the potential risks encountered.

The present study focuses on high-uncertainty projects - or rather, what seems to be agreed to be high-uncertainty projects - in an attempt to see what lessons can be drawn from such extreme cases. The focus is on international development assistance projects.

Systematic studies of uncertainty and risk in development projects could prove justifiable because of the scope of international development assistance. In 1996 the total flow of official development assistance from the member countries of OECD was USD 55 billion, of which a sizeable proportion went into specific projects and programmes. The Norwegian share was in the excess of USD 1 billion, or approximately 1 per cent of the country’s gross national product. Assuming a high exposure to uncertainty and risk, there could be a huge potential for savings if the related problems can be managed better.

Seen from the point of view of industrialised countries, development projects represent a laboratory for the study of uncertainty and risk under sub-optimal conditions. To focus specifically on uncertainty and risk and draw experiences from such projects could be useful also for project management in industrial countries. In science, it is often the study of extreme cases which yields the highest return.

According to Christensen and Kreiner (1991) the most characteristic feature of a project is that it is target oriented. Projects are also organisational prototypes. The efficiency of organisations rely on the existence of a repertoire of standard answers which routinely and relatively unconsciously can be applied in every possible situation. The project, on the other hand is usually designed to respond to problems and uncertainties without the help of the standard answers of its parent organisations but on an ad hoc basis.
A project is an ad hoc organisation of people dedicated to a specific purpose or objective. Projects often involve large, expensive, unique, or high risk undertakings which have to be completed by a certain date, for a certain amount of money, within some expected level of performance. In a sense, the project is an innovation designed specifically for the purpose of coping with uncertainty. And still, uncertainty is usually not handled as a separate parameter in project management; the focus is usually on timing, cost, scope and quality.

As mentioned, the general assumption that development projects are less successful than similar projects conducted in industrial countries is frequently explained by a higher exposure to uncertainty and risk, particularly as the effect of cultural differences, socio-economic conditions and political instability in developing countries. If this assumption is true it would imply that by measuring the success rate of a project - which is a highly aggregated and often obscure measure - we obtain an implicit indication of uncertainty and risk.

Therefore, the first question to ask is whether development projects are in fact less successful than similar projects in industrial countries. In this study, the answer will have to be based on secondary information from documents which explore the success rates in projects in industrial or developing countries separately. Whatever the answer, it may also be useful to explore which are the uncertainties that constitute risk in development projects. If the success rate is lower and risk exposure is higher than ‘normal’, there may be important lessons to be learned that could be of interest for project management also in industrial countries. And it would certainly justify the attempt to look at risk as a separate project parameter. This could help device means to better cope with uncertainty and risk and thus increase the success of development projects. If the conclusion is that the success rate is not lower and risk exposure not higher than ‘normal’, it could have profound impact on policies related to management of development projects, performance requirements, contractual obligations between the financing and implementing parties, etc.

1.3 Lessons from experience

One of the common definitions of uncertainty postulates that uncertainty and the availability of relevant information are directly correlated: in the absence of information uncertainty is high - when information is made available, uncertainty decreases. The belief that uncertainty and risk is high in development projects has
caused a very ambitious policy to generate information about development projects in donor agencies. This may to some extent explain why these agencies often are in the forefront in the field of project evaluation, in developing tools for appraisals, planning, project monitoring and quality assurance measures in general. While this may be useful (to some extent) in handling uncertainty and risk, it is also obvious that the agencies’ perceived need for information may often be beyond what they can realistically generate and handle.

Large resources have been used over the years to evaluate development projects and draw lessons that could be used in the design of new projects. What characterises such studies is that they often take a broad perspective on the project. They not only look into the nitty-gritty of project management itself, but often look at the project in a socio-economic, environmental, political and cultural perspective. The use of evaluations and the scope of such studies is probably much more pronounced in development projects than in projects in industrial countries. The claim is frequently made by policy and decision makers that these studies should focus less on the delivery of the project, and more on its impact in society. It is reasonable to assume that this is because of the belief that development projects often are highly exposed to risk and uncertainty in its surroundings. If this was not the case, it would probably be a better and more productive use of resources if many of these studies were focused more on the delivery of the project itself.

The need to extract more generally applicable lessons on the basis of samples of similar projects has often been voiced. There are in fact numerous such attempts to extract lessons from larger amounts of evaluation reports, for instance by the OECD. However, in such studies the information is commonly organised according to main parameters such as the type of project, sector, country, donors, size of projects, etc. - while risk and uncertainty has hardly been selected as a key parameter. OECD (1992). For decades the agencies have conducted evaluations which conclude that things are going wrong and to some extent explain why this happens, while little has been done to analyse the phenomenon of uncertainty in a systematic way based on this material.

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2 Considerable resources have been used to develop and use objective-oriented management tools such as Logical Framework Analysis, Samset (1996), and to operationalise this in decision-making and management in terms of formats, routines for aggregation of information, management procedures, etc., NORAD (1994). Some agencies are developing ambitious systems for quality assurance where such components are included. The EC Commission has joined the initiative of UN organisations and recommends its member countries to use objective oriented planning to reduce the level of ambition in projects and thereby reduce uncertainty. The Commission also recommends the use of interdisciplinary, cross-cutting assessments to improve the insight and understanding of the project context at an early stage by means of a so called Integrated Planning Approach, European Commission (1993).
A discussion of evaluation systems in international development aid is included in Annex 1. The paper gives an account of how evaluation activities are organised in the sector and the emphasise and efforts invested in the evaluation of development projects. A discussion on the usefulness of evaluations in learning and management of projects is included in Annex 2. These papers are based on a larger study of the use of evaluation in development assistance, which shows the limited possibilities to make use of vast amounts of fragmented information from many different projects in a systematic way. Samset & al (1993)

However, the existence of a vast material of evaluation reports does represent a valuable research material for studies into the problems of uncertainty and risk in development projects. The emphasis on the project context in such studies could provide useful insight also for project management in general. Systematic studies can help improve our understanding of uncertainty and risk in the sector, select strategies to reduce risk, economise with resources and improve the effect of development projects.

Both at the aggregate, as well as the project level, surprisingly little has been done to study uncertainty and risk explicitly as success criteria. In one study by the World Bank, an attempt was made to design a model to improve estimates of construction costs and schedules in power generation projects based on data from a number of concluded projects, and also explore the reasons for delays and cost over-runs, Bacon & al. (1996). Another recent study by the Norwegian Ministry of Foreign Affairs looked at risk as a parameter in the bilateral cooperation between Norway and Mozambique, ECON (1996). Such studies may be early indications of a new trend to focus on uncertainty and risk in the development assistance sector.

1.4 Some questions to pursue

In international development assistance designated projects and programmes have been used as a main means to channel development assistance funds. Large numbers of personnel from industrial countries have been assigned to such projects to provide professional advice and assist the recipient organisations in managing the projects. This is very expensive in relative terms if the alternative is to use local personnel. No doubt - although not explicitly stated - one of the key motives behind the use of such personnel is their role in handling uncertainties and reducing risk. Also, uncertainty and risk have been used implicitly to explain project failure with regards to
performance (cost, quality and timing) and impact (problem-solving, development, needs-satisfaction). In my personal experience from conducting a number of evaluations in the field, uncertainty and risk is also used as a common excuse to allow extensions in existing projects and programmes, justify cost overruns and increased budgets, and accept sub-standard performance and results. This is common to the extent that the words risk and uncertainty need not even be used explicitly - it has become more of a taboo word than a management concept.

On this background there is no doubt a need to analyse international development projects from a risk perspective. Many questions could be raised:

- Are development projects less successful than similar projects in industrial countries?
- Are they exposed to higher degrees of uncertainty and risk?
- Are they exposed to uncertainty and risks of a different nature or composition?
- Does the exposure to uncertainty and risk justify extensions of time schedules and budgets on behalf of the donors?
- Is the use of expatriate personnel an efficient means to reduce risk and uncertainty?
- To what extent are the uncertainties and risks affecting developing projects determined by cultural and political conditions?
- To what extent are they universal phenomena?
- To what extent can uncertainty and risks be predicted?
- What should be the role of the recipient organisation and the donor organisation in handling risk and uncertainty?

A frequently used strategy to reduce uncertainty has been to increase the input of resources, to broaden the scope of the projects in an attempt to include and manage as many of the uncertainty factors as possible, and to use expatriate personnel in key positions. No doubt, the budgetary consequence of this strategy is dramatic. The pay-off in terms of improved performance and better results is unclear. One of the indications that this strategy has failed is that there is a new trend among donors in recent years to choose an entirely different strategy where the recipient increasingly is left with the entire responsibility for planning and implementation of the projects. Whether this will reduce uncertainty and risk is an unresolved question, which also needs considerable attention in the future.
Finally, in the past the concepts uncertainty and risk have apparently been interpreted by development agencies as synonymous, and the focus has been mostly on the negative consequences of uncertainty. Strategies have been chosen based on stereotype conceptions of uncertainty as a problem - without taking into considerations the possible positive opportunities that might result. By broadening the perspective in this way and base the conclusion on systematic analysis of empirical data, the chance is that more effective strategies could result.

To sum up, the main justification of this study lies in the importance of development assistance in solving problems in poor countries, the scope of investments used on these efforts, and the perceived high failure rate of development projects. If this is true, it represents a considerable problem in terms of waste of resources. However, the problem also represents a positive challenge in terms of a potential for improvements. In the field of development assistance there is much unexplored ground and many unanswered questions. In the perception of those working in this field one of the main problems is that risk and uncertainty is higher than ‘normal’. Yet, little has been done to focus specifically on these issues.

The present study is a limited attempt to look at the field from this point of view. Lack of resources allows the study only to scratch the surface and look for some major patterns - not to explore or explain the underlying reasons in any depth or detail. The study also attempts to apply some of the existing knowledge of risk management, and discuss its applicability in international development assistance, for the purpose of improving performance and reducing the failure rate of development projects.
2. Design of the study

Summary: Not much research has so far been done on uncertainty and risk in development projects that could be used to guide studies in this field, and help assert validity of findings. The present study uses an extensive approach to explore some of the major issues involved, rather than looking in-depth at one particular phenomenon. Because of the limited resources and time available, the samples that have been used in this study are too small to assure scientific reliability. The use of several sources of information when focusing on the same phenomenon may to some extent help validating finding through triangulation. However, because of the methodological weaknesses in the study, the main intention is to explore the field and raise some questions rather than providing answers.

2.1 Theoretical studies

As discussed above, development projects - whether infrastructure, health, education, industry, agriculture, or other sectors - are frequently appraised and evaluated in a broad societal perspective. While a project to establish an industrial company in an industrial country may be assessed mostly on the basis of its profitability and environmental impact, a similar donor-funded project in a developing country will often be assessed in a much broader economic, cultural, political and social perspective.

Much of the research on uncertainty and risk management that could be of relevance for the present study has been done in the field of decision making in industry in industrial countries, where uncertainty is manageable to a higher degree and the perspective is narrower. Decision-making under high uncertainty is predominantly associated with the military sector where the perspective is entirely different. In the field of social planning the need for broader interdisciplinary studies may be more explicitly pronounced than in these two sectors. Little has been done in terms of theoretical and applied research on risk and uncertainty in this sector. Planning of
development projects is a more limited field within this sector, and there is apparently very little relevant research in this sub-sector.

In the absence of relevant research to guide narrower and more in-depth studies in this field, the present study had to take a broader view to explore the field itself. Instead of an intensive study where the emphasis is on larger samples and high reliability and validity of data, the present study attempts to generate some insight based on different sources of information because of the limited time and resources available, had to be based on relatively small samples where the quality of data cannot be guaranteed to the same extent.

2.2 Empirical evidence

There is a vast amount of evaluation reports available to study the success and complexity of development projects. Many of the reports have a high professional standard and look at the projects both in depth and in a broad perspective. Such material is an obvious entry-point in a study of risk and uncertainty.

Risk and uncertainty are complex phenomena caused by a multitude of different factors. The bulk of available evaluation reports are ideographic studies, focusing on the particularities of individual projects, see Figure 2.1. In such studies, there are often attempts also to draw comparisons with other similar projects or what may commonly be understood to be the ‘best practice’ in the sector involved. There are also a large number of nomothetic studies which attempt to draw lessons from these evaluation reports. The ambition of such ‘synthesis studies’ is inevitably to extract generally applicable ‘best practice’ lessons for further development and improved performance in the sector. These studies attempt to build aggregates of information from series of projects with highly different characteristics performed under very different conditions. They are useful only to the extent that they present recommendations at a highly aggregate level which are generally applicable. Attempts to set standards and produce guidelines at a sectoral level tend to fail just because of the pluralism in each sector. The individual projects and their contextual settings are often too diverse. Successful nomothetic studies in this field therefore seems to rely on the application of parameters which can yield insight at an aggregate, generally applicable level. Risk and uncertainty may be such parameters.
2.3 Quality of information

There is little authoritative research to guide probes into this area. This study was therefore designed as an early attempt to explore some of the issues involved, using an extensive approach with different focuses and sources of information.

In studies using an intensive approach, scientific requirements regarding reliability are frequently ensured through the use of sufficiently large, representative samples of research material. In addition, the methods used to extract and analyse data determine whether information is reliable and can be trusted.

Validity, on the other hand, is ensured primarily by the researcher’s ability to relate data and analysis to common experience in the field, specifically as expressed in related research. The main weakness is related to the researcher’s judgements, and the main challenge is to minimise possible problems caused by this.

While the laboratory experiment often investigate an isolated phenomenon using several parameters to obtain an in-depth understanding, this study focuses on the effect of one phenomenon on a complex problem. The limitations inherent in the design of research will obviously not be overcome by increasing sample sizes only. In such a study, the ambition must be limited to the type of and scope of observations made rather than whether the findings are generally applicable.

As discussed above, the means to ensure an acceptable scientific standard in this study would have to be different. Reliability cannot be ensured through large, representative
samples of research material. Instead, several sets of relatively small samples of research material have been used. The data do not ensure representativeness and the methods used to extract and analyse data may to varying degrees be affected by the researcher’s judgmental subjectivity. Seen in isolation, the problem of reliability may be considerable in each sub-study. Also, the absence of relevant research on risk and uncertainty in development projects is a main obstacle to validity in the present study.

2.4 Design of the study

The solution to these problems lies in the extensive approach itself. Using separate sets of research material when focusing on the same phenomenon, in this case uncertainty and risk, adds a triangulation effect which helps in addressing the problems of reliability and validity. Looking at the same phenomenon under different angles has a powerful effect in terms of validifying or falsifying assumptions and findings from the different studies, also when some of these studies are prone to judgmental subjectivity in an unacceptable degree.

The present study is parametric in the sense that it probes into the complex field of project management on the basis of an unsystematic selection of a diverse sample of projects, looking specifically at one parameter only. The entry point is a set of summaries of evaluation reports from a sample of about 250 international development projects in four different sectors, implemented in a number of developing countries. These are summaries of evaluation reports submitted from different development agencies to OECD. Such studies usually satisfy certain minimum requirements regarding validity and reliability, in many cases they may be of a high professional standard. However, in this study there is no information on the quality of each individual report, or even if the information in the summary reflects the key issues highlighted in the report.

The reports give an indication of success of the projects and a brief description of a few of the major problems encountered, OECD (1996). The reports also provide some information on the context for their conclusions. For the purpose of the present study, a database was constructed to standardise and analyse this information. The data that were recorded included some data on the characteristics of the project, as well as the projects’ complexity, degree of success, the type of problems reported and the nature of the uncertainties that were used to explain these problems. The study is presented in Chapters 6-9 and in Annex 5. On the basis of the descriptive

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3 Most of the documents report only one to five of the main problems encountered during implementation.
information, an assessment was made of the extent to which the described problems could have been predicted or not, and at what stage of the project cycle measures should have ideally been taken to prevent, avoid or reduce the effect of the problems. These two pieces of information which are based on subjective assessments by the researcher may obviously be influenced by the lack of contextual information and misinterpretations on behalf of the researcher.

In order to validate the findings from this study the phenomenon was studied from different angles. One survey was conducted among a sample of project managers and decision-makers in the Norwegian development agency, see Annex 6. These data were also compared with the data from a related study of uncertainty based on a sample of Norwegian projects, Karlsen (1997). Also, an attempt was made in this study to relate the findings to an analysis of the quality of planning and risk assessment in a number of formal appropriation documents used to allocate funds to development projects, see Annex 8.

The intention in this study is not to provide quantitative evidence of generally applicable principles or mechanisms, but to explore the field in a relatively broad perspective. The small samples in these studies do not warrant the use of statistical tools to test consistency and co-variation of data. Because of the design of the study, the possibilities to assert validity or test reliability of the findings is limited. This can only be done through more intensive studies. The present study therefore may probably produce more questions than answers. We would assume that if the validity and reliability associated with the data are not enough to provide solid answers, it may at least be sufficient to support the questions that are raised and offer a promise that subsequent intensive studies may be worth while. The problems of reliability and validity are therefore to some extent unresolved, but are highlighted where they occur in this study.
3. Concepts and definitions

*Summary:* In this chapter, a general model to distinguish between the concepts uncertainty, risk and opportunity is described. Uncertainty is used as a general, value-neutral concept, and risk/opportunity to signify the effects of uncertainty. Making the distinction between these concepts is necessary to allow an open opportunity-seeking attitude to uncertainty, and not only a risk-averse attitude. Risk and opportunity relate to particular events and can be quantified in terms of probability and utility. The problem is that both these variables usually will have to be quantified on the basis of subjective assessments and judgmental values, and that different people may consider utility differently.

3.1 Uncertainty

Uncertainty characterises situations where the actual outcome of a particular event or activity is likely to deviate from the estimate or forecast value. Uncertainty is the combined effect of the initiating events and all processes that cause and affect the outcome. Each of the initiating events and processes may be predictable to varying degrees. Their combined effect is usually considered to be less predictable. Uncertainty is determined to some degree by the type of and number of such processes involved. It follows that decision-making becomes more difficult as uncertainty grows. Further, that the availability of relevant information increases predictability and reduces uncertainty seen from the decision maker’s point of view.

This is illustrated in figure 3.1. In general, disregarding possible unanticipated changes in the future, uncertainty would be highest at the earliest stage where the project concept is conceived and will reduce as time passes and information accumulates. A reasonable suggestion is then that the potential to reduce uncertainty and risk is largest in the outset and that it could be achieved by adding more information. Obviously, there are limits to this. This is discussed further in chapter 9.
It follows from what was discussed above, that uncertainty is rooted in the ‘objective’ nature of the situation. Usually, the distinction is made between the objective situation which is value-neutral and usually described in terms of uncertainty, and the subjective effect of uncertainty which may be either negative or positive seen from the point of view of different parties, and is usually termed risk or opportunity, respectively.

3.2 Risk and opportunity

The concepts uncertainty and risk are used in different ways in literature. For instance, Heijden (1996) suggests that uncertainty and risk is determined by the predictability of events, and makes the following distinction between three categories of uncertainty:

1. Risks, where there is enough historical precedent, in the form of similar events, to enable us to estimate probabilities (even if only judgmentally) for various possible outcomes.

2. Structural uncertainties, where the possibility of the event presents itself by means of a cause/effect chain of reasoning, but we have no evidence for judging how likely it could be.

3. Unknowables, where we cannot even imagine the event. Looking back in history we know that there have been many of these, and we must assume that this will continue in the future. But we have no clue what these events could be.
Another distinction along the same lines was made by Wynn (1992), suggesting a further distinction between ignorance and indeterminancy:

1. Risk: Odds are known
2. Uncertainty: Odds are not known
3. Ignorance: We don't know what we don't know
4. Indeterminancy: Casual change or open networks implying an element of unknowability

In project management a more common distinction seems to be that uncertainty is used as a general value-neutral concept which indicates that the actual outcome may be likely to deviate from anticipated or predicted outcome. Unknowables, ignorance and indeterminancy is not labelled explicitly since we have not any clue of what they involve, but they may be handled as part of uncertainty as a general contingency element.

Risk is commonly associated with the negative consequences of uncertainty. For instance, Williams (1995) states that risk refer to an adverse event which is uncertain, either dictated by chance (aliatorically) or dictated by knowledge (epistemically). In a recent research programme on risk and vulnerability in industry, NFR (1997), risk is simply defined as a potential loss. If the outcome of an event is certain, e.g. a bank instalment at fixed interests, the distinction is between gain and loss. If the result is uncertain as in case of stock holding, the distinction is between opportunity and risk, see figure 3.2.
Another common definition is that risk is an expression of the danger that unwanted events represent for people, environment, or material assets. But there is considerable confusion in literature: uncertainty is not always associated with the cause and risk is not only associated with the effect. Some authors even take the concepts one step further in the cause-effect chain. For instance, Grey (1995) plainly states that risks are the issues which might keep a project from being a success.

The three most common ways to define risk are:

1. Risk equals uncertainty (both negative and positive)
2. Risk is associated with unwanted events (negative only)
3. Risk is the net effect of uncertainty (negative minus positive).

All these definitions suggest that uncertainty is a neutral or broader concept. Risk is associated with the outcome of uncertainty. Obviously, uncertainty gives room for both positive deviations from the expected outcome (opportunities), and negative (risks).

![Figure 3.3 Linkage between the key concepts used in this study](image)

The concepts are illustrated in figure 3.3. Uncertainty may have many various causes, related to the situation itself, the design of the project, the time perspective, available information, the implementation of the project, etc. Ritchie and Marshall (1993). The effect of uncertainty is either positive or negative (or neutral) and expressed as opportunity or risk. The occurrence of opportunity and risk is of course a key to whether the project will succeed or fail.
People’s common understanding of these concepts don’t necessarily correspond with the definitions. There is a tendency to value not only risk but also uncertainty in negative terms. This is because more people are risk-averse than risk-seeking, and tend to highlight the negative aspects of uncertainty more than the positive. They become uncertainty-averse and may therefore put themselves in a position where they may avoid risks, but at the same time cannot take advantage of the possibility to explore and exploit the impending opportunities in an uncertain situation.

Uncertainty can also be seen as a source of motivation. For instance, a strictly pre-defined and predictable routine job provides few challenges and the motivation will frequently be low. Increasing uncertainty may represent a challenge which motivates for improved performance. However, if uncertainty increases beyond a certain level where major parameters become unpredictable and the understanding and control over the project is lost, the motivation is reduced.

This suggests the necessity to strike a balance in handling uncertainties and risks. Too often organisations focus on elimination of both uncertainty and risks. Failure is punished even if it is caused by unforeseen events and not by bad management. This will foster a culture of uncertainty avoidance which could mitigate both against motivation and realisation of the positive potential in uncertainty. The challenge therefore is to create organisational cultures which also rewards the managers that look for opportunities in uncertainty and try to make projects perform better than planned.

3.3 Utility and probability

The most common way to express risk (or opportunity) in quantitative terms is as a product of the probability of a loss (or gain) and its magnitude which is called utility. This is the same as the expected value in decision theory. If the potential loss is $10,000 and the probability of occurrence is estimated at 0.25, then the expected value or risk is $2,500.

This definition is not unproblematic. Should the probability and utility components be treated as multiplicative in the sense that a small probability of a large loss is considered equivalent to a larger probability of a smaller loss? Is the low probability of a major wipe-out as the result of an all-out nuclear war equivalent to the higher probability of wide-spread fall-outs of small amounts of nuclear waste in future
nuclear reactor accidents? Research indicates that this does not necessarily reflect the way people think, *Brun* (1995).

Risk and opportunity are therefore subjective constructs. Risk has to do with losses, the significance of the losses and the uncertainty associated with them. The risk associated with a certain event would have different value for different people or parties. This is because utility refers to a measurement of relative liking or preference on the part of the decision maker for particular outcomes. Utility is therefore subjective in the sense that different individuals may attribute different values to the utility. The expected utility can be expressed objectively in mathematical terms, for instance as $10,000 (a certain win of $10,000) and $12,500 (a 50/50 chance to win $25,000). However, the two sums can still be attributed different subjective value by different parties depending on the probabilities attached to them, but also by individual preferences. Great personal wealth combined with the thrill of gambling - or a major goal that can be achieved with $25,000 and not with $10,000, could explain why some people would choose the option with highest objective opportunity, *Baird* (1989) and not the certain win. The distinction between subjective and objective utility is therefore essential. A study of some experimental cases from the literature is included in Annex 4.

The definition of *probability* is represented by the *frequentists*, who interpret probability as relative frequency, and the *subjectivists*, who interpret probability as degree of belief. Probabilities are understood as a language for communicating degrees of belief. The degree of belief may be based on frequency data or other relevant information. Probability assessment involves trying to establish beliefs about events of interest based on evidence (belief assessment), and, to the extent that the beliefs cannot be established with certainty, qualifying them with numbers (response assessment). Unlike affective propositions such as wishes and desires, a belief is a mental representation that connects to some external reality. As such, it requires information about the external reality for its development, *Browne* (1997). Probability therefore can be expressed either in ‘objective’ terms mathematically based on logic or empirical experiments, or in subjective terms based on general experience or intuitive assessment, or a combination of both.

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4 For instance - assuming a less dramatic experiment - confronted with the choice between a certain win of $10,000 versus a 50/50 chance to win $25,000, most people would choose the first option despite the fact that the latter option has an expected value $2,500 higher than the former. In objective terms the $25,000 option represents the most favourable choice with the highest opportunity (or highest negative risk). But most people’s up-front reaction to the two options would be that the former option is certain while the latter is uncertain and therefore risky - they focus more on the possible loss than the possible gain. They subjectively (wrongly) interpret the $25,000 option not as an opportunity relative to the $10,000 option, but a risk.
A main problem associated with the concept risk (or opportunity) is therefore that it is based on two different variables, both of which are often quantified on the basis of subjective assessment and judgmental values. And further, that uncritical use of this compound measure may be in conflict with the way most people value probability and utility, as discussed above.

In the combined assessment of risk and opportunity, utility is as important as probability. If the promise of the future is high enough, investors are prepared to invest long before there are sufficient indications of a positive outcome. If expected utility is very negative, even low probability of occurrence would be a strong argument against investment.

The model depicted in figure 3.3 is generally applicable. Uncertainty can result in either positive or negative outcome. For simplicity these are termed opportunities and risks. Both can be determined to some extent by determining the probability (which is neutral) and utility (which is either positive or negative). In this study, uncertainty is used as a general concept and risk/opportunity to signify its effects.

As mentioned earlier, there are two common ways to look at uncertainty and risk in a project. *Torp and Kilde* (1996):

1. Uncertainty is a characteristics associated with all project parameters (time, cost, quality, competence, etc.). To increase knowledge about each parameter enables us to improve performance.

2. Uncertainty is a parameter in itself which can be identified, estimated, and controlled. It can be used to guide project resources to maximise benefits and fulfil objectives (avoid risk and exploit opportunities)

In this study uncertainty will be handled primarily as a separate parameter as the main focus of attention.
4. The success of projects

Summary: Are development projects less successful than similar projects in industrial countries? There seems to be no simple answer to the question, because success may be measured differently in different types of projects, success can be measured in different perspectives, at different stages, and in absolute or relative terms. In order to compare success between projects, parameters must be used that take into consideration the effect of the projects in different development perspectives.

4.1 Ambitions versus success measures

Assuming that success and uncertainty is related, an obvious entry point in the study of uncertainty and risk would be to determine to what extent projects in developing countries are less successful than similar projects in industrial countries. Success is a universally applied parameter in projects. Numerous evaluation reports are available for projects in both types of developing environments which these countries represent. Apparently, one would imagine that it would be straightforward to make comparisons.

However, success is a highly aggregated parameter. There are large variations in how it is defined and interpreted. A meaningful comparison of success rates in different projects can therefore only be made if the definition and application of the concept is carefully explained in each individual project. This is often not the case, and a cause of concern for some authors. According to Pinto and Slevin (1988), ‘The concept of project success has remained ambiguously defined both in the project management literature and, indeed, often within the psyche of project managers. Projects are often rated as successful because they have come in on or near budget and schedule and achieved an acceptable level of performance. Other project organisations have begun to include the client satisfaction variable in their assessment of project success. Until project management can arrive at a generally agreed upon determinant of success, our attempts to accurately monitor and anticipate project outcomes will be severely restricted.’
A rather restricted interpretation of the concept is to look at success in an *operational* perspective where it is measured according to whether the project was completed on *time*, or the *costs* did not exceed the budget, or the *quality* of its outputs met with expectations. These are the most commonly applied measures of success.

It is also the most limited perspective which gives an indication only of the *delivery* of the project itself. It is the operator’s perspective. A more compound measure of success in the operational perspective would be an aggregate based on these three (or more) parameters. Obviously this would narrow the chance of success considerably, as indicated with the shaded area in Figure 4.1.

![Figure 4.1](image)

**Figure 4.1** Different measures of success in three different perspectives

A broader interpretation of the concept would encompass the *tactical* perspective and focus on the extent to which the project has achieved its formal *goal*, or whether the *impact* of the project is predominantly positive, or whether the project is *relevant* in relation to people’s needs. Clearly, these measures are more ambitious. There is more uncertainty involved. This is the users’ perspective. Realisation of these measures can only be expected at a later stage after the project was initiated. The aggregated measure of these three components would be a success measure associated
with the usefulness of the project rather than its performance during implementation, and hence more ambitious. Therefore, the chance of success would also be less.

The broadest interpretation of project success would be associated with the strategic perspective of development which could be based e.g. on measures of whether the project contributes to economic growth in the broadest sense, or whether it causes significant positive changes in society, or whether its positive effects are sustainable in the long term. This is the society’s perspective. Obviously these are even more ambitious and aggregated measures with a correspondingly lower chance of realisation. By combining these measures as indicated by the shaded area in Figure 4.1, as is often done in development projects, the chance of success is even more restricted.

One reason why it is difficult to compare success rates in development projects with similar projects in industrial countries is that the measures of success in the former group of projects are often broad, aggregate expressions which include not only the operational but also the tactical and strategic perspective, while success criteria for projects in industrial countries often are much narrower and less ambitious, focusing on the operational aspects, only.

For instance, in the planning framework which is most commonly used in planning and evaluation of development projects, the success measure is based on the following five main criteria:

1. **efficiency** (the delivery of the project in terms of cost, timing and quality)
2. **effectiveness** (the extent to which the project goal has been achieved)
3. **impact** (the sum of positive and negative, planned and unforeseen changes and effects of the project in society)
4. **relevance** (the degree to which the project respond to real needs and priorities in society)
5. **sustainability** (the extent to which the positive effects of the project will continue in the future).

In total, these five criteria cover all the three perspectives. The operational perspective is covered by the first criterion, the tactical perspective by criteria two-four, and the strategic perspective by the last criterion. See also chapter 4.5 and figure 4.4 for a discussion of how these concepts are applied. In projects in industrial

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5 The so-called Logical Framework, see Samset (1993)
countries, all criteria may be applied when the project is planned and appraised, but during implementation, the focus is often limited to measuring efficiency, only.

Making comparisons of success rates between development projects and similar projects in industrial countries on the basis of what is reported in literature where the success measure is often not explained or defined, would therefore probably give the development project a disadvantage. In the present study which is confined to a review of literature, there is no attempt to disaggregate these compound statements of success to make comparable measures. The assessment of success is taken at face value without any attempt to correct distortions, simply because the material does not provide sufficient information to do this. The validity of findings is therefore correspondingly limited, and the chance is that the picture may be considerably distorted.

4.2 Relative versus absolute measures of success

An additional problem is that success is a relative measure related as much to what has been agreed as to what has actually been achieved. This may further distort the picture when comparing success rates. Consider four different project cases as illustrated in figure 4.2, where the distinction is between ambition and performance. *Ambition* is here associated with the agreed objective and the scope of the project. An example of a project with low ambitions could be a project designed to replace certain parts of the production facilities in a company. The more ambitions project could be the one that was designed to boost the company profit. It would involve not only production facilities, but also institutional development, product improvements, marketing, etc. *Performance* is associated with the implementation of the project and what has been actually achieved in terms of adherence to budgets, time schedules and quality standards.
The question is how these four projects should be ranked in terms of degree of success. Which of the two high-performance projects is the most successful: project number 1 or number 2? Which of the two low-performance projects is the least successful: project number 3 or number 4?

The problem is illustrated in figure 4.3. If performance is measured in absolute terms (in relation to what has actually been achieved) project number 2 would be reported as the most successful because the ambition level is low, despite the achievements being equal. If performance is measured in relative terms (in relation to what has been formally agreed), the two projects would be reported equally successful despite the
achievements of project number 1 being higher than project number 2. The same type of reasoning would apply for projects 3 and 4.

In my personal experience, the most common approach in evaluation of development projects is to measure success in relative terms, but practice may vary. When comparing single statements of success between projects the distortions may be considerable. In the data regarding success and failure of projects in the present study we have no means to correct for these types of errors.

4.3 Success versus time

As illustrated in figure 4.1 the chance of success of a project is highly dependent on what time in the project cycle the evaluation takes place. During implementation it is usually possible to establish with some confidence whether the project will succeed in the operational perspective; more so the closer we get to the completion date. A reliable assessment of success in a tactical or a strategic perspective will frequently have to be made at a later stage. The effect of time is therefore that uncertainty regarding success is reduced as time passes, as indicated in figure 3.1. To compare two similar projects which have been evaluated at different stages in their project cycles may therefore also contribute to a distorted picture. In one case where evaluation takes place five years after the project was completed its effect on development may be well established. In another case which is evaluated before it is completed, the outlook may be promising. In hindsight the project may still prove to be a failure seen in a broad perspective.

For instance, a project may be evaluated in the operational perspective in terms of cost-effectiveness, i.e. whether the project itself has produced value for money, or it is more expensive than necessary. In a tactical perspective, however, it would not be possible to determine success or failure until the pay-back period has elapsed but often not until there is enough data to establish the internal rate of return or profitability with some confidence. In many projects, for instance in the energy sector, this may take many years. Finally, in a strategic perspective success will have to be measured on the basis of the broader spin-off’s of the project in society, expressed for instance as the broader economic rate of return at an even later stage.

To obscure the picture further, projects often have a tendency to change both ambitions and performance over time. See figure 4.2. A project may start out with very high ambitions and excellent performance (case 1); then realise that the objectives are too ambitious and lower the objectives but still continue at the same
high pace (case 2); then for some reason lose momentum and reduce performance (case 4); then re-design and re-vitalise with increased budget and more ambitious objectives (case 3); which then finally result in higher performance again (case 1). No doubt, its success as measured against operational, tactical and strategic objectives may change considerably in this period.

In literature, success rates are often discussed and even compared without any reference to what stage in the project cycle the projects have been evaluated. Neither in this study any attempt has been made to take the time factor into consideration, because of lack of information. This problem further limits the possibilities to make valid comparisons of success between projects.

4.4 Studies of success in development projects

Most of the evaluation reports provide some assessment of the degree of success of the projects under study. These conclusions are frequently used in aggregate studies to analyse success and failure in development projects. The conclusions from some of these studies are summarised in Figure 4.4.

One of the most authoritative studies on the effect of international development assistance is a comprehensive study of a large number of evaluation reports and synthesis reports based on evaluations. Cassen & al (1994). According to the study, World Bank projects during 1960's and 1970's were reported to have an *ex post* internal economic rate of return of respectable 17 per cent on average for the twenty-year period. In a review of more than 1000 projects completed between 1975 and 1983 it was found that about 80 per cent had a minimum internal economic rate of return of 10 per cent. Around 90 per cent of total investments appeared to have achieved their major objectives, or were on the way to doing so. These findings refer to the tactical perspective of development.

According to the same study, the Asian Development Bank found that 97 of 139 projects (70 per cent) completed and evaluated at the end of 1984 were judged to have been generally successful in achieving their aims, and the remainder partially so. The Inter-American Development Bank reported very similar results, as did the Canadian and Dutch aid agencies, and three other major agencies. The common conclusion was that some 65 - 75 per cent of the projects were found to be satisfactory or highly satisfactory, and most of the remainder problematic but not irreparably so, with a small percentage (in single figures) completely written off. These measures refer to either the tactical or strategic development perspective.
The Cassen report concluded that there is sufficient evidence that projects on average do produce satisfactory results in a very large proportion of cases. Eight major agencies have examined the experience of large numbers of their recent projects, with very similar findings, showing two-thirds to three-quarters of them broadly achieving their objectives.

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**Figure 4.4  Success in development projects as reported in different studies (percentages)**

Certain patterns were observed regarding success and failure. The majority of cases where aid appears not to be effective arise in the poorest countries; i.e. the majority of African countries and the minority of Asian countries. The World Bank identified agriculture as the sector with the highest incident of unsatisfactory performance. One third of the operations in this sector were judged unsatisfactory, and only 52 per cent of agricultural projects in Africa were rated as 'performing satisfactorily'. Two third of the projects with physical investment objectives substantially reached their goals. One third of projects with institution objectives substantially attained their goals, while half of the projects partially reached their goals. World Bank performance were also reported to be strong in most sectors where the Bank's portfolio was large, particularly highways, power and water supply.
A study of 82 Norwegian funded developing projects and development interventions from the period 1985 - 1990 concluded that half of the projects were found to have performed reasonably well (15 per cent with high or very high effectiveness). It was found that none of the studies contained exact comparison of planned costs and actual costs. Only about 60 per cent of the reports contained some information to draw tentative conclusions about their efficiency or the cost-effectiveness. It was found that only 40 per cent of the projects appeared to have been cost effective. Finally, economic sustainability scored very low, only a minority of the projects scored high or acceptable, *Koht Nordby (1996)*.

A German study 1986 of evaluation reports for nine consecutive years reported that about three quarters of the projects had performed satisfactory in relation to the objectives set forth. More specifically, 30 per cent of all the projects were judged positively without reservations, 33 per cent positively with reservations, 25 per cent were considered partly positive and only 12 per cent mainly negative.

A similar study of Swedish aid found that as many as 88 per cent of the infrastructure projects had succeeded while only 46 per cent of the agricultural and fisheries projects could be regarded as successful.

A review of more than 150 evaluation reports of Finnish financed projects from the period 1988 - 1995 concluded that most projects had attained or were likely to attain most of their major immediate objectives. *Koponen and Mattila-Wiro* (1996). It was noted that most of the projects, in their planning and monitoring, had given little weight to impact and very little information was available on the impact of the projects. Further, efficiency in terms of the economic relationship between inputs and outputs was given low priority in most of the projects and there was considerable room for improvement to make projects more cost-effective. Also, it was found that the relevance of objectives of projects were commonly taken for granted by evaluators. The rationale of the project was discussed in terms of whether projects followed recipient governments or donors policy - not the users’ shifting priorities and needs.

Finally, in our analysis of 249 development projects presented in chapter 5 the degree of success of individual projects were recorded (see also Annex 5). The findings correspond very well with the findings quoted above. In total, 27 per cent of the projects reportedly were highly successful, 43 per cent partly successful, 26 per cent limited successful and only 4 per cent unsuccessful. The data suggest that projects in medium developed countries were slightly more successful than in less developed countries, which also corresponds with common opinion. However, no correlation
was found between success and the ambition level of projects as expressed by their objectives, as discussed in chapter 4.1. But again, a meaningful comparison of success rates between projects need to correct for how ambitions are measured, at what time evaluation is done, and how various objectives are interpreted and prioritised by those responsible for implementing the projects. With the limited information available this has not been possible in the present study.

While most of the studies referred to above are using success measures associated with a tactical or strategic perspective, there are also much information on performance in an operational perspective, particularly in terms of cost and timing. A study of 135 hydroelectric and thermal power plants financed by the World Bank between 1965 and 1986 by *Bacon and Bessant-Jones (1996)*, concluded that there was an average cost overrun of 21 per cent and a delay of an average 36 per cent in relation to plans for all these projects. A World Bank study in 1995 of 1014 projects in developing countries concluded that cost overrun was in the range of 30-40 per cent. This was confirmed by an independent study of World Bank projects from the period 1945-85. A study of 384 Turkish projects reported that the cost overrun was 40-110 per cent, while schedule overrun was 34-44 per cent. *Morris and Hough (1987).*

### 4.5 Success in projects in industrial countries

The studies above report success of projects in developing countries which are largely seen in a tactical or strategic perspective. There are also numerous studies of success in projects in industrial countries. As mentioned in chapter 4.1, these focus more frequently on the limited operational perspective.

One of the main studies on success in such projects focus on *major* projects, *Morris and Hough (1991).* These are typically large publicly financed projects in various sectors such as defence systems, transport systems, industrial plants, aerospace, power plants, etc. The study draws lessons from 31 separate studies from the period 1959 - 1986 involving more than 4000 projects, which look at success and failure. The majority are US based civil and military projects. There are also some British and Swedish projects, and some of the studies also discuss projects in developing countries.

There are obviously large variations in the data, but the main conclusion is that as regards cost and time performance, there are hardly any reports showing underruns. In
most cases, in projects all over the world and in different industries, cost overruns are the norm, being typically between 40 and 200 per cent. In some oil projects cost overrun is reported as high as 780 per cent and in some nuclear power plants as high as 3900 per cent. Schedule overrun varies in most of the projects between 0 and 100 per cent. The study concludes that:

‘Curiously, despite the enormous attention project management and analysis have received over the years, the track records of projects are fundamentally poor, particularly for the larger and more difficult ones. Overruns are common. Many projects appear as failures, particularly in the public view. Projects are often completed late or over budget, do not perform in the way expected, involve severe strain on participating institutions or are cancelled prior to their completion after the expenditure of considerable sums of money.’

The study quotes a number of examples. Studies by the General Accounting Office (the auditing arm of the US Congress) have consistently shown that federally funded projects overrun their initial budgets. A report in 1975 concluded that such projects were overrunning on average 75 per cent while overrun on projects of USD 1 billion or more was on average 140 per cent. By 1982 the figures had increased substantially. Studies of US nuclear power plant, tunnelling, highway, water, aerospace and construction projects show overrun to be extremely common. Also North-sea projects, UK power and civil projects and defence projects have a record of frequent overruns.

As mentioned, these findings all refer to the operational perspective of the project, or the first order effect: the extent to which the planned outputs have been produced. Even at this level data are distorted and the possibility for comparison is limited. For instance, overruns refer to the original budget. Large overruns may in many cases be an indication of bad craftsmanship on behalf of planners rather than wasted financial resources in relation to what should be the realistic expenditures for the project.

Also, the budgets’ contingency posts may vary substantially in different projects. Some reports include contingencies in overrun figures, other reports not. A third

6 One example quoted is the Trans-Alaskan pipeline project which had an initial budget of USD 900 million, without a contingency in its initial budget. The project involved a simple pipeline laid over 800 miles of frozen tundra and ended at USD 8.5 billion after enormous engineering and regulatory changes.

7 For example, the Apollo program came in at USD 21 billion, only USD 1 billion over its initial estimate. However, the initial estimate included USD 8 billion of contingencies which is exceptionally high. This means that reported overrun was only 5 per cent (1/20); however, compared with the actual budget, it would rather be 75 per cent (9/12).
problem is that expenditure is often calculated in terms of accumulated costs in current prices regardless of when they occur - and then compared with the original budget without discounting. In projects where the implementation period is large, distortions can be significant.

4.6 Success of projects in industrial versus developing countries

Based on this limited review of the reports quoted above, it would be reasonable to conclude that there is no consistent evidence to suggest that the success rates of development projects are less than similar projects in industrial countries. If the assumption holds that development projects are generally judged on the basis of more aggregated and compound measures than projects in industrial countries, the indications are even weaker. This is in agreement with what was concluded in one of the main studies discussing this issue. Cassen & al (1994).

Seen in a limited operational perspective, a large number of development projects reportedly had a cost overrun of 30-40 per cent. In a large group of some 4,000 projects drawn from all over the world but mostly from industrial countries, overruns were the norm, being typically between 40 and 200 per cent.

In a broader, tactical or strategic perspective, as much as two thirds of development projects reportedly are highly or largely successful. Comparable findings from projects in industrial countries are limited. As discussed above, it is more difficult to compare success in these broader perspectives. In my personal experience from working with such projects, favourable assessments of development projects are often the result of (1) unclear objectives to be used as the reference point when making the conclusion, and (2) insufficient information to make reliable assessments when projects are evaluated.

As a general observation when comparing success rates, one would expect that because of the time factor, the chance of success would be higher when the assessment refers to the operational perspective than when it considers achievements in the tactical/strategic perspectives. The reports quoted above suggest that the opposite seems to be the case: the operational success rate of projects in developing countries reportedly is higher than for similar projects in industrial countries. One plausible explanation for this would be that the financing party in industrial countries more consistently use the initial budget as reference when reporting financial performance. In development projects, the financing party is often more prepared to accept amendments and extensions to the budget, implementation often extends over
years and is divided into several phases with separate budgets, etc. Data on cost overrun in these projects may therefore not be comparable.

If, however, the success rate of development projects seen in an operational perspective was higher than similar projects in industrial countries, it would be reasonable to assume that the success rate based on a tactical/strategic perspective would also be higher. However, the opposite could easily be the case. Development projects are often based on initiatives from the outside - not on genuinely self-propelled initiatives by local institutions or entrepreneurs. Projects in industrial countries on the other hand are more often initiated on the basis of genuine priorities and needs as expressed e.g. through political processes or the economic interests of industry. The adaptation of the project to the market’s needs and priorities may therefore be better. The development project is based on injections of external funds where there is often a mismatch between the investments/expenditures and the market’s capability or the user’s ability to cover operational costs. The situation may therefore very well be that projects in industrial countries, although cost overrun in the implementation phase may be high, are still more successful in a broader perspective, in responding to the needs in society and promoting development in general. Only in-depth studies of a large number of projects to specifically focus on these issues would make it possible to arrive at a more firm conclusion.

4.7 An example: means to measure success

Based on the findings and discussions above, it seems obvious that project delivery in terms of cost, time and quality is an inadequate measure of success. A meaningful comparison of success of different types of projects would require that not only the operational but also the strategic and tactical perspectives were taken into consideration. The model in chapter 4.1 illustrates this, see also figure 4.5. Project delivery in terms of cost, timing and quality is precisely what is measured by efficiency. In other words, the extent to which the planned outputs of the project have been produced seen in relation to the inputs consumed. But this is only the operator’s perspective. The financing part or the owner of the project will have to consider the project in a broader perspective to justify investments. What seems to be a success in an operational perspective may be a disaster in a tactical perspective. The success criterion is then the effectiveness of the project - or whether the project has achieved its tactical objective. As an example, consider a sub-sea road tunnel project linking an island with the mainland. The project may be a complete success in technical terms, completed on time and within budgets. The tactical objective is to improve access for residents to the mainland by dramatically reducing the access time. In this particular case, the project failed entirely in this respect simply because the construction and
operating costs were too high compared with the size and the financial means of the
target population. The user fees therefore were correspondingly unrealistic. People
preferred to continue to use the ferry. The tunnel project was a potential disaster in
financial terms, as measured for instance in terms of the internal rate of return.

However, measuring effectiveness provides only a narrow part of the picture, namely
the extent to which the formally agreed tactical objective has been achieved. In other
words, only the anticipated positive consequences of the project. To make a fair
statement of success or failure seen in the tactical perspective requires a broader
assessment of the impact in society: i.e. also the negative and unexpected
consequences need to be considered, as illustrated in figure 4.5.

Consider the example above: the authorities now wanted to strengthen the need for the
tunnel and at the same time support decentralisation, and moved part of the district’s
administrative headquarters to the island. This caused considerable dissatisfaction
with authorities and a growing conflict between the islanders and the mainlanders. At
the same time, the tunnel made the island more attractive as a holiday resort.
Increasing real estate prices caused people on the island to sell out to people from the
mainland. Migration of residents from the island to the mainland resulted. These
were both significant negative consequences of the project which had not been
foreseen.

**Figure 4.5  Success criteria**

While the three success factors mentioned above certainly contribute to a fuller
picture, there is also a need to look at the relevance of the project. In other words, to
what extent the objective of the project corresponds with important priorities in
society and the needs of the users. In a sense, it expresses the discrepancy between the
formally agreed objective and society’s needs. In other words, it is a measure of the quality of the initial design of the project. Obviously, the relevance of the project can change over time as the result of changing priorities and needs in society. It is therefore also an important indication of success during implementation.

Again, considering the example above, the goal in the tunnel project was to improve access to the mainland and reduce access time. The economic basis for the island’s residents was basically fishing and tourism and some agriculture. Improved access would be good for tourism to the island. For the resident population, however, most of the transport was by boat. Their needs in terms of infrastructure was more in terms of improved harbour facilities than an access road. It was therefore highly questionable whether the project was relevant, or whether people would have been better served by looking at the transport needs from a marine angle for fishermen and tourists alike. Rehabilitation and extensions of harbour facilities would also been far less expensive.

Finally, the long term strategic development perspective needs to be taken into account. This is expressed in terms of sustainability. In other words to what extent the positive effects of the project persist in the years after the project has been completed. This is a combined measure which has to take into account all changes brought about by the project in society.

In the example of the tunnel project, the long term strategic objective was to increase economic activities and develop the economic potentials of the island. The opposite seemed to be the result. Residents moved to the mainland, employment in the fisheries went down, and their houses were taken over by tourists. The sustainability of the total project was thereby reduced. While the tourists might be more willing than the resident population to pay the high user fees, they would use the access tunnel only during the short summer months. The rest of the year their resorts would be locked up and the island more and more deserted. The economic basis for the project was therefore even worse than anticipated and a large part of the project had to be financed by the public, not by the users as planned.

What is then the final verdict, is this project a success or a failure? There is not one simple answer to this question. An early evaluation of the project seen in an operational perspective would obviously conclude that it is a success. Also, in a tactical perspective the project is partly successful, since it’s formal tactical objective was attained. However, a number of unforeseen and negative consequences, as well as the entire aspect of relevance are pointing strongly in the opposite direction - it is a
failure. And finally, in a strategic perspective, the project appears to be a disaster: the tunnel is an economic burden to society and a main cause of the death of an island.

No doubt, what perspective to use when evaluating a project is a political issue, depending on the interests of different parties: such as the contractor, the islanders, the mainlanders, the authorities, the tourists, etc. The question of how to compare success of different projects is a technical one, much related to the perspectives under which the projects have been evaluated. As the example illustrates this is a complex issue.

Most of the projects from industrial countries included in the studies quoted above, seem to consider success only under the constructor’s perspective. Evaluation of success in development projects, however, are frequently initiated by international donor organisations and try to satisfy their wish for a broad societal assessment in a strategic perspective. More often than not, the resources in such studies may not be sufficient to provide the comprehensive answer. In many cases success will be judged in relation to unrealistically ambitious objectives. The conclusion may be distorted, incomplete or unjust. Also, we may compare completely different types of measures. Therefore, on the basis of available information, there is no evidence to suggest that development projects are less successful than projects in industrial countries. There are in fact some weak indications that this may not be the case.

To compare success between projects would require an instrument as the one described above, which takes into consideration the effects of the project in different development perspectives. This instrument is already adopted by some of the major development agencies, but would have to be applied on a considerable number of projects to provide reliable answers to the questions raised.
5. Conceptions of uncertainty

Summary: The opinions of a small sample of specialists in the field of development assistance are explored in this chapter. The data reveal an exceptionally strong consensus that development projects are more affected by uncertainty than similar projects in industrial countries, and that the uncertainty is different. Uncertainty is predominantly associated negatively with risk and failure, and the attitude seems to be not only risk-averse, but also uncertainty-averse. At the same time there seems to be an attitude of tolerance to risk and failure which could explain some of the policies applied by donor organisations and modes of cooperation that have been preferred in the past.

5.1 Uncertainty in developing countries

As discussed in the previous chapter, there are several reasons why the success rate of a project cannot be used as a measure of uncertainty and risk. One reason is that success is defined and measured differently in different projects: for instance in relation to objectives at different ambition levels, by measuring performance relative to objectives or in absolute terms, at different stages of the project cycle, etc. Comparisons of success in literature may therefore not be valid.

Nevertheless, there is a widespread belief that success and uncertainty is related. Rather than attempting to prove this with empirical evidence it may be more useful to explore people’s opinion on this, because that is likely to affect the way they are dealing with uncertainty in development projects.

In a survey administered to a group of 50 researchers and consultants working in the field of development assistance, as much as 89 per cent of the respondents fully or partly agreed that development projects are more affected by uncertainty than similar

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8 A means to measure success with higher validity may be a more compounded instrument such as the one described in chapter 4.7, consisting of five separate indicators, which provides a more detailed and probably also more accurate measure of success.

9 The survey is included in annex 6
projects in industrial countries. See Figure 5.1. Also, 86 per cent thought that the probability of failure is higher in development projects. Further, only one third of the respondents were of the opinion that uncertainty represents more opportunities than risks. In other words, the majority associated uncertainty with risk rather than opportunity. Seen in combination, this strongly suggest that the majority associate uncertainty with failure. When asked more specifically about this there is much less of a consensus: only 58 and 57 per cent respectively agreed that delays and cost overrun (which are common expressions of failure) often is the result of uncertainty.

It should be noted here that the delays and cost overruns are linked to the operational objectives and therefore may be more influenced by internal factors than external factors. The strong consensus among respondents that the probability of failure is higher may be with reference to the realisation of the project’s tactical or strategic objectives, in other words seen in a broader, societal perspective.

In chapter 3.2, the distinction was made between opportunity and risk as the positive and negative consequences of uncertainty, respectively. In chapter 5.2, the distinction is made between operational uncertainty which is associated directly with the project, and contextual uncertainty associated with the project’s environment. By combining these two dimensions, a more detailed picture of uncertainty emerges, as depicted in Figure 5.2, in terms of the internal strengths and weaknesses of the project, and the opportunities and threats in the project’s contextual environment.
Figure 5.2  *Four main characteristics of uncertainty affecting a project*

The replies in the study referred to above, indicate that the respondents make the distinction between operational and contextual uncertainties, but that they associate uncertainty predominantly with negative risks. In other words, they make the distinction between weaknesses and threats, while they may be less concerned about the potential strengths and opportunities. This suggests an attitude of risk avoidance rather than opportunity seeking. Seen in relation to international development assistance in general, this is probably a major problem and a restraining factor in policy making at the donor side which need to be explored further. A rational but more opportunity-seeking attitude could result in different modes of co-operation and different development strategies altogether, better suited to manage uncertainty and risk, as discussed in chapter 11.

The strong risk avoidance reflected in Figure 5.1 is partly explained by the responses recorded in Figure 5.3. As can be seen, a remarkably high proportion (97 per cent) of the respondents were of the opinion that uncertainty is different in development projects as compared with projects in developed countries (item 1). One explanation could be that almost two third of the respondents agree that these projects are more affected by contextual than operational uncertainty (item 4). An interesting observation is that while there was a strong distinction between projects in industrial countries and developing countries, respondents hardly distinguished between less developed and medium developed countries (item 5) - despite the fact that conditions in these two categories of countries can be considerable for instance in terms of available infrastructure and institutional capability for implementing projects.

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10 These findings may help explaining some of the policies, instruments and modes of operations used in development assistance, where the emphasis is on reduction of uncertainty as a solely negative phenomenon. One example is the strong emphasis in the past on development projects and programmes. The reason why donors have preferred specifically designated projects and programmes as a main mode of co-operation is probably their wish to control uncertainty and reduce risk. Donors have had a policy in the past of detailed control and surveillance of project activities and have relied heavily on the use of long term expatriate personnel in management and advisory positions in development projects. The lead motive for these administrative demanding and expensive practices is probably again the wish to control uncertainty and reduce risk.
There is more of a consensus that uncertainty is higher in larger and more ambitious projects, and varies in different sectors (items 2 and 3). Respondents were asked to indicate to what extent 15 different development sectors defined by OECD were affected by uncertainty and risk. See Annex 6, figure 6. The result was that in nine of the sectors the respondents were split in the question whether risk was higher or lower than ‘average’. Only in three sectors (multi-sector support, planning and public administration, agriculture) a clear majority thought the risk was higher than average, and in three cases (emergency aid, education, debt relief) the risk was below average.

When taking these findings in combination, the resulting picture of respondents’ opinion is illustrated in Figure 5.4, where the distinction is between the project context and the type of project involved. The predominant view on uncertainty is that the contextual element is the strongest - while the type of project seems to be less critical. Taking into consideration that uncertainty is associated negatively with risk and failure, this would imply that in the eyes of the majority of respondents, development projects are planned and implemented under the worst possible

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11 The sectors are: multi-sector support, Planning and public administration, Agriculture, Other social infrastructure, Trade bank and tourism, Industry mining and construction, Programme assistance, Water supply and sanitation, Food aid, Energy, transport and communication, Health and population, Emergency aid, Education, Debt relief.

12 As a curiosity it was observed that the respondents’ perception of uncertainty seemed to match the actual distribution of development assistance by OECD countries in the sense that projects considered to be more exposed to uncertainty received a relatively smaller share of funds as compared with perceived low uncertainty sectors, which received larger shares of funds, see Annex 6, figure 6.
predicament. Firstly, the policy of donor countries often dictates that most of the development funds should be given to the least developed countries. Secondly, the donor agencies which have very restrained administrative capacity and large amounts of funds to distribute, are forced to give priority to large and often complex projects. Under these unfavourable circumstances, an obvious response would be to accept failure to a relatively high degree - and thereby also implicitly tolerate a high risk.

This response is in conflict with norms and performance standards in industrial countries. Correspondingly, a conflict exists between the attitude of risk avoidance and the tendency of risk tolerance, as illustrated in Figure 5.5. About half of the respondents were of the opinion that risk should be reduced. The other half was split between maintaining the present practise which is essentially a practise of risk tolerance, and accepting higher risks - which can be interpreted as either an even higher level of risk tolerance, or an attitude of opportunity seeking. This would require a different management philosophy altogether in relation to uncertainty, attempting to realise opportunities rather than avoid risk. In the absence of such a management policy, the data presumably illustrate essentially a split in opinion between risk avoidance and risk tolerance.

Figure 5.4 Predominant conception of uncertainty in projects
Incidentally, when asked specifically about this, as much as 77 per cent of the respondents agreed that donor agencies should accept higher risks in order to realise opportunities. This seems to contradict the majority view that the probability of failure is higher in development projects, and that uncertainty represent more risk than opportunities. In a business-as-usual situation this does not make sense. Accepting higher risks by donor agencies would be rational only if the probability of failure is balanced with the probability of success, which probably would require a different scenario all together, with different modes of operation and qualitatively different means to master uncertainty and realise the positive opportunities that may prevail. Opportunity seeking strategies are discussed further in chapter 12. The present situation is rather that with a combined and conflicting attitude of risk avoidance and risk tolerance, the existence of risk is used as an excuse for low performance and a convenient explanation for failure. Uncertainty and risk are not seen as challenges. The problems are swept under the carpet rather than confronted head on.

5.2 Uncertainty and time

In analysing uncertainty in a project, a useful distinction is between operational uncertainty and contextual uncertainty. Christensen and Kreiner, 1991. Operational uncertainty is basically associated with the implementation process itself and considered relatively independent of the context in which the project operates. The operational uncertainty may be high in an innovative development project which explores new ground, and low in a routine type project with many repetitive elements, extensive experience from similar processes and where the outcome is largely predictable. A characteristic with operational uncertainty is that it will be reduced as the process develops. To some extent it can therefore be reduced by increasing the amount of information available. It can also be reduced by establishing operational objectives at a realistic ambition level and through systematic, realistic planning.
Contextual uncertainty is associated with the surroundings or the context of the project. The contextual uncertainty would be high in projects operating in an unknown environment. Contextual uncertainty is linked to conditions or circumstances beyond the scope and authority of the project, for instance political processes, decisions and responses in affected institutions, demands and responses in the market, technological development, etc., and the possibility to influence uncertainty is often limited. Contextual uncertainty will often be the result of complex processes to a degree which causes the information gap to be maintained despite effort to generate relevant information.

The general view is that uncertainty is highest at the earliest stage when the project concept is conceived, and will reduce as time passes and information accumulates, as illustrated in Figure 3.1. Half of the respondents in the survey referred to above agreed that uncertainty is reduced as time passes, and the other half disagreed to this statement, see Figure 5.6, item 2. The lack of consensus support to some extent the result in Figure 5.3, item 4, that almost two third of the respondents agreed that development projects are affected more by contextual than operational uncertainty.

The causes and effects of contextual uncertainty are more difficult to predict than for operational uncertainty. In the survey this distinction is not made. As can be seen in Figure 5.6, items 1 and 3, a small majority agreed that it is not easy to predict the results of uncertainty - while only about one third of the respondents agreed that this would be the case when looking at the causes of uncertainty. In other words, it is easier to predict the causes of uncertainty than the results. This makes sense in a past-present perspective where the causes can be observed in the past and present but the results are part of the future and therefore more difficult to foresee.

13 In the study included as Annex 5, this problem is explored in a sample of 249 development projects by looking at events in hindsight in the opposite order: firstly what major problems that actually occurred, then
5.3 Conclusion

The extent to which the opinions reflected in the study referred to above are representative of decision makers at the donor and recipient side is unclear. The limited sample of 36 respondents represent a group of consultants and researchers with extensive experience in the field. As much as 75 per cent of the respondents had more than 10 years experience with international development assistance, and 86 per cent had worked more than two years in developing countries. All respondents have a role either as advisors to development agencies or as managers of development projects, and would therefore presumably represent opinions and attitudes which do not differ dramatically from those of their clients.

The survey indicates that there is a strong consensus that development projects are more prone to fail than similar projects in industrial countries, and therefore probably also less successful. The main explanation is that uncertainty is both higher and of a different nature. As the result of this view, the attitude of the group was characterised by two distinct tendencies:

1. An attitude of risk avoidance which most probably can be interpreted in a broader sense also as uncertainty avoidance, since uncertainty was predominantly associated with a negative outcome.

2. An attitude of risk tolerance which is basically an attitude not only to accept the prevailing situation of perceived high risks, but also to accept failure with reference to the presence of risk.

The survey gave no consistent indication on an opportunity-seeking attitude among the respondents, since the individuals that would accept higher risks were not the same as those that held the opinion that uncertainty represent more opportunities than risks.

Whether these opinions and attitudes are shared by the key managers and decision makers in development agencies can only be confirmed in more comprehensive studies. If, however, the findings are valid, it would go a long way to explain some of the risk-averse policies and practises in development assistance, and could be a starting point to develop new attitudes and more efficient policies to enable potential opportunities inherent in uncertain situations to be realised, and at the same time to strengthen risk management.

What types of uncertainties that caused these problems, and finally to what extent these uncertainties could have been predicted at an early stage. See also Chapter 7.
6. Causes of uncertainty in development projects

Summary: Empirical evidence from development projects presented in this chapter seems to contradict some of the attitudes and opinions presented in the previous chapter. The data suggest that most of the uncertainty causing major problems in development projects are operational, and related to management and design of projects. A smaller share of the uncertainties are contextual, predominantly related to users’ responses to the projects as well as the availability of resources and environmental problems. The data also suggest that a large share of the uncertainties could have been predicted at an early stage of the project. If these observations are valid, it could help explain why some of the past strategies in development assistance have failed.

6.1 Uncertainties causing major problems in projects

In the attempt to study uncertainty and risk as separate parameters in development projects, an analysis was made of 249 projects based on summaries of evaluation reports from these projects. The study is included as Annex 5. The summaries provided an account of major achievements and problems in each project, seen in retrospect. The study focused on what the main problems were, and particularly what caused these problems, in other words the major uncertainty factors affecting the projects. These uncertainty factors were registered, and also characterised in different ways: to what extent they were contextual or operational, to what extent they could have been predicted or not, and to which professional fields they were associated, either the financial/economic, environmental, institutional, political, socio-cultural or technological field.

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14 There are some methodological weaknesses in this setup, particularly possible biases caused by subjective judgements made by the researcher. These problems are discussed in Annex 5.

15 In its effort to improve international development assistance and make development projects sustainable, OECD recommends that special attention should be made to analyse uncertainties in these six main fields, OECD (1992)
In the study the reported problems were either classified as related to cost (examples: high operating costs, low profitability, additional costs, low revenue, low economic viability), time (examples: delays, interruptions, slow implementation) or quality (examples: limited effect, ineffective operation, environmental damage, non-functioning systems, low productivity, low utilisation). Most of the problems (44 per cent) were quality-related, 33 per cent cost-related, and 23 per cent time-related.

As discussed in chapter 4, projects can be described in terms of cause-effect chains of objectives. In a road construction project for instance, the operational objective is to produce the road. The tactical objective may be to improve transport, and the strategic objective to develop a geographical area. The problems in the project can also be described in terms of cause-effect chains. High construction costs (in the operational perspective) may result in a road which is not maintained because of too high operating costs (in a tactical perspective) resulting in vehicle damage and low utilisation so that the economic viability of the project is too low (in a strategic perspective).

These problems, however, are not linked up in one-dimensional chains, but are elements in a dynamic process. The chain of problems is a simplification constructed partly on the basis of the sequence in which they occur, and partly on perceptions of stronger and weaker connections between the different problems. When focusing on the main problems and their corresponding uncertainty factors in this study, they were considered as elements in such cause-effect chains. The problems that were registered in the study were simply those reported as the main problems. In most cases there were some information on the causes of the problem which could be registered as uncertainty factors. However, it was not possible to check the strength of the link between uncertainty factor and problem, and if there were other, stronger influencing factors contributing to the problem. Also, it was not possible to check whether the reported problems were the major ones.

In this study no attempt was made to correct for discrepancies between planning perspectives and the problems reported. The planning perspective was not considered a major confounding factor in the study, since it is essentially focusing only on the main uncertainties. Also, most of the projects in the sample (61 per cent) had a perspective limited to operational objectives where the linkages between the main problems and their causes presumably were rather direct and easily detectable.
6.2 Uncertainty factors

The study concluded that the majority of uncertainty factors that caused major problems (63 per cent) were operational in the sense that they invoked problems that are normally within the responsibility of the project management. See Figure 6.1.

Figure 6.1 Uncertainty factors causing major problems in 249 development projects (percentages)

The largest group of these factors were associated with the management of the projects, such as unclear responsibilities, unrealistic planning, unclear procedures, inadequate tariff structures, etc. The second largest group of uncertainty factors had to do with the design of the project, for instance that it is unduly complex, expensive, with unclear objectives, and unrealistic in relation to the users’ priorities, needs or
capabilities. The third group fell under qualifications and experience of personnel, for instance inadequate experience of expatriates, unqualified local staff, high turnover of personnel, etc. Together these three groups of uncertainties accounted for some 90 per cent of the operational factors - or 57 per cent of the total.

Only 37 per cent of the factors were \textit{contextual}. The largest group of contextual factors were associated with the response of the users and target groups, such as their priorities or changing needs, failure to pay for services, ability or willingness to invest, etc. Many of these factors were in the grey area between operational and contextual factors since they could be influenced considerably by the project e.g. through mapping and monitoring of prospective user’s needs and priorities, better project design, and improved interaction with users during the implementation of the project. The second largest group was associated with the environment and availability of resources, such as conflicts over the use of land, difficult geological conditions, and climatic conditions, etc. The third largest group covered responses of co-operating or competing institutions. Together these three groups accounted for some 75 per cent of the contextual factors - or 28 per cent of the total. The remaining contextual factors were characterised under either political or social unrest including international conflicts, price changes of key resources, or government support to the project.

The main categories of uncertainty factors are mapped out in Figure 6.1 to illustrate proportions. What the data indicate is that the picture of uncertainties may be not entirely different from what can be expected in projects in industrial countries. What is surprising here is that most of the uncertainty factors are operational in the sense that they are supposed to be directly controllable by the project itself. This is contrary to common opinion that the main problems in development projects are associated with contextual uncertainty. In the survey referred to in chapter 5, for instance, almost two third of the respondents were of the opinion that development projects are affected more by contextual than operational uncertainty. See figure 5.3.

Also, there is little evidence of the “fuzzy” uncertainty factors which are often claimed to be the main reasons for high failure rates. As can be seen from Figure 6.1, a large proportion of uncertainty factors stem from the project as it is conceived and designed before it is planned and implemented. The socio-cultural and political uncertainties constitute a surprisingly small part of the total picture, which certainly don’t mean they are not there; they are simply not the main stumbling stones for the projects.
Figure 6.2 The extent to which major problems related to time, quality or cost are affected by contextual or operational uncertainty in 249 development projects. Percentages.

When cross-correlating the distribution of operational and contextual uncertainty factors with the type of problems they cause, the data suggest that the causes of time delays are to a significant degree more linked to internal problems in the project than to contextual factors. See figure 6.2. The same goes for quality problems but to a lesser degree, while cost problems are caused almost equally much by operational and contextual uncertainty factors.

Figure 6.3 The extent to which projects at different ambition levels are affected by contextual or operational uncertainty. Percentages. (n=249).

Looking at the ambitions of projects, there is also a significant difference between projects with a broad social objective: which are affected by contextual more than operational factors - and projects with a more limited institutional or technical objective which are more influenced by operational factors. See Figure 6.3. This is also in accordance with general experience, and the opinions expressed in the survey included in Annex 6. A social project is likely to rely more on uncontrollable responses and interaction with groups in society, etc. than for instance a road construction project.
When looking at the four sectors involved, projects in the energy sector, water supply and education are almost equally much affected by operational and contextual factors. See Figure 6.4. The projects in the forestry sector, however, are to a significant degree more affected by operational factors (82 per cent) than contextual factors. One explanation could be that the typical forestry project operates in an environmental rather than a social context which is less complex and more predictable. There were no significant differences in distribution of operational/contextual factors between Africa, Asia and Latin America, between less developed and medium developed countries, between successful and unsuccessful projects or between multiple or singular projects.

The data presented in Figure 6.1 indicate that the five largest groups of uncertainty factors causing the major problems in development projects represent as much as 81 per cent of the total. The by far largest group of uncertainty factors is related to management and represent some 36 per cent of the total if staff weaknesses is included. The second largest group has to do with inadequate project design, representing 21 per cent of the total. And finally there are two groups of external uncertainty factors relating to the users’ response and the environment/availability of resources totalling 15 and 9 per cent respectively. Each of these areas are discussed in some detail below.

6.3 Management and staff weaknesses

The significance of management problems as the largest group of uncertainty factors in this study seems to contradict the findings of some surveys conducted in industrial countries, which highlights the design of projects as the main determinant of success, for instance Pinto and Slevin (1988) and Ashley et. al (1989). Such discrepancies may be related to differences in developed and developing countries. If this is the case, management improvements should be a major concern in the efforts to improve...
project performance. However, part of the explanation could be that the study in Annex 6 is based on “objective” findings reported by evaluation teams while surveys are based on more subjective opinions by project managers reporting on their experiences with their own projects. Their blindness to their own managerial weaknesses could be a major distorting factor, which can only be explored by conducting similar surveys among project managers of development projects. This has not been done in the present study.

Table 6.1 Breakdown of uncertainty factors related to management and staff weaknesses in a study of major problems and uncertainty factors affecting development projects

<table>
<thead>
<tr>
<th>Uncertainty factors</th>
<th>Number of projects</th>
<th>Per cent</th>
<th>Per cent of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management and decisions</td>
<td>32</td>
<td>26</td>
<td>10</td>
</tr>
<tr>
<td>Staff weaknesses</td>
<td>25</td>
<td>21</td>
<td>7</td>
</tr>
<tr>
<td>Planning and preparation</td>
<td>23</td>
<td>19</td>
<td>7</td>
</tr>
<tr>
<td>Logistics and communication</td>
<td>20</td>
<td>17</td>
<td>6</td>
</tr>
<tr>
<td>Institutional weaknesses</td>
<td>20</td>
<td>17</td>
<td>6</td>
</tr>
<tr>
<td>Sum</td>
<td>120</td>
<td>100</td>
<td>36</td>
</tr>
</tbody>
</table>

Table 6.1 provides a breakdown of uncertainty factors related to management and staff weaknesses that were registered in the study. As can be seen, the uncertainties fall under five groups of similar sizes. The problems related to management and staff weaknesses had to do with management problems, inadequate information flow, weak financial management, etc. Staff weaknesses had to do with qualifications of staff, the experience of expatriate personnel, lack of commitment, turn-over of qualified staff, etc. Planning and preparation had to do with the availability and quality of detailed plans of operation. Logistics and communication had to do with transport, delayed procurement, etc., and institutional weaknesses had to do with unclear responsibilities, weak user links and unclear division of responsibilities between institutions.

Few of these uncertainty factors were different in nature from what can be expected in projects in developed countries. In the absence of more specific evidence it may be tempting to assume that also the relative distribution of uncertainties as listed in Table 6.1 is not radically different from what can be found in projects in developed
countries. We have no evidence to verify if this is true. However, the distribution of different types of management-related uncertainties may not be the crucial issue. More important is that during the period of implementation of these projects (1975-93), a substantial number of expatriate personnel have been assigned to most of the projects in order to strengthen management with technical assistance and improve management capabilities. The effect of such technical assistance may be difficult to assert without comparable data from projects with and without expatriate staff. In the absence of such data it may be premature and unsubstantiated to conclude that the presence of (in many cases) large numbers of expatriate staff in development project has had a limited effect on management of major problems. The data available in the study above simply suggest that such problems seem to persist despite of the presence of technical assistance personnel in the projects. Further, that these problems are mostly of a type that the expatriate personnel should be particularly well versed to handle.

The effectiveness of long-term technical assistance personnel in development projects has been under debate for decades, and has been highlighted in major studies discussing the impact of development projects, for instance Cassen (1994) and OECD (1992). As the result, several major donor agencies have reduced considerably the use of long-term technical assistance. There are few indications in recent evaluation reports that this has had a dramatic adverse effect on project performance. Some of the most common explanations for this is that expatriate experts may be unable to operate effectively in an alien cultural setting, that their qualifications and experience not necessarily are compatible with the needs in the recipient country, and that their ability to communicate - or even comprehend the subtleties of local communication - is limited. It would be logical to assume that when comparing two individuals with the same level of professional competence: one of national origin and one expatriate, the former would probably perform better in his own environment and therefore also be better equipped to understand and handle uncertainties appropriately.

Improved risk management may therefore indirectly be some of the rationale behind the trend in recent years to cut down dramatically on the use of long term technical assistance and to transfer the responsibility for implementation entirely to the recipient. The same goes for the trend to shift to twinning arrangements between institutions instead of ad hoc targeted projects to produce specific results. The twinning arrangement facilitates exchange of short-term professional expertise when needed but at the same time leaves the responsibility for implementation almost entirely with the recipient organisation. It may therefore be the best model to put different resources to use effectively: by making use of those with the specific
professional expertise when needed on an ad hoc basis - and let those which are best equipped to handle uncertainty manage the process.

6.4 Design of projects

In the study included in Annex 5 the distinction is between design and planning. Design is associated with the conceptual framework that constitutes the project and establishes its main characteristics and objectives, while planning is the detailed formulation of the projects strategy in time, cost, quality, and quantity. The design provides an account of the project in its entirety, while the plan is largely limited to the operational perspective. As can be seen from Figure 6.1, planning is seen as part of the management problem, contributing about 7 per cent of the uncertainty factors, while inadequate project design contributes 21 per cent of the total.

Table 6.2 provides a breakdown of uncertainty factors related to the design of projects that were registered in the study. As can be seen, the uncertainties fall under three main groups. The problems related to inappropriate components had to do with lack of training, maintenance, too sophisticated or ambitious components, etc. Incoherent design had to do with unclear or conflicting objectives, and finally, too ambitious objectives had to do with available resources and planned activities being too limited to achieve stated objectives.

<table>
<thead>
<tr>
<th>Uncertainty factors</th>
<th>Number of projects</th>
<th>Per cent</th>
<th>Per cent of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inappropriate components</td>
<td>43</td>
<td>61</td>
<td>13</td>
</tr>
<tr>
<td>Incoherent design</td>
<td>17</td>
<td>24</td>
<td>5</td>
</tr>
<tr>
<td>Too ambitious objectives</td>
<td>10</td>
<td>15</td>
<td>3</td>
</tr>
<tr>
<td>Sum</td>
<td>70</td>
<td>100</td>
<td>21</td>
</tr>
</tbody>
</table>

Table 6.2 Breakdown of uncertainty factors related to project design in a study of major problems and uncertainty factors affecting development projects

The study concludes that design is one of the main sources of uncertainty that causes major problems in projects. The same study, when looking at the extent to which the uncertainties causing major problems in the projects could have been foreseen at an early stage, concluded that as much as 70 per cent of the uncertainty factors were characterised as largely predictable. Examples are uncertainties related to the priorities and needs of users, users’ financial capability to cover operational costs,
lack of infrastructure, etc. About 28 per cent were considered partly predictable. Examples would be for instance irregular Government payment, maintenance of facilities, turnover of staff. Only two per cent of the uncertainty factors were considered unpredictable. These were essentially related to problems such as international or local conflicts, changes in oil prices, and drought situations.

Although there may be methodological weaknesses and subjective biases in this study unable to account for, the pattern is too obvious to ignore. A large share of the uncertainty factors causing major problems are fully or partly predictable at an early stage, providing the necessary inquiries have been done. The design problem therefore seems to lie with the absence of information rather than with the fundamental issue of predictability of events. If this is true, the prospects for improved planning should be good provided the necessary efforts are made to produce the required information - and that projects are systematically designed on the basis of this information. However, for decades major donors have invested considerable resources specifically in improving design of projects. Several agencies including the UN-agencies have long since introduced objective-oriented planning as a common requirement with the specific purpose to assert realism in design and assess the effect of risks. What the present study therefore suggests is that these efforts to improve design have failed. Not because of the fundamental characteristics of uncertainties, or by the absence of systematic approaches to improve design, but probably more because of lack of pre-studies to provide the information necessary to produce an appropriate design.

In an attempt to look somewhat deeper into this problem, the quality of design was analysed in a sample of 30 Norwegian funded development projects, where the Logical Framework Analysis had been used as a standard design instrument. The study is included as Annex 8. These projects which represent a best practise in design and therefore could be expected to exceed the average design quality, confirm the findings in the study in Annex 6. The study focused on the quality of design in five major areas: at input, operational, tactical, and strategic level, and pertaining to the risk factors. The analysis concluded that all projects had major design weaknesses - 77 per cent of them in three or more of the five areas. In only half of the projects the resources were specified to a reasonable degree and in accordance with operational objectives. In one third of the projects the operational objectives were either too ambitious or too limited. At the strategic and the tactical level, however, about two third of the objectives were either too ambitious or too limited.
In as much as 20 of the projects objectives had been swapped between the three ambition levels. What is interesting about this is the asymmetric pattern of these objectives as illustrated in Figure 6.5, which indicates that a large part of what was stated as the tactical objectives (more than 60 per cent) were in fact low ambition operational objectives. Almost half of the strategic objectives were also less ambitious tactical level objectives. The conclusion is that most of the projects were not more ambitious than reasonable. Only in three projects the tactical objectives were overly ambitious and in six cases the strategic objectives were overly ambitious. This is contrary to common opinion. One tentative explanation could be that the use of objective-oriented planning in these projects has been successful in reducing ambition levels in project design.

The findings seem to confirm the findings in the study in Annex 5 where the main problem lies in inappropriate components and incoherent design. The problem of too ambitious objectives does not seem to be the major problem in neither studies.

The most characteristic weakness of these projects, however, seemed to be the lack of risk factors that had been identified and described. See figure 6.6. A total of 58 risk factors were identified. However, only 60 per cent of these were relevant in the sense that they were contextual risks related to the project in question. In 60 per cent of the projects there were no relevant risk factors, and in the remaining 40 per cent there were on average only two risk factors. Only nine projects had more than one relevant risk factor specified. However, in none of these cases the risk factors were expressed in verifiable terms.
Number of projects

Figure 6.6 Distribution of risk factors in 30 development projects. Half of the projects had no risk factors, and as much as 18 projects no relevant risk factors.

The lack of identified risk factors could indicate an absence of pre-studies and sufficient information to assess the relevance and realism in the design in these projects.

Such inconsistencies seem to be the rule rather than the exception. Koponen and Mattila-Wiro (1996) concludes in a study of more than 150 evaluation reports that the most critical internal problems in the projects seem to pertain to deficiencies in design and planning. “Ambiguity regarding the objectives of the projects or programmes, and confusion between longer and shorter term objectives and actual outputs or results, were observed in many evaluation reports. Sometimes the problem was not in understanding the objectives, but in a confusion as to the differentiation between components, outputs, indicators, activities, and plans.” It was found that a fundamental flaw was that in many of the projects the attainment of physical or institutional targets was emphasised much more than the utilisation of targeted facilities. The targets were stated in terms of quantifiable, operational objectives (e.g. the number of wells to be constructed), while the demand for their utilisation was taken as granted. This left the link between the outputs at the operational level on the one hand and the wider objectives (e.g. improved health) on the other, poorly defined and tenuous. In the lack of the integral connection between the operational and the strategic objectives, the authors found that the latter might remain wishful thinking or become a cover under which activities can be undertaken that have very different purposes from those stated publicly.

A study of 94 evaluation reports of Norwegian funded projects, Koht-Nordbye (1996), reported that the study team frequently had to use their own judgement in their
assessment whether the objectives had been fulfilled or not, “because it was not obvious from the outset what the ‘objectives’ were in more precise terms. Moreover, many activities had multiple objectives and it is not clear whether some of the objectives are more important than other, and hence if success or failure to attain a given objective should be given more or less weight than others.”

In a study by the World Bank (1996) the importance of quality at entry, as measured by the quality of project identification, preparation, and appraisal, was reviewed for 1125 projects evaluated between 1991 and 1994. The study concluded that projects with adequate or better identification, preparation, and appraisal had an 80 per cent satisfactory rate versus 35 per cent for projects that were deficient in all these aspects. Of the projects with deficient appraisal but adequate identification and preparation, 46 per cent had satisfactory outcomes, nearly half the rate of those with adequate appraisal. Only 34 per cent of projects with deficient preparation and appraisal, but adequate identification, were rated satisfactory. What this study shows is that the initial phases are crucial in projects. Further that the formal definition of the main characteristics of a project also seems to matter, depending on the clarity and consistency of the design. But also the design in qualitative terms is important: a project design based on a through pre-study and appraisal is more likely to succeed than a project based on less systematic analysis of reality.

The answer is therefore probably not more accurate planning. The distinction between design and planning is important. What really matters is again to identify the key determinants that would be decisive in the future development of the project. Many of these key determinants are predictable. Systematic scrutiny of these determinants and a probabilistic assessment of the risks and the opportunities they represent is likely to help produce a realistic design and increase chances of success.

6.5 Contextual determinants

As indicated in figure 6.1, about two third of the contextual uncertainty factors were associated either with the users’ response, which are essentially socio-economic determinants, or with environment and availability of resources, which are essentially physical, and geographic determinants.
The major contextual uncertainties that caused major problems in the projects have been broken down in seven sub-groups in Table 6.3. Inadequate payment had for instance to do with the users’ willingness to cover operational costs, e.g. for maintenance of water supplies or investing in tree planting - in several cases even the users’ ability to pay, they did not have the financial means to cover the costs. Conflicting priorities could be expressed for instance in terms of diverse priorities within the main target group for a power supply project - or a conflict between a forestry project and the target groups’ preferences to use the area for animal grazing. Inadequate understanding in a health/hygiene motivated water supply project could result in under-utilisation of improved water supplies. And finally, too limited demand could be the result of the size of a target group being too small or settled too disperse in a power project.

What is common for the uncertainty factors described above is again that they in most cases would appear predictable if a thorough analysis of socio-economic conditions had been done in advance. These contextual uncertainties represent some of the main features that make development projects different from similar projects in developed countries. Most of them are rooted in the fundamental problem that development projects are expressions of a “gift” economy while projects in developed countries more often are the products of market economies. While the latter projects are often the result of political processes and publicly debated needs, analyses to establish financial sustainability, or market analyses to establish demands; the development project is more often the result of the recipient’s urge to secure donor funds and the

<table>
<thead>
<tr>
<th>Uncertainty factors</th>
<th>Number of projects</th>
<th>Per cent</th>
<th>Per cent of total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Users’ response</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inadequate payment</td>
<td>13</td>
<td>16</td>
<td>4</td>
</tr>
<tr>
<td>Conflicting priorities</td>
<td>13</td>
<td>16</td>
<td>4</td>
</tr>
<tr>
<td>Inadequate understanding</td>
<td>13</td>
<td>16</td>
<td>4</td>
</tr>
<tr>
<td>Too limited demand</td>
<td>10</td>
<td>13</td>
<td>3</td>
</tr>
<tr>
<td><strong>Environment and availability of resources</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural resources</td>
<td>17</td>
<td>21</td>
<td>5</td>
</tr>
<tr>
<td>Land/Geology</td>
<td>10</td>
<td>13</td>
<td>3</td>
</tr>
<tr>
<td>Climate</td>
<td>4</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td><strong>Sum</strong></td>
<td>80</td>
<td>100</td>
<td>36</td>
</tr>
</tbody>
</table>

*Table 6.3 Breakdown of main contextual uncertainty factors in a study of major problems and uncertainty factors affecting development projects*
donor’s need to disburse fiscal budgets. In this process the systematic analysis to establish demands and needs is too often inadequate.

This problem may be one of the major dilemmas in development assistance. Economic theory in industrial countries is almost entirely devoted to the phenomenon of exchange of commodities, services and funds in society based on supply and demand theories. The pathology of these economies is analysed in terms of inflation, price distortion, discounting, etc. On the other hand there is almost no theory available for the gift economy that is introduced in developing countries and its pathology of inadequate cost recovery, lack of commitment, embezzlement, cost overruns, price distortions, investment distortions, etc. Forss (1989).

The second major group of contextual uncertainties is related to the environment and availability of resources. The largest sub-group comprise the availability of natural resources for instance in terms of reservoir variations and reduced river flow in energy projects. Uncertainties related to land and geology could be for instance the geological conditions in a dam project or land ownership in a forestry project. And uncertainties related to the climate would involve for instance drought and violent storms affecting energy and forestry projects.

Also in these cases a common characteristic is that the uncertainty factors are predictable to some extent at an early stage. Except for exceptional climatic situations with devastating effects, the necessary information could have been acquired on the basis of trend analyses, surveys and tests of geological conditions and yields, analysis of data on land ownership, etc. Also in this case therefore the answer is probably improved pre-studies to identify the main determinants, risks and opportunities forehand, before the project is designed and agreed.

<table>
<thead>
<tr>
<th>Operational uncertainty</th>
<th>Contextual uncertainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cassen et al. 1994</td>
<td>• Intrusion of donor’s commercial or political motives</td>
</tr>
<tr>
<td></td>
<td>• Poor design</td>
</tr>
<tr>
<td></td>
<td>• Inattention to local circumstances</td>
</tr>
<tr>
<td></td>
<td>• Failure to profit from past experience</td>
</tr>
<tr>
<td></td>
<td>• Unfavourable policy environment</td>
</tr>
<tr>
<td></td>
<td>• Administrative deficiencies</td>
</tr>
<tr>
<td></td>
<td>• Lack of motivation to implement project</td>
</tr>
<tr>
<td>Morra,Thumm 1997</td>
<td>• Quality at entry/quality of appraisal</td>
</tr>
<tr>
<td>264World Bank operations</td>
<td>• Quality of donor supervision</td>
</tr>
<tr>
<td></td>
<td>• Managerial problems</td>
</tr>
<tr>
<td></td>
<td>• Macro-economic and political conditions</td>
</tr>
<tr>
<td></td>
<td>• Institutional problems</td>
</tr>
<tr>
<td></td>
<td>• Domestic inflation</td>
</tr>
<tr>
<td>Study</td>
<td>Country Funded</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Koht Nordbye 1996</td>
<td>Norwegian</td>
</tr>
<tr>
<td></td>
<td>84 projects</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Koponen et al. 1996</td>
<td>Finnish</td>
</tr>
<tr>
<td></td>
<td>150 projects</td>
</tr>
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<td></td>
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</table>

Table 6.4 Some critical factors determining success or failure in development projects according to four recent major studies

One survey on critical factors influencing success in major projects in industrial countries proposes 14 factors which are critical, of which the project design is the most critical by far. In the survey, which involved 586 project managers, the success factors (or risk factors) were distributed along the project cycle and indicated that the by far most important factor was the project design itself which followed through the whole project cycle as the key element. *Pinto/Slevin, 1988.*

In Table 6.4 some of the conclusions from major studies of development projects are summarised. The main operational determinant that is common in all studies include the quality of design and the quality at entry. The most commonly mentioned contextual determinant is related to the priority accorded to the project by the recipient, which is also consistent with the findings in the present study.
7. Characteristics of uncertainty in development projects

Summary:  Empirical data suggest that more than two third of the uncertainties causing major problems in development projects are either institutional, economic or technological, while only a small proportion of the problems are caused by socio-cultural or political uncertainties. The study of people’s opinions indicate that they overestimate the importance of socio-cultural, political and environmental problems, and under-estimate the importance of economic and technological aspects. If this is true, it would imply that the professional focus in international development assistance seems to be rooted in the belief rather than empirical evidence.

These findings presented in the previous chapters suggest that there is considerable scope for improvement in planning and design of projects if the necessary information is collected and analysed beforehand. However, what is needed is probably not to make more detailed and accurate designs - but to generate relevant information of the prevailing situation, as seen in relation to general experience from similar projects and identify the main uncertainty factors likely to affect the project - in order to get the fundamental design right.

7.1 Areas of uncertainty

The concept of strategy is based on the assumption that changes and responses in the contextual environment to some extent is predictable. Predictability is based on the assumption of a deep stable structure pertaining over the planning time frame. This assumption is likely to fail in most projects and particularly if the time perspective is wide and in high-uncertainty environments in developing countries with a weak economic and socio-political infrastructure. As an example to illustrate this, two decades ago, several donor agencies financed so-called master plans in different sectors of infrastructure developments. These plans provided detailed instructions regarding both location and capacity of facilities to be constructed by development projects. Shortly after the plans were completed, it was realised that settlement patterns were changing, policies were shifting, institutional responsibilities had been
changed, economic conditions altered, etc. to the extent that most of the plans were rapidly becoming obsolete and the planning exercises were largely in vain.

Figure 7.1 The complexity of processes underlying single events Heijden, (1996)

The processes constituting and affecting a project need to be seen as a dynamic system of interlinked events rather than a one dimensional chain of causes and effects as is usually done in planning. Discussing uncertainty in a narrow cause-effect perspective meets with severe theoretical and methodological difficulties, as discussed in chapter 6. What should be seen as causes and effects would depend on sequence, strength of connection and scope of impact. In the real situation, every event in the dynamic system of a project is affected by a complexity of trends, patterns and structures as illustrated in figure 7.1

The most commonly used paradigm in international development assistance to grasp the complexity is a set of six so-called cross-cutting issues recommended by OECD as the focal areas that donor agencies should take into consideration at all stages of the project cycle in their effort to make development projects sustainable. The organisation highlights the importance of analysing the project from these six different angles during the appraisal stage before the project is designed since it would broaden the view on the project and bring to the attention of decision makers contextual determinants as well as operational. OECD, 1992.

In the study of uncertainties causing major problems in 249 development projects (see Annex 5), an attempt was made to link uncertainties with these six areas as illustrated in figure 7.2
What the study revealed was that the large majority of uncertainties are related to institutional aspects in the project itself and to some extent in its institutional environment. The three major areas of uncertainty i.e. institutional, economic and technological accounted for 71 per cent of the problems in the projects, while the more “exotic” areas of political and socio-cultural uncertainties caused only 22 per cent of the problems. Environmental uncertainties were the least significant, representing only 7 per cent.

The six areas of uncertainty are mapped out in Figure 7.3. Not surprisingly, operational problems are mainly institutional (50 per cent). According to these findings, 83 per cent of the operational uncertainty factors are either institutional, economic, or technological. Since operational problems count for 63 per cent of the total, this means that more than half of the uncertainty factors involved are in the hands of the project management in these three fields. The contextual problems seem to distribute fairly evenly on five of the fields except technology (3 per cent only). This is contrary to common opinion which seems to highlight the socio-cultural and political aspects of the contextual uncertainty. According to these data, socio-cultural and political uncertainties account for 38 per cent of the contextual uncertainties but only 14 per cent of the total uncertainties.
The survey of the views of researchers and consultants (see Annex 6) indicated that there is a very high consensus that most problems in development projects are institutional. However, if the above findings are valid, the respondents clearly overestimated the importance of socio-cultural conditions, political conditions and environmental aspects. Correspondingly, they underestimated the importance of economic/financial and technological aspects. See figure 7.4.

The same view which conflicts with the findings above, is expressed in the study of 150 Finnish funded development projects, Koponen and Mattila-Wiro (1996), concluding that external problems might have had a more severe influence than internal problems, particularly:

- problems attributed to policies or unexpected policy changes
- inability or unwillingness of local partners to carry out their part of the commitment
- Inadequately understood problems attributed to the social and cultural environment

A study of more than 1000 operations World Bank (1992) mentions specifically that ‘‘macro-economic and political conditions are factors beyond the control of executing
agencies which explain much of the deteriorating performance over the last two decades”. The report calls for an improvement of the Bank’s analysis of project risks and furthermore a strengthening of the assessment of institutional and political factors in project performance.

![Figure 7.4](image)

Figure 7.4   Opinions regarding the extent to which development projects are affected by uncertainty in six different areas, from a group of 36 researchers and consultants specialised in development assistance. See Annex 6

These findings are contrasted by the study of 94 Norwegian funded projects, Koht Nordbye (1996) which reported that “We have found plenty of observations on the problems which most directly affect project performance, viz. institutional capability and procedures, but not much on other factors, except in cases of war and internal armed conflicts. We have therefore not analysed the possible influence of socio-economic, political and cultural conditions.”

A study of German evaluation reports carried out in 1990 found that 20 per cent of their operations failed due to very difficult general conditions. Another 30 per cent of the failures were considered to be caused by unreliable political and legal backing in the recipient countries, whereas the weak structures of the project executing agencies were considered to account for 40 per cent of the problematic projects.

The findings referred to above are conflicting. People’s opinion might highlight the contextual and “exotic” uncertainties, while empirical studies may play down the importance of these factors. The evidence is not sufficient to draw firm conclusions. More comprehensive studies would be need. However, if the finding in the studies in Annex 5 and 6 are valid, the significance could be considerable. The professional focus of donor agencies seems to be rooted in the belief rather than the empirical situation. For instance, over the decades there has gradually been a shift from technological and economic expertise towards increasing use of social science,
political science, and environmental expertise in recruitment of staff and use of external advisors and consultants. In my personal experience from the field I would maintain that these three fields have got more that their reasonable share of attention also in evaluation studies and in reporting, while economic and technological aspects often have received insufficient attention.

According to a study by Forss & al. (1998) the majority of professional staff in development agencies have their professional background in the social sciences. For instance, in UNDP which is financing environmental projects as one of its main areas of activity, had in 1996 only 14 staff members with relevant education in natural science. In the Swedish development agency, the majority have their background in social science, while less than 10 per cent are educated in natural science and technology. The majority have only a basic academic degree. They entered the organisation when they were young and have not developed professional competence in any specific field other than intra-organisational competence related to their roles in the organisation. The study concludes that the situation in most donor agencies is quite similar, and that the available professional competence as seen in relation to needs, is highly unsatisfactory.

The policy to direct much of the attention to socio-cultural and political aspects of development assistance may be problematic for two reasons. Firstly, because these aspects may prove not to be the main causes of the problems. Secondly, because of the complexity of social and political processes and the limited possibility of projects to influence and control the social and political dynamics in recipient countries. Such an endeavour is clearly very ambitious, and probably also not aiming at the target. Chance is that a stronger emphasis on the institutional, economic and technological aspects could have contributed more to problem-solving by directing the attention more specifically to the project or process itself and the responsibilities, commitment and performance of the parties involved.

Two types of arguments have been used against this type of reasoning. Firstly, that the project in itself is not the aim, but that it is only a means to achieve a broader objective. Secondly, that the institution building aspect is more important than the efficient production of outputs. These arguments grew out of the historical process of development assistance. In the early years, agencies tended to be too preoccupied with the implementation and performance of projects, and not the significance of the project seen in a wider context. Some of these projects had severe negative and un-anticipated impact in society. Hence, the attention was shifted more to the societies’ needs. The objectives became more ambitious, in the sense that they were linked to users’ satisfaction and fulfilment of needs, rather than the production of outputs.
Professionals in anthropology, sociology and political science were used increasingly to analyse and try to comprehend the processes induced by development projects. The emphasis was shifted to the impact of the project rather than the project itself - in many cases to the extent that performance standards and the efficiency of projects were neglected.

During the later years, the emphasis has been on sustainability. Projects should be used to produce results that can be sustained - or to develop capability to deliver outputs at a sustained basis. This policy has further relaxed the requirements regarding compliance with budgets and time schedules, and also the performance standards and demands on efficiency.

A present trend is to shift the responsibility for planning and implementation to the recipients. While this may be the appropriate thing to do in terms of managing uncertainty and risks, the relaxed regime regarding performance and efficiency may cause severe problems regarding ensuring commitments, fulfilment of obligations, accountability, etc. It would seem reasonable that when the responsibility for handling the more “exotic” parts of uncertainties (which presumably represent a smaller part of the total) is left with the recipient, the demand on the donors in terms of socio-cultural and political expertise would be reduced, and the need would rather be on institutional, economic, technological and environmental aspects (which seems to be the most problematic areas in terms of uncertainty). Also it would be logical to strengthen the enforcement of agreements to ensure that the recipient adhere to certain minimum performance standards.

In conclusion, if problem-solving is the issue, donors may need to reconsider their recruitment policy to change the professional bias and strengthen their planning, appraisal, and problem-solving capability. This is discussed further in chapter 12.

7.2 Predictability

Planning is also based on the assumption that something is predictable. If the future is 100% uncertain, planning is obviously a waste of time. To separate what is predictable from what is fundamentally uncertain will therefore help assessing to what extent it is possible and viable to make plans - and how comprehensive and detailed the plan should be in view of the uncertainties ahead.
Certain developments in the future are to some extent 'predetermined', depending on the time frame. In the time frame of a project demography may be entirely predictable. However, over the very long term birth rates are just as unpredictable as anything else. Invention is probably the most unpredictable phenomenon of all. Growth rate of production capacity may be an example of predetermined element. Political power shifts take time and exhibit an element of momentum allowing an element of prediction. Cultural shifts are even slower. And some human characteristics are permanent, such as the desire to survive, develop and interact.

Predictability depends on both time perspective and rate of change. In fast changing environments planning becomes shorter-term, and policies must exhibit a higher degree of flexibility. The comprehensiveness of the strategy should therefore depend on the degree of uncertainty in the environment. For example, according to Heijden (1996), some phenomena exhibit more inertia and momentum than others. For example energy use shows strong momentum, so oil companies plan a long way out. On the other hand, construction companies seldom plan ahead more than 3 years. Beyond that they experience little that is predetermined and they tend to adjust their business policy accordingly.

In the study of major problems in 249 projects (see Annex 5), an attempt was made by the researcher to review to what extent the identified uncertainty factors were predictable. This is no doubt the parameter which is affected the most by the authors’ judgmental subjectivity. In the study, all uncertainty factors were categorised according to whether they were considered largely, partly or not predictable. Examples of predictable uncertainties could be e.g. “weak institutions”, “turnover of project staff”, “quality of the water source”, or “the needs of the users”. In such cases one can imagine that it would take some effort to establish the facts, for instance through studies of the institution, the water source, or the users’ priorities, but with this information available, the problems could have been foreseen. Examples of partly predictable uncertainties would be e.g. “delayed release of funds”, “demographic estimates”, and “user’s maintenance of facilities”. In these cases the element of chance is probably larger. Examples of non-predictable uncertainties would be e.g. “drought situations”, “changes in oil prices”, and “acts of terrorism”. It should be noted that in this study, the assessment of predictability was done on the basis of brief statements with very little contextual information. The reliability of data may therefore be questionable. The main findings are displayed in Figure 7.5.
The conclusion was that as much as 70 per cent of the uncertainty factors were characterised as largely, and about 28 per cent partly predictable. Only 2 per cent of the uncertainty factors were considered not predictable. These were essentially related to international or local conflicts, changes in oil prices, and drought situations. These findings contradict dramatically the view that development projects are strongly affected by uncertainty factors that are difficult to foresee, and in some cases even to understand.
When looking more specifically at the six areas of uncertainty mentioned above, the study revealed that uncertainties in the technological and institutional fields may be the easiest to predict (84 and 81 per cent, respectively), see Figure 7.6. Less obvious is that most of the socio-cultural uncertainties (74 per cent) also seem to be largely predictable, since this is the field where one would assume that most of the “exotic” uncertainty factors would appear. The reason is probably that most of these problems are related to the user’s response to the project in one way or another, which could often be predicted on the basis of assessments of the user’s needs and preferences, as compared with the size of user fees, the users’ financial capability, etc. Apparently, the least predictable types of uncertainties are those pertaining to policy support (26 per cent) and environmental conditions (50 per cent). It should be observed that uncertainties in these two fields only represent less than 20 per cent of the total, whereas the other four fields of uncertainties which appear to be the most predictable ones represent more than 80 per cent of the total.

In a sense this is both good news and bad news. It means that there is considerable scope for improvement in planning and design of projects if the necessary information is collected and analysed forehand. The problem is that it is reasonable to suspect that the possibility to translate this into improved performance during implementation may be severely restricted. For decades, donor organisations have tried to reduce uncertainty and risk specifically through improved planning and the use of expatriate personnel to implement plans. The data above therefore implicitly suggest that these may not be viable strategies.
When cross-correlating with other parameters in this study, the only pattern to be observed is that uncertainty factors may be slightly easier to predict in water supply projects, and more difficult in energy supply projects than in educational and forestry projects. One explanation could be that the water supply projects are fairly homogeneous while the energy supply projects include many different types of technology. There were no significant variations in predictability between uncertainty factors that affect the quality, the time and the cost of the project, between successful and less successful projects when correlated with complexity and ambition or whether in Africa, Asia or Latin America.

7.3. Discussion

Over the last 2-3 decades, donor organisations have increasingly introduced objective-oriented planning procedures, in order to improve project design. In my experience working with these methods, I would maintain that they have basically been used for two purposes. Firstly as a formal tool to express the main design elements in a standardised format. Secondly, to design projects in great detail. This may not have improved the quality of design substantially. Without a sufficiently thorough analysis of the perceived project in its institutional, economic/financial, technological, environmental, socio-cultural and political context, the planning frameworks have often been filled with the wrong design elements. Also, the main uncertainties likely to affect the projects have not been identified or analysed sufficiently. In such cases it does not help if the design conform with the logic required by the planning method.

Surely, if the fundamental design is inferior, it does not help to make the design more detailed by specifying operational objectives and the activities associated with these in detail, and defining measurable indicators linked to all individual objectives in the design. I would maintain that even in the exceptional cases where the fundamental design is appropriate, the chance of success will not increase significantly by making the design more detailed if the project is implemented in a high-uncertainty situation. A detailed design will most probably become a straight-jacket of non-fulfillable obligations that would tend to undermine the authority of agreements and contribute to a relaxed regime of non-adherence to requirements regarding responsibilities, commitments, performance and accountability. As mentioned in chapter 7.1, this is probably what has happened in international development cooperation.

In my experience, the design depends more on the quality of information and analysis that it is based on than the formal design principles used. The design should be based on a thorough analysis of the

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16 An analysis of project design is included in Annex 8
prevailing situation - seen in relation to general lessons of experience from similar projects elsewhere. Without this information, it is not possible to identify and analyse the main uncertainties that are likely to affect the project.

If the findings in the study quoted above are valid, it is a strong argument for such analyses. Several studies of international development projects have concluded that problems and successes in projects in the same sectors are repeatable. The present study indicates that the uncertainties causing the major problems are largely predictable. Investments in relevant information and thorough appraisals of proposed projects, to get the fundamental design right, could therefore prove to be worth while.
8. Uncertainty and strategy making

Summary: Often, much information is collected at an early stage to guide appraisal and design of projects. Many of these studies are too pre-occupied with contextual problems related to socio-cultural, political and environmental conditions. Some of these studies are both broad and in-depth, and produce a mass of information beyond what is useful for the appraisal - with a utility/cost-ratio below what is reasonable. Indications are that resources could be better used, if the focus was more on what causes the major problems in projects, and the studies were guided by experiences from similar projects elsewhere.

The planning method adopted by most donor agencies seems to be appropriate for the purpose of appraising the realism of a project strategy and the significance of the uncertainties affecting the strategy. A realistic strategy is more a question of deciding on the appropriate ambition level, than laying out the sequence of events and estimating anticipated achievements in detail. This require a systematic analysis of the probability and the utility of the uncertainties associated with each ambition level in the strategy. A main problem seems to be that such a systematic analyses of probabilities and utilities are seldom done in development projects.

8.1 General

As discussed in Chapter 3, a common way to define uncertainty is in terms of absence of information to make the right decision. Although this is a useful definition in operational terms, it is also very limited: it suggests that uncertainty can be eliminated once the necessary information is available. However, projects are dynamic processes operating in societal environments where plans are frequently overtaken by events. Such an assumption is therefore naive, to say the least. It may nevertheless be useful to consider uncertainty along the dimension of time as indicated in figure 3.1 and particularly to make the distinction between the situation before and after the project is initiated. First the low information/high uncertainty phase and then the high information/low uncertainty phase. The text books promise a high return in terms of reduced uncertainty if relevant information is produced at an early stage. What type of information is available at the earliest stage when a project is formulated and appraised? What type of information can not be produced? What is the limit to the usefulness of additional information? What is most important: contextual information or operational information?
8.2 The information basis

The assumption that uncertainty is highest at the outset when information is most limited is a tremendous motivation for investing in information at an early stage, on the assumption that this will reduce uncertainty. However, there are at least two problems that have to be considered. Firstly, the objective is not to reduce uncertainty, but rather to reduce risk and realise opportunities. This may affect the type of information we are seeking. Numerous studies in decision making show that people tend to be more preoccupied with risks than opportunities. If the search is largely on weaknesses and threats, the information may be useful mostly for passive risk assessments. If the information also focuses on potential strengths and opportunities, it could facilitate more pro-active planning and risk management.

Secondly, it is the question whether relevant information can be generated at all. At the early stage before the project is initiated the manager wish to base decisions on facts as much as possible, but will also have to make predictions about the future.

In general, future events are predictable only to a limited extent. Some events can be predicted in quantitative terms on the basis of assessments of past trends. In a situation which is predictable to some extent the uncertainties may cause only minor deviations along the general direction indicated by past developments. Other events occur more spontaneous and represent qualitative changes or discontinuities. Sudden changes in the economy, a new technological breakthrough, an act of terrorism, a change of government or management may suddenly change the general picture altogether. Often, neither the timing nor the effect of such events can be predicted or even understood before they occur. Uncertainty therefore depends not only on the amount of information which is actually available to the decision-maker, but also the nature of the process studied. In many cases vital information is by definition not available forehand to shed light on development before it actually happens.

Looking more specifically at information needs in a development project, what we are seeking is not any type of information but information that is critical to the success of the project. The study of 249 projects in Annex 5 concluded that as much as 70 per cent of the main problems affecting the projects were caused by uncertainties that were largely predictable, see also Chapter 7. If this is true, it reduces the problem substantially.

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18 For a further discussion see Annex 3
Figure 8.1  Cost and utility of information when additional information is collected to improve management of a project. As a general rule, the gain in utility tends to decrease and cost tends to increase. Consequently, in terms of cost efficiency, there is a limit to the amount of information that should be collected. Jessen (1995)

In general terms, the cost of collecting information on a specific topic usually increases progressively with the amount of information collected as indicated in figure 8.1. This is because more information require more in-depth studies or more wide-ranging information searches. On the other hand, the gain in utility of additional information tend to decrease. This is because there is usually a critical amount of information that is needed to get the necessary insight in a situation. Additional information will be of limited use. Maximising the utility/cost-ratio will therefore set a limit to the amount of information that is useful.

A targeted search for information regarding the main uncertainties affecting the project is likely to be more cost effective than an unguided search, since it makes it possible to increase the share of relevant information and reduce the total amount. Several studies conclude that success and failure is largely repetitive in the same type of projects, and that the uncertainties causing the major problems in projects are largely predictable. The chance is that a pre-study guided by accumulated experience from similar projects could produce cost-effective and relevant information.

The majority of respondents in the survey quoted in Annex 6 were of the opinion that most of the uncertainties affecting development projects are contextual and to a large extent related to socio-cultural or political conditions in the recipient country - and therefore more difficult to predict than for instance institutional or technological uncertainties. According to the empirical data in the study in Annex 5 this is not the case. When the perspective is limited only to the information associated with major problems or major risks in the projects, the data suggest that most of the uncertainties that create major problems in the project are operational. Only 15 per cent of the uncertainties were related to political and socio-cultural contextual conditions, while
as much as 53 per cent were operational and related to the institutional, economic or technological aspects of the project.

Presumably this would make a difference in terms of predictability. The amount of information needed could be limited if the search was limited to what could possibly be the main stumbling stones and the main success factors in the perceived project. By using experiences gained with similar projects as a guidance, the search for information could be targeted quite specifically and the amount of information further reduced. This view is supported indirectly in a study of 264 World Bank operations which concluded that repeater projects have significantly more successful outcomes than other projects. The study therefore recommended increasing use of pilot projects and sharing of experience with other donor agencies, *Morra and Thumm (1997)*.

Respondents in the survey referred to in Annex 6 had a strong belief in pre-studies and initial analyses as a means to master uncertainty and risk. As can be seen in figure 8.2 a huge majority believed in pre-studies of needs, priorities, and possible impacts, while a smaller majority believed in systematic risk analysis. A tentative explanation for this difference could be that systematic risk analysis is not yet practised to any extent while there is a tradition for using interdisciplinary pre-studies as input to appraisal and design of projects. The chance is that broad and often expensive pre-studies represent a mass of information beyond what is useful for the appraisal and with a utility/cost-ratio far below what is optimal.

![Figure 8.2: Opinions in a group of researcher and consultant regarding the usefulness of different measures to master uncertainty and risk. Percentages. (N=36)](image)

The importance of *quality at entry*, as measured by quality of project identification, preparation and appraisal, was reviewed for 1125 projects evaluated between 1991 and 1994 in a study by the *World Bank (1996)*. The study showed that projects with adequate or better identification, preparation and appraisal had an 80 per cent satisfactory rate, versus 25 per cent for projects that were deficient in all these aspects. Of the projects with deficient appraisal but adequate identification and preparation, 46 per cent had satisfactory outcomes, nearly half the rate of those with adequate appraisal. The report concluded that the quality of preparation and of
appraisal had significantly more influence on satisfactory performance, than key country macro-economic variables, external factors, or government considerations.

The study of 94 Norwegian funded projects by Koht Nordbye (1996) showed quite unequivocally that variations in quality of planning were strongly connected with differences in the performance of the project. This observation was confirmed also in studies made by German and Finnish development agencies which seemed to regard planning as the most problematic aspect of development aid performance.

The study of major problems in 249 projects in Annex 5 suggests that the problem of predicting the major uncertainties in a project may be manageable. From a technical point of view, the uncertainties causing the largest share of major problems, i.e. institutional, economic/financial and technological, would appear to be predictable to a large degree, as indicated in figure 8.3. Problems caused by environmental and political uncertainties may be considerably more difficult to predict, but seem to represent a smaller share of the total.

![Figure 8.3](image)

**Figure 8.3**  
Assessment of predictability of uncertainties causing major problems in a sample of 249 projects

A further look at the predictability of operational versus contextual uncertainties indicated that also the contextual uncertainties to some extent are largely predictable as indicated in figure 8.4. While this may be surprising, an explanation might be that successes and failures are largely repeatable in projects with similar purpose and characteristic, for instance with one sector. Taking the accumulated lessons of success and failure from these projects as the lead when looking for information relevant to the design and appraisal of an anticipated project may therefore be less demanding and expensive than imagined.
Figure 8.4 Assessment of predictability of operational and contextual uncertainties causing major problems in 249 projects. (N=334)

8.3 Defining a realistic strategy

Assuming that the necessary information is available, the next step is to lay the strategy. Improving strategic planning has been a high priority for donor agencies. For instance, UNDP and the UN agencies with technical cooperation programmes in developing countries introduced objective-oriented planning as a prerequisite as early as in the 1970-ties. All major bilateral donors agencies have followed suit and introduced similar methods as a standard, including the European Commission and Japan. Large resources have been invested in designing strategies at project level, often highly detailed, with quantitative indicators not only attached to the operational objectives but also to the tactical and strategic objectives. This may seem surprising under the assumed conditions of high uncertainty and risk in developing countries. For the implementing organisation such detailed strategies may easily become rigid bureaucratic blueprints defying events, rather than operational frameworks to enable processes to develop.

One problem with strategy making in development projects has been that despite a strong belief in pre-studies and improved information as reflected in figure 8.2, experience is that the main concern often has been to develop the strategies in accordance with the agreed planning procedures, but without the necessary information and analysis, and therefore producing inferior results.

Project designers tend to be ambitious. One reason may be that there is a common desire among people both at the donor and recipient side to achieve as much as possible with a given amount of resources. This causes the ambition level to be defined as high as possible, within boundaries. Another reason may be that ambitious objectives provide motivation for those involved to improve performance. However, the most common reason for designing ambitious development projects is probably that ambitious objectives are used to justify proposed projects, both by the recipient in his request for donor support, and by the donor organisation in its quest for public and political support. The dilemma is that high ambitions tend to reduce the probability of success. Success is determined by performance relative to ambition. An incremental rise in ambition does not necessarily cause a corresponding rise in performance. Rather, a high ambition level would often require that the scope of the project would have to be extended to increase the probability of success. This is
common in international development assistance: when resources prove to be insufficient to support a project’s ambitions, the budget (and often also the time frame) is extended, instead of redefining objectives. The problem is illustrated in figure 8.5.

![Diagram](past_achievements.png)

**Figure 8.5 Ambitions relative to past performance**

The ambition level will have to be related to the resources available. Planners often start with an idea of the amount of funds available and stipulate an objective to match the resources. Although this is a perfectly rational approach in planning, the result is often a mismatch between objectives and available resources. There may be several reasons for this. One reason is that people have a tendency to underestimate costs. Another common and plausible explanation is that both the amount of funds available as well as the objective are provided by decision makers as non-negotiable inputs to the planning process. The match between resources and objectives may therefore be the result of chance as much as of reason. Often, objectives are ambitious beyond what available resources can support. Doing it the other way around could result in a better match between resources and objectives: first agreeing on the main objective, then stipulating the necessary operational objectives, and then calculate the costs of these operational objectives. In case of a mismatch, either the budget would have to be adjusted upwards, or the objectives scaled down.

Availability of resources does not necessarily guarantee project success. The critical factors affecting the project may be insensitive to the amount of resources available, for instance if they are related to the market response, carrying capacity of the environment, the availability of technology, etc. The assessment of realism at the planning stage would usually have to consider a large number of such factors. For simplicity, a first short-cut would be to consider the project in relation to what has been achieved earlier in the same field. The realistic time schedule would be the one that builds on previous experience, the realistic project objective would be the one that does not deviate significantly from what has been achieved in the past. Without this linkage to the past it may be difficult to assert realism before the project is implemented. The danger is of course that by accepting previous ambitions as the standard the possibility to improve performance may be lost in the outset Christensen
and Kreiner, (1991). The alternative would be to lift ambitions just so much above the level of the past that it provides the necessary stimulus to improved performance and at the same time a reasonable probability of success is retained.

Laying a realistic strategy is therefore more a question of deciding the ambition level than laying out the sequence of events and estimating achievements in detail. A systematic analysis of the probability and utility associated with each ambition level in the project is probably of much higher significance than the detailed analysis. It is also much less expensive. And still, in my experience, systematic analyses of probabilities and utilities are seldom done in these projects.

The so-called logical framework method adopted by most of the donor agencies lends itself exactly to this purpose but has apparently not been used to this effect. The method structures the key elements in a project in a logical sequence at operational, tactical and strategic levels, as well as the main contextual uncertainties influencing the strategy at each level as illustrated in figure 8.6. The method provides a framework for analysis of probability at any level of sophistication from simple, intuitive assessments based on subjective judgement, to mathematical simulation of processes. No doubt, a simple analysis is better than no analysis - and probably not grossly inferior to the sophisticated approach in a situation with high uncertainty. Chance is, therefore, that the strategy of many development projects could be improved considerably if they were subjected to at least a simple type of risk assessment of operational and contextual uncertainties.

*Figure 8.6 The project strategy is laid out in three distinct ambition levels with associated key uncertainties attached to each level in the logical framework method*
According to this planning method, a realistic strategy should provide a description of the main elements in the project and the main influencing factors or uncertainties in its surroundings. It should encompass the three planning perspectives in figure 8.6. It should have a strategic objective which provides the justification for the project, a tactical objective which is explicit regarding the preferred situation that the project is meant to contribute to, and a number of operational objectives which are explicit regarding what the project should produce. For example, a road is constructed to solve a traffic problem. This is meant to result in people making more productive use of their time. Construction of a school is done in order to provide education for people. This is meant to result in improved services in society. The road and the school building are the operational objectives, traffic flow and education are the tactical objectives, and productive use of time and improved services are the strategic objectives.

The operational objectives should be factual in the sense that the project is expected to fulfil these objectives with a high probability. The tactical and strategic objectives are hypothetical in the sense that the project is only one of several conditions that have to be fulfilled in order for the objectives to be realised. Traffic flow, for instance, requires that there are no other major bottlenecks in the road network. Education require additional funds, motivated students and qualified teachers. The probability that these objectives will be realised are therefore more limited than the probability that the road and the school building are constructed.

A realistic strategy is built on a cause-effect chain which starts with an amount of resources to be used within the project to fulfil a number of operational objectives. The resources must be sufficient to ensure the fulfilment of objectives. The operational objectives must therefore be defined so that the probability of realisation is close to 100 per cent. If the operational objectives are hypothetical, the project is not formally designed to succeed.

Projects are often designed with several independent objectives at the tactical and strategic level, sometimes involving different ambition levels. In some cases the same project can have conflicting objectives. This creates an internal uncertainty which opens up to different interpretations of the objective by different parties. A successful strategy requires that the tactical objective should not be ambitious beyond what is realistically achievable within the time frame associated with the objective. Also, the objectives must be defined precisely and as singular objectives. Agreeing on only one tactical objective will facilitate planning, allocation of resources, project management and control. The same requirements apply for the strategic objective.

The project’s strategy is established by the main normative elements listed on the left side in the matrix in figure 8.6. At the right side are the main uncertainties affecting the strategy and linked directly to the fulfilment of the different levels in the strategy. A realistic strategy requires that as many as possible of the major uncertainties are identified in the outset. The matrix provides room for the information necessary for an overall description of the fundamental characteristics of the strategy. Such a strategy, without details, will provide useful insight for all parties involved in or affected by the strategy and will be a good point of departure for the assessment of realism and a subsequent more detailed design of the project. The framework
provides a fuller perspective than the much narrower but more detailed picture presented by common project management tools. Effective use of resources would suggest that the first thing would be to establish the main strategy or framework before the details are described and agreed. Next thing would be to clarify ambitions by analysing the probability of realisation of objectives systematically, and in view of the available resources.

This is often not done properly. Strategies are laid and projects are planned without a thorough appraisal of tactical priorities. The strategic perspective is often analysed only in projects above a certain size. This problem came out quite clearly in the study included under Annex 5, where inadequate project design was registered as the second largest cause of major problems in the sample of projects under review, accounting for 21 per cent of the total and 33 per cent of operational uncertainties.

The quality of design in development projects was explored further in the study included in Annex 8, where a sample of 30 projects designed according the logical framework methodology were analysed. It was found that applying the method may have helped in reducing ambitions at strategic and tactical levels. Still, the strategies did not meet the planning requirements by far. Most of the projects had design faults at all levels and no projects were without faults.

In two third of the projects objectives had been swapped between the three ambition levels. About half of the projects had between two and six tactical objectives, instead of one, as required. Only 10 per cent of the projects were found to be well designed at the operational level, 7 per cent at the tactical level, and 7 per cent at the strategic level, see Figure 6.5. The study therefore demonstrated that there is much to be desired in terms of defining clear, consistent and verifiable strategies in development projects.

This problem was confirmed in the study of 94 Norwegian funded projects, Koht Nordbye (1996), where the study team frequently had to use their own judgement in their assessment whether the objectives had been fulfilled or not, “because it was not obvious from the outset what the ‘objectives’ were in more precise terms. Moreover, many activities had multiple objectives and it is not clear whether some of the objectives are more important than other, and hence if success or failure to attain a given objective should be given more or less weight than others.”

Most of the design faults identified in the study in Annex 8 were obvious and easy to detect. The answer to most of these design problems is not the application of complex analyses of probabilities, but rather some crude logic of causalities. In other words, to structure the sequence of events based on some basic understanding of the processes involved, in combination with some simple intuitive estimation of probabilities. In my experience, such rough assessments as a first approximation to a realistic design would make a vast difference in the quality at entry - and ultimately between success and failure of the project.
Planning for the future is not about predicting the future, but being able to live with the unpredictable.

9. Risk analysis and risk assessment

Summary: The road to a realistic project design is paved with difficulties: firstly the availability of information, secondly the judgmental problems involved in translating the information into probabilities and utilities, and thirdly the analysis and application of the information in the final design. Because of the in-build dynamism and the self-adjusting abilities of social and administrative systems, the present trend in risk assessment of projects is to use simple, subjective and intuitive methods rather than advanced mathematical methods to simulate processes. The problem lies more in identifying the relevant information than devising systems to help aggregate the information. Under this pretext, the method adopted by most donor agencies appear appropriate for identifying and making rough estimated of the probability and utility of major uncertainties, and to consider their possible effect on different project strategies.

9.1 Methodologies and the quality of information

There is a long tradition of risk analysis and risk management in industrial countries, and risk and uncertainty are used increasingly as separate parameters in the analysis and management of projects. Considerable research and experience with different types of analytical tools over many years has caused a distinct shift in emphasis from advanced mathematical methods and analysis towards increasing use of simple, subjective and intuitive methods.

The reason for this is primarily that reality is predictable and controllable only to a limited extent because of the in-built dynamism in social and administrative systems, particularly their self-adjusting abilities. For this reason, minute plans developed at an early stage may be less effective in achieving objectives than successive interventions to influence the dynamic process as it unfolds. Systematic risk assessment could therefore be seen as an alternative to detailed planning in a high-uncertainty situation. It’s intention is two-fold: to help making a realistic design, and to identify major potential stumbling stones and challenges that would need attention.
when the project is implemented. In order to assess risks a rudimentary strategy need to be envisaged. The risk assessment will then give some indications of the viability of that strategy. In a sense, it represents a ‘light’ version of planning that helps appraising the main strategy, but allows considerable flexibility in its implementation.

Risk and opportunity is the combined expression of probability and utility, as discussed in chapter 3, and is an expression of potential loss or gain in an uncertain situation. Because of the uncertainty it cannot be determined exactly whether or when the loss will occur. It may however be possible to estimate the size of the loss and its probability of occurrence.

For instance, the acquisition of shares in a company may result in either gain or losses when they are sold at a later stage, as illustrated in figure 9.1. Based on previous market data and projected trends it may be possible to produce a probability distribution to guide decisions on whether or not to acquire the shares. The decision criterion could for instance be the expected outcome $E$ represented by the maximum probability value. But it could also be a risk factor which expresses the size of the risk area in percentage of the entire area of risk and opportunity. Or it could be the coordinates of the mean value of risks $P_M$ and $U_M$.

![Figure 9.1 Probability distribution for an uncertain event](image)

The simplest way to analyse risk is to classify such single estimates of risks expressed in terms of probabilities and utilities associated with the event according to some classification system. These values can be plotted in a matrix which expresses different classes of risks. Such diagrams give a very rough but direct picture of sets of risks. A major weakness of this approach is that it assumes that the probability and
utility is multiplicative. Also is gives a static value of the risks associated with an event, viewed completely out of context. It can therefore for instance not take account of the type of phenomenon where low-probability and low-utility risks, since they exist as parts of a dynamic process, actually cause havoc to a project. If the choice is the simple risk matrix, precision is not improved significantly by dividing the variables into a larger number of classes. The method can only be used for making rough estimates.

![Simple risk analysis matrix](image)

*Figure 9.2 Simple risk analysis matrix*

The opposite extreme would be to try simulate the actual processes for instance by means of dynamic mathematical modelling. However, experience suggest that the complexity of a project in its societal setting does not warrant the considerable efforts it would take to make such a model, because of the dynamism and unpredictability in the system.

In a non-routine project in a high-uncertainty situation, the information that is available at the pre-appraisal stage is not always quantitative data with high validity and reliability, but more often qualitative expressions of the situation. The quality of the data may be questionable. This adds to the problem of the decision maker in his assessment of probabilities and utilities.

The quality of judgement would therefore largely depend on the information available to understand past and present events and to predict future events, but also the biases, distortions and limitations related to the judgmental process itself. A large amount of research confirms that it is difficult to judge the quality of human judgement. There is no such thing as an “objective” prediction, in the sense of a prediction that depends
solely on data. There are always some confounding judgmental effects. Moreover, people do not extract from available data all the information they could, and some people are not disposed to think about uncertainty, so they may not be able to provide good probability assessments. Even the simplest type of prediction is therefore prone to errors, both in terms of weaknesses in data and in human judgement.

Some of the conclusions from experiments with decision-making related to singular problems indicate that. Phillips, (1987)

1. People often over-estimate low probabilities and under-estimate high ones
2. Correspondence between probability and actual outcome is usually better for future events than for general knowledge questions
3. Experts with special knowledge and experience are usually better in assessing probabilities
4. Groups can generate better assessments of probabilities than individuals working alone by sharing knowledge and experience
5. Training helps in making predictions and most improvement occur early in the training session
6. Assessment improves when complex events are broken down into more simple events

Judgement studies of more complex decision making provide evidence that in a prediction where several activities or assumptions are involved, peoples’ thinking is channelled and biased by prior beliefs and expectations which inhibit logical reasoning. People are likely to have strong motivational commitment to their theories arising from years of effort expended, professional status, and so on. This is likely to add to their personal bias. Evans, (1987). What such studies show is that subjects can fall prey to biases which severely restrict their imagination of the ways in which processes may be interpreted. In terms of forecasting, such biases would entail selectively generating predictions that confirm a priori beliefs and ignoring others which may equally be deduced from the available evidence.

Moreover, studies indicate that people often have a limited awareness of the restrained accuracy of their judgements. While one would expect people to learn from mistakes made in the past and realise their limitations as forecasters, studies indicate that people are quite poor at learning from past mistakes. A number of studies indicate that people tend to over-estimate the likelihood that they could have predicted an

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19 See G. Wright/P. Ayton (ed.),1987
20 See G. Wright/P. Ayton (ed.),1987
event after they are provided with outcome knowledge. If asked to recall earlier predictions after outcomes are known, people will also remember more accurate predictions than they actually made.

Initial incomplete problem representations or scenarios may leave the decision-maker or forecaster to have un-warranted confidence in the information at hand, disregarding the complexity of matters and the need to explore the breadth and depth of the situation. This is because complex problems are often so intricate that their structure is not well-understood. The description of assumptions may therefore often be based on the analyst’s own intuition and past experience, disregarding information from other sources.

One distinction is therefore between expectation and uncertainty, where expectation is the subjective conception of the effect of uncertainty. Extensive research has shown that while uncertainty is ruled by probability theory, the rules that govern subjective expectancy may be entirely different. There are numerous evidence that people's reasoning doesn't follow the mathematical rules of conditional probabilities, but are influenced by biases and so-called heuristics. According to Kahneman, Slovic and Tversky (1982) people rely on a limited number of heuristic principles which reduce the complex tasks of assessing probabilities and predicting values to simpler judgmental operations. In general, these heuristics are quite useful, but sometimes they lead to severe and systematic errors.

Three common heuristics that are employed in making judgements under uncertainty are the:

1. representativeness heuristics, which is usually employed when people are asked to judge the probability that an object or event A belongs to class or process B. For instance, people tend to underestimate the range of possible values an uncertain variable can take.

2. availability heuristics which involve judging an event as likely or frequent if it is easy to imagine or recall. Frequently occurring events are generally easier to imagine or recall than unusual events. Events may be easily imagined or recalled simply because they have been recently brought to the attention of an

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21 In a study by Fischhoff, Slovic and Lichtenstein (1978) subjects were presented with a list of seven main groups of causes for the event that “a car fails to start”. They were asked to estimate on average what percentages of the problem were associated by the specified causes. One group of respondents got a shorter list where three of the groups of causes were included under “all other problems”. It was found that the importance accorded to “all other problems” did not increase significantly when it contained tree of the other main causes.
individual. Failure to appreciate the limits of presented data may lead to biased probability estimates.

3. adjustment from an anchor, which is usually employed in numerical prediction when a relevant value is available. Subsequent estimates may be unduly influenced by the initial value, so that subsequent estimates are typically insufficiently different from the initial value. Moreover, for a single problem different starting points may lead to different final estimates which are biased towards the starting values.

These heuristics are highly economical and usually effective, but they lead to systematic and predictable errors.

Finally, simplicity is preferred to complexity. People tend to expect that the complexity of social systems can be used for the purposes of analysis without sacrificing realism. Consequently people with different expertise and experience tend to analyse differently. A group of experts, each knowledgeable about one aspect of a complex system, does not necessarily comprise expertise about the total system.

In summary, the road to a realistic project design is paved with difficulties. Firstly, the question whether information is available and what it will take to produce the information. Secondly, the judgmental problems involved in translating and converting that information into probabilities and utilities, and thirdly the analysis and use of the findings in the final project design. Most of the research on risk assessment and risk management has gone into the third stage in the process: processing of information as a basis for decisions. In a high-uncertainty situation, the main weakness may still be the quality of the information that is used in the process. Ayton and Wright (1994) conclude that “if people are good at assessing probabilities but poor at combining them, then perhaps they can be helped by a system that takes the human assessments and combine them using mathematical principles of conditional probabilities. However, if they were poor at assessing the component probabilities then there wouldn't be much point in devising systems to help them aggregate these. 'Garbage in garbage out' used to be a popular aphorism for summarising this sort of predicament.”

The answer to the first problem is to focus the information search on what seems to be largely predictable risks and opportunities guided by experience from similar projects or processes, as discussed in chapter 7. The answer to the second problem of interpreting the information, would be to use groups of individuals with relevant knowledge and experience in a systematic attempt to assign probabilities and utilities to risks and opportunities. And finally, regarding the weaknesses inherent in the
information, this would also be the answer to the third problem, using the same group to produce aggregated estimates of probabilities and elicit the implications of the information on the project.

9.2 Identification of uncertainties

As mentioned, before uncertainties can be quantified, it first needs to be decided what the uncertainties are. According to Williams (1995), little structured work has been done in current research on uncertainty and risk management either on ensuring completeness or on eliciting such risks from experts. Systematic risk identification is also a neglected area in development projects.

In the project framework in figure 8.6, the main contextual uncertainty factors are included at the right side of the matrix, sorted vertically so that they relate directly to the objectives that define the project’s three ambition levels. The uncertainties are seen as conditions that have to be fulfilled in order to realise the objectives at different levels, in other words they either improve or reduce the probability of success. Uncertainties are usually analysed on the basis of estimates of expected utility, expressed in terms of probability of realisation and the utility of its event. This makes it possible to establish a simplified picture of different classes of risks and opportunities associated with uncertainty to guide decision making when the project is designed.

In the study of project design in 30 development projects included in Annex 8, the conclusion was that the weakest part of the design was the description of contextual uncertainties associated with the perceived project. The study confirmed the problem that people tend to be more pre-occupied with preventing risks than promoting opportunities, since all uncertainty factors were listed as negative risks.
The total number of risk factors were 58, as illustrated in figure 9.3. In exactly half of the projects no risk factors were registered at all, in the other half there were on average four risk factors. However, only 60 per cent of the risk factors were relevant in the sense that they were contextual risks related to the project in question. Some of the factors that were considered not relevant were internal factors related to the project (examples: release of donor funds, capability by the implementing organisation, time schedule being adhered to). Only nine projects had more than one relevant risk factor specified. However, in none of these cases the risk factors were expressed in verifiable terms.

The projects under study was a group of larger, best practise projects designed with the logical framework method. The conclusion from the study was that both design and risk assessment was much below what could be considered a reasonable standard both as regards the strategy itself as well as the identification and analysis of key opportunities and risks, there is a large potential to improve project design through systematic use of probability assessments. This is a major challenge for both donor and recipient organisations in their attempt to find workable means to promote development.

Prior to a more thorough analysis of opportunities and risks it is useful to make a rough first screening of uncertainties. This is illustrated in figure 9.4, which focuses on risks only. The first and the most important step will be to focus on those risks that can be expected to have large impact on the project and a high probability of occurrence (marked in black). Examples could be the priorities in target groups, their will to cover operational costs, or critical geological conditions. These are the risks that are critical and should be identified and scrutinised at the earliest stage when the project is designed and before planning takes place. Confronted with this type of risks the entire project concept will often have to be re-assessed and re-formulated in order to reduce the importance or probability of these risks to occur. If this is not possible the strategy will have to be abandoned. The second step would be to eliminate those risks that are likely to be of limited importance, as well as the low-probability risks (marked in grey).
This type of simple assessment, even if it is based on subjective judgement of probability, has often proved to be effective, particularly if conducted by a group of resource persons with relevant knowledge of the problems to be solved. Once this initial screening has been done, the project design can be outlined and the remaining risks - which are considered important and with a certain probability of occurrence (marked in white) - can be analysed further and classified, as illustrated in figure 9.5.

The same type of reasoning would be applied for uncertainties with an anticipated positive effect. The difference is that in the extreme case the uncertainty represents not fatal risks but important positive opportunities which are likely to occur with a high probability. This would have to be taken into consideration and included in the plans. The remaining opportunities that are considered important but which are less certain to be fulfilled could be included in a detailed classification of opportunities as described above.
Figure 9.5 Detailed classification of risks (and opportunities) when a project is designed

This type of review of contextual opportunities and risks will contribute to either increased or reduced probability of realisation at each level in the project structure. The strategy can therefore be described in a series of conditional probabilities which can be aggregated to some (limited) degree of accuracy. The risk analysis would include such a combined assessment of probabilities of operational uncertainties in the strategy and contextual risks and opportunities. If the contribution of the elements considerably reduces the probability that objectives be fulfilled, it may be necessary to reconsider the entire strategy, for instance by adding resources and operational objectives which would realise opportunities or reduce the effect of some of the risks. The entire process to improve quality at entry in projects is depicted in figure 9.6.
It can be done on different levels of sophistication. An innovative project operated in a high-uncertainty situation, with only insufficient and inaccurate information available would have to be done on the basis of simple judgmental methods where aggregation of information is based on intuition rather than mathematics. In a routine type project operated in a stable, highly predictable environment, and where information is quantitative and reliable - more sophisticated analytical tools could be warranted.
A realistic project design rely firstly on the availability of information, secondly the judgmental problems involved in translating the information into probabilities and utilities, and thirdly the analysis and application of the information in the final design. Because of the in-build dynamism and the self-adjusting abilities of social and administrative systems, the present trend in risk assessment of projects is to use simple, subjective and intuitive methods rather than advanced mathematical methods to simulate processes. The analytic framework adopted by most donor agencies appear appropriate for identifying and making rough estimated of the probability and utility of major uncertainties, and to consider their possible effect on different project strategies.

The main problem lies in identifying the relevant information and performing risk assessment as part of project appraisals.
10. Strategy versus tactics

Summary: In a high-uncertainty situation, the chance that a predetermined strategy will be realised may be small. Plans are frequently overtaken by events, and it would therefore make little sense to use much resources on laying a detailed strategy. The main purpose of a strategy would be to explore alternative options and identify the main determinants for success and failure. Ensuring success would then to a high degree be a question of how uncertainty is handled tactically during implementation.

In general, people seems to over-emphasise the importance of strategy and under-estimate the importance of tactical performance of projects. Empirical evidence point in the opposite direction. One of the main problems in international development assistance is probably the combination of uncertainty-averseness and the emphasis of strategic planning and adherence to strategic plans - which create rigid systems of non-fulfilable obligations where both the donor and the recipient side will have to compromise to the extent that the authority of agreements are undermined.

10.1 Limits to strategic planning

As mentioned in chapter 7, the concept of strategy is rooted in stability, not in change. Projects are managed within a context of uncertainty about the future. The success of a project is therefore also about handling risks and realising opportunities. The success or failure of the project is related to its environment. Developing a sound and healthy project requires understanding the environment as much as understanding the project itself.

Many large and complex projects experience large cost overruns, considerable completion delays, and major quality deficiencies. Failure to realise project objectives is often claimed to be the result of unforeseeable and uncontrollable hazards such as technological problems, contract disputes, market changes, political interference and mismanagement. In a study of such projects in industrial countries, Hauge and Wright
claim that most hazards are both predictable and controllable, and that project failure is largely the result of lack of attention by project management - since project management concentrates on only a subset of project objectives; those which are easy to measure, and may therefore ignore important hazards of less conspicuous and qualitative nature, like personnel qualifications, incompatible personalities, small letters in the contract, etc.

In a study of business risk management, *Marshall and Ritchie (1993)* concludes that if an organisation is to be successful, it needs to respond effectively to those risks that materialise during the implementation of the decision whether these risks have been foreseen and evaluated or not. Although the importance of planning can never be underestimated, the more important survival characteristic for an organisation to foster is the ability to make effective responses to the unforeseen events. This also applies to projects.

In the children’s game of Pigs winning and loosing is a question of getting rid of the cards and responding quickly to the other player’s signals. The game appeals more to children than adults, because the element of chance is larger than the element of skills. The game of Chess is much more appealing because the element of skills is much larger in relative terms. It is a game of laying strategies and making tactical responses to the opponent’s moves in a field where all elements are visible. The element of chance is solely related to the opponent’s decisions.

In the game of Bridge chance and skills are more balanced. Vital information about the distribution of cards is disclosed during the initial round of bidding. Half of the cards are visible to all parties when the game is played. The player needs to lay a strategy on the basis of the considerable information already available to him - and respond tactically to the opponent’s draws. The element of chance is larger that in the game of Chess, but for the experienced player, a considerable part of the game is predictable. This is one of the main reasons why the game is so popular. The balance of chance and skills in the game of Bridge bears some resemblance to the challenges to be overcome in the management of projects.

Two key questions in project management are how to plan and how to handle the elements of chance, or in other words strategy versus tactics. In a situation with much contextual uncertainty that is difficult to predict, the chance that a predetermined strategy will be realised may be small. It may therefore make little sense to use much resources on laying a detailed strategy. However, it may still make sense to make efforts to generate strategic information, to make some broad outline strategy or discuss which strategies could be most feasible. In other words to draw some
scenarios. One reason would be to explore possible tactical moves under different scenarios, which could be useful under any strategy chosen, to respond to changes.

In a situation where the contextual uncertainty is less overwhelming and more predictable, it makes more sense to invest in strategy making. The chance of realising the strategy may be higher. But only to a certain extent. Because even events that may appear insignificant could have major effects on the way the project develops. And experience shows that project management frequently fails to comply with the requirements of the strategy in the course of events. It is common experience that detailed plans are not used to the extent that was intended. According to Pinto and Slevin (1988), success is very much related to adaptation to external conditions and identification of external determinants. Failure is much related to internal aspects. The main significance of planning in a high-uncertainty environment could therefore be to identify the main determinants for success/failure and the interface between the project and its environment. Flexibility might be necessary for success.

But also, there is ample evidence that strategy making is useful both for projects and institutions. A major aim of planning may be to achieve a better structured and more efficient day-to-day management practise, so that managers at all levels can take account of longer-term aims in their daily decision making. Research shows that this leads to superior overall results, Heijden, (1996). A modest up-front investment in planning reduces the need to think through every crisis situation from scratch. Also, appropriate planning assists in making the transitions from individual insights to institutional action.

10.2 The importance of tactical responses

In international development assistance, donor agencies have focused essentially on strategic measures to improve quality at entry, as expressed in design, plans and agreements. During implementation, the emphasis has been on securing adherence to the initial strategy and plans. Adherence to the strategy has been the main measure of success - disregarding the possibility that the strategy could be inadequate, inappropriate or even entirely wrong. Adequate tactical responses to uncertainties by project management have not been part of donor agencies formal monitoring and follow-up system. The donors have been more concerned with the initial strategy than to establish an enabling system that encourage the most effective responses to the risks and opportunities that occur when the project is implemented.
Figure 10.1 Opinions in a group of about 220 staff members in development agencies regarding the importance of the strategic and tactical phase of a project as expressed by means of 16 success criteria.

This is illustrated in a study where about 220 employees in development agencies were confronted with a list of 16 characteristics of successful development projects derived from a brainstorming session on this topic in a similar group. The respondents were asked to identify which phase in the project cycle was the most critical in ensuring that each of the characteristics were realised. The results are illustrated in Figure 10.1. The study indicated that as much as 87 per cent of the responses referred to the strategic phase as the critical (feasibility study and planning), while only 13 per cent referred to the tactical phase as the critical (implementation). The tendency is confirmed to some extent also in the survey included in Annex 6, where the large majority thought that pre-studies in the strategic phase would be important in order to master uncertainty and manage risk, see figure 8.2.

The study of 249 projects in Annex 5, however, seems to emphasise the importance of the tactical phase of the project, since as much as 63 per cent of the uncertainties causing major problems in the projects were operational in the sense that they were within the responsibility of the project management to handle. A large share of these were typically problems that occurred during implementation and required appropriate

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22 The study was done as the opening exercise in conjunction with 22 training sessions for professional staff in development agencies. The respondents operated in groups of 6-15 individuals, and the responses were based on consensus in each group.
tactical responses more than strategic planning. The contextual uncertainties could have been taken into consideration when the strategy was conceived only to the extent that they were predictable, but also a large share of the contextual uncertainties would require tactical responses when they occurred.

In conclusion, the combined effect of uncertainty averseness and the focus on strategic performance in international development assistance apparently is a major problem for donor agencies and implementing agencies alike. No doubt, quality at entry can be and should be improved considerably in a large share of development projects. But even the best strategy is likely to fail to some extent when implemented rigidly in a high-uncertainty environment. If risk averseness is the dominating policy, many opportunities may be ruled out from the earliest phase when the strategy is conceived, and throughout the project’s lifetime - as self-imposed restrictions that are likely to affect adversely the possibilities to succeed. An enabling system which allows tactical responses of different types to uncertainties when the project is implemented would have to rely on a more opportunity-seeking policy.

In chapter 11, four project cases are used to illustrate the significance of strategic and tactical performance, and some of the problems and principles discussed in previous chapters. In chapter 12, some of the alternative policies and means to master uncertainty are discussed.
11. Four project cases reviewed

Summary: In this chapter, four project cases are described in order to illustrate the importance of strategic and tactical performance. The cases illustrate the importance of a realistic design based on a thorough appraisal, where the main uncertainties are identified - as well as the target-oriented implementation process where there is room for tactical manoeuvre in face on uncertainty. The conclusion is that project failure can be achieved even in a favourable environment if the internal factors are unsuccessful. On the other hand, success can only be achieved if the external factors are favourable. The cases show that there are a few major uncertainties that are critical in determining success or failure. The challenge for the project manager is to apply the appropriate mix between strategic planning to avoid the main stumbling stones while guiding the project in the right direction - and at the same time be able to respond tactically to unforeseen events in order to coach the project towards a successful conclusion. Also, in this chapter, the success criteria described in chapter 4 are applied to the project cases to illustrate that they could be used pro-actively to establish design and performance standards that could ensure not only quality-at-entry, but also guide the tactical performance of projects when they are implemented.

11.1 Strategic versus tactical performance

Most authors emphasise the importance of balancing strategy and tactics. Pinto and Slevin, (1989) use the concepts of tactical and strategic performance to distinguish between four types of projects, as illustrated in figure 11.1:

1. High strategy/high tactics - with a high potential for implementation success
2. High strategy/low tactics - with a tendency to err because of inaction and low acceptance/involvement
3. Low strategy/high tactics - which are successfully implemented but fail to address actual needs
4. low strategy/low tactics - with a high potential for implementation failure

Four development projects are described in the following to illustrate the four categories of projects described above. The projects are characterised in terms of the
strategy and tactics applied, and the uncertainties and risks encountered by the project when they were implemented. The cases are used to illustrate the problems of design and risk assessment discussed in chapter 8 and 9, and measuring success discussed in chapter 4.

The project cases differ in terms of their score on tactical and strategic performance. The first project is an earthquake centre which scores high on both variables. The next is a training programme for refugees which made some achievements despite and inappropriate strategy. The third project is a quality assurance programme for industry in a number of countries, which started out with good intentions but failed in the way it was conducted. Finally, the last project case is a water supply project that was a failure both in the way it was conceived and implemented.

11.2 The Earthquake Centre (Case no. 1): Successful strategy and tactics

This project was designed to establish a national centre for disaster prevention. The initiative came from the government in the recipient country two years after the capital
was hit by a major earthquake with devastating effects. The government sought support from a donor country with some of the world’s best expertise in earthquake engineering and prevention of earthquake disasters.

A thorough appraisal process was initiated which lasted for two years. It was concluded with an agreement which spelled out clearly the objectives, expected outputs and inputs, and the division of responsibilities between the donor and recipient countries. The donor was supposed to finance construction of all facilities, provide all equipment, and supply long-term and short-term technical expertise for the project period. The recipient should create the legal framework for the institution, provide the land, recruit qualified management and staff, and cover the expenses of future operation and maintenance.

The facilities were constructed by a local contractor under the recipient’s supervision and with expatriate advisors. The equipment was installed under guidance of the recipient, and with advice from long-term experts and a large number of short-term expatriate specialists from the donor country. The local staff was trained, and an information programme was developed with advice from the expatriate advisors. The project fulfilled it’s operational objectives and was completed on target, within budget, and with acceptable quality of outputs. It was also well on its way to meet its tactical objectives: the institute was able without delay to operate a seismic early warning system designed to detect seismic waves on their way from off-shore epicentres to the capital. A computer-based system was designed to identify the high-risk micro-zones where earthquakes would make most damage, based on accumulated seismic data. A research programme to test and design low cost reinforced building structures was in operation, and a comprehensive information programme had been initiated to educate and train contractors in the building industry, civil defence, researchers, and the public.

Furthermore, the institute rapidly became a national coordinator of all seismic research, and expanded its activities also into other areas such as chemical hazards and surveillance of volcanoes. It established training programmes for MD and PhD students and became increasingly involved in international projects in the region. It also maintained contacts with several of the involved institutions in the donor country.

Strategy
In a strategic perspective, the strength of this highly successful project was that there was a strongly felt need by the recipient government and a commitment to recruit qualified staff and use resources to develop and maintain the institution. The project was carefully planned, based on information from a very thorough appraisal process
with ample communication between donor and recipient. Many aspects which would otherwise be uncertain, were thereby discussed and sorted out in advance.

Its strategy was well balanced in terms of probabilities of realisation at different levels in the project design. The operational objectives were essentially the building stones that constitute an effective institution: well designed facilities, a competent and well trained staff, appropriate equipment and sufficient funds to operate. The highly experienced and specialised expatriate expertise used in the early phases of the project would be the best guarantee for a realistic design. The tactical objective of the project was simply to establish an efficient and reliable early warning system for disaster prevention in the case of earthquakes. This is a technical objective which is not very ambitious in the sense that the probability of its fulfilment is rather high once the institution has been established and is in operation. The chance of success was therefore good. The strategic objective was to reduce the disastrous effect of earthquakes in society. This is also essentially a technical objective with a relatively high chance of realisation, although it depends on the active involvement of a number of other external institutions such as civil defence, building industry, law enforcement, fire departments, mass media, etc. in order to succeed. The role of the centre would be to disseminate information and advisory services to these institutions.

**Tactics**

In tactical terms the strength of the project was that it was implemented by highly qualified people both from the recipient and the donor side. Resources were sufficient. The purpose of the project was clearly understood by decision-makers and the public, exactly because of its down-to-earth, realistic design, and there was ample political support for the project. The institution had no competitors in its field and did not have to compete for public funds. A clear but not too detailed agreement which spelled out the obligations of both the donor and the recipient, and careful monitoring of the project by the donor helped ensuring that the strategy was followed quite meticulously when the project was implemented. This was possible also because the project did not encounter any major contextual problems or risks during implementation.

**Uncertainties and risks**

The uncertainties in this case were correspondingly limited. A main uncertainty was whether government would provide sufficient operational funds in the future. After the project was completed, it turned out that the increase in operational funds provided by government were not enough to compensate for inflation. However, the management responded to this problem with a constructive, down-to-earth approach:
to cut down on some of its theoretical research and focus more on activities which were more immediately useful to society, in the fields of developing its surveillance and early warning-systems, analyse and management of data, and information activities. Some of the most sophisticated equipment was transferred to research institutions and replaced with simpler equipment which was less expensive to maintain. This was a very effective way to avoid not only a future budgetary problem but also possible conflicts with counterpart institutions in the future. It was definitely an unexpected manoeuvre, most institutions would probably prefer to keep their sophisticated equipment and wish to develop their own capacity to operate it.

11.3 Refugee Entrepreneurs (Case no. 2): unsuccessful strategy, successful tactics

This project was designed to assist a group of refugees from one country to become self-employed in their new country of residence. The programme was initiated by one UN agency and implemented by another, with the consent of the government in the host country. The motivation, as expressed by the funding agency, was simply to cut down on its emoluments to refugees who had settled permanently. The project was implemented by the other agency because of its particular expertise in the field of setting up small scale industries in developing countries. The project used the agency’s standard design for such projects without a prior appraisal or pre-study, and without any involvement by the host country’s government.

The implementing agency employed an expatriate specialist and a local staff to coordinate the project. The project recruited the refugees. Training was done through existing institutions in the country. Fees were paid by the agency. The project staff was then involved in following up the candidates, providing advice and support in setting up their small scale industries. Loans were provided through local banks, while collateral’s for the loans were provided by the agency.

**Strategy**

The main problems in this project were related to the strategy and design of the project. It turned out when the project was set in motion that the number of resident refugees was much too small to provide the recruitment basis for the planned number of candidates. Certain minimum qualifications and abilities were required. In order to fulfil the stipulated quota, the project therefore also admitted unqualified resident refugees and younger refugees which were temporary residents in transit to refugee camps in other countries. As the result, a sizeable proportion of the candidates either
failed to establish businesses or had already left the country before this could happen. Consequently, when evaluated, the cost efficiency of the project was very low, with overhead costs four times the amount of loans disbursed.

The remaining part of candidates succeeded in setting up small-scale businesses, some succeeded very well. These were people with high qualifications seen in relation to the situation in the host country. Their businesses created employment for local people. Some businesses expanded rapidly. The group of refugees started to earn money and it soon became an issue of concern that they were exploiting local manpower and paying low salaries after having been set up on very favourable conditions by a UN agency. The project generated an ethnic conflict of some dimension. In a small country this became an issue which added to the general hostility towards a large group of refugees and caused considerable concern for the host government.

The design of this project was inadequate. The project was a straightforward initiative to train a group of people during a relatively short period of time and provide them with financial means and advice to set up their businesses. The tactical objective was simply that these businesses would be established. This is a simple technical objective with a fairly high chance of realisation once the operational objectives have been produced. The strategic objective, however, was very limited. It was just to cut down emoluments from one UN agency to the refugees involved. The potential benefit for the target group was very substantial. By offering the project only to a small group of resourceful foreigners, the chance of realisation was high. In a small, transparent society with less than one million inhabitants, the chance of causing internal conflicts were correspondingly high. Had the project been slightly more ambitious in the sense that it also included people from the host country in the target group this problem could have been avoided. Had the recipient government been consulted before the project was planned, this would have been the likely result. The strategic objective as it was formulated did not give sufficient justification for the project and mis-guided the use of resources.

**Tactics**

In *tactical* terms, the strengths of the project was that it had a competent staff, a resourceful target group, and that the necessary services were provided by using existing institutions in the country. The project achieved its operational objectives and was implemented as planned, within schedule and budget.

The two major problems in this project were the limited recruitment base and the potential ethnic conflict that the project could cause. Both were identified as key
problems by the project management at an early stage. However, the project had been designed and approved by people from the agency Headquarters in Europe. The project manager operated under a very centralised bureaucratic structure, reporting to the Headquarters according to pre-determined, detailed performance indicators. He did not challenge the Headquarters strategy but did his best to comply when the project was implemented. Under a more flexible regime he could probably have made the necessary corrections to the strategy in the course of events as the project developed.

_Uncertainties_

A main uncertainty in this case was the size of the target group. This could obviously have been foreseen if an appraisal had been made. With this simple piece of information available, a reasonable solution would have been to admit the refugees in existing programmes on the same footing as locals, without creating a special, expensive project which gave the refugees preferential treatment also in setting up their businesses and securing their financial situation. This would have reduced overhead costs significantly and the competition would be more fair for the two ethnic groups.

Another main uncertainty was the socio-cultural effect of providing assistance to a foreign ethnic group of very resourceful individuals. In a small, transparent society the problems that might result were also largely predictable. In this particular case the financing UN agency had initiated a project based on its own agenda to reduce recurrent expenses. An obvious solution would have been to leave the initiative with the government. The responsibility to think through the ethnic issue would then be in their hands, as well as the responsibility to lay down and enforce the rules for refugee entrepreneurs. A major conflict could have been avoided.

11.4 Quality Assurance (Case no. 3): successful strategy, unsuccessful tactics

This project was designed to introduce quality assurance and quality management in 100 industrial companies in ten developing countries. The initiative came from a regional organisation with representatives from individual governments. The project was implemented by a multinational company accredited to the highest level in field of quality assurance. The tactical objective was to develop capability in the countries to encourage and assist industry in implementing quality assurance and quality management.
The implementing company chose a centralised approach in its implementation of the project. It was coordinated from the company’s Headquarters in the donor country, with resident project offices in two of the recipient countries. The international experts in these offices and a number of short-term experts from headquarters conducted all training courses and serviced local industry directly in all the ten countries. This implied very high travel costs and manpower fees, and also a type of training which was more adapted to the conditions in industrial countries than in developing countries.

As the result, in-plant services were provided only in four of the ten countries. The project staff did not have the time, capacity, or funds to cover all intended countries. The response in those companies that had been serviced, however, was good, and in some cases remarkable results were achieved in terms of improvement of products, working conditions, reduced pollution, improved market responses, etc.

**Strategy**

In *strategic* terms, the strength of the project was a strongly felt need for quality assurance activities, both by governments and by the industry. With quality being a general problem, small investments in quality awareness and improved procedures in industry would be a win/win suggestion for all parties.

The project was designed as a two-step strategy where the first step was to develop capability in local institutions to introduce quality assurance in industry and assist companies in improving quality. The second step would be for these bodies to make contact and provide services to industry. The operational objectives of the projects were associated with the first step in the process. The tactical objective was that industry improved quality and the strategic objective was that the target industry should be strengthened. Both these objectives are technical objectives which would be realistically achievable with the resources available for the project.

**Tactics**

In terms of *tactics* it turned out that in the course of events, the executing company had focused its attention on two levels primarily: the national standardisation organisations, which had received some general training, and industrial companies directly which had received training and in-plant support. However, nothing had been done to build the capacity to service industries in the countries, as was the original intention. The project should have trained and coached quality inspectors in the national standard organisations, other technical institutions, the consulting industry, etc. That would have been a more cost-effective use of the highly qualified and expensive expertise in the multinational company.
In this project, the implementing company had not complied with the original strategy but taken a short cut to service industry directly. In the short term this would with no doubt produce more tangible results. However, it was an expensive approach, and the long term effect wouldprobably be more limited than the effect of the intended strategy.

**Uncertainties and risks**

A main weakness of this project was that the regional body did not have the qualifications, capacity or national backing to manage the contract properly with the executing company.

A main uncertainty in this case seems to lie in the motives of the executing company itself. Despite being financed entirely by a donor agency, the company apparently had its own agenda to create a market for its own services in the region, rather than creating a network of potential competitors as it was asked to do. An obvious solution in this case would have been to focus the attention on institution-building in each country and to train trainers or instructors which would then be the ones to service industry. Instead the organisation failed to honour its agreement with the donor. From the donor’s point of view the incident was probably not predictable from the outset. However, proper follow-up of the contract should have corrected the company’s performance. This is therefore a tactical issue, not a strategic one.

11.5 Water Supply (Case no. 4): unsuccessful strategy and tactics

This project was designed to construct simple wells and boreholes for the provision of domestic water in rural areas in a developing country. The project came out of a global initiative to promote this type of projects for the poor. The formal request came from the recipient government in response to a situation where the donor already had committed funds for projects in this sector. It was followed up with a very brief appraisal mission which discussed basically the technical and economic aspect of a possible project, but not the contextual issues. The project agreement specified a number of water supplies to be constructed but gave no guidelines on which target groups should be served by the project.

The project was implemented through the local water authority. This institution was strengthened with a number of international experts and local staff, and considerable investments in equipment, vehicles, facilities, etc, to make it capable of constructing
and maintaining the facilities. In terms of its operational objectives, it exceeded its time schedule by 300 per cent, and the budget over-run was some 2000 per cent. After construction was completed there were no more funds forthcoming from government for further construction, the institution that had been built up disintegrated, and people were laid off. Large investments in institutional development and equipment had been wasted.

Furthermore, it turned out that availability of water was not a major problem in the area and not a priority issue for the target population. As the result, it was difficult to make people pay water fees or maintain the facilities, which then frequently broke down. Also, it was found that the target population consisted of two distinct ethnic groups. One group lived in more marginal areas while the other group had the legal rights to most of the natural resources. They lived in the most fertile areas with the easiest access to water, they were in control of all political, administrative and legal institutions in the area, etc. As it were, it turned out that most of the boreholes and wells had been constructed in these areas where it hardly was a need for improved water supplies.

Strategy
In strategic terms this project was designed according to general experience from a large number of similar projects in the field. The operational objectives were a specified number of simple manually driven water supplies and certain initiatives to improve the awareness of water-related health and hygiene among the beneficiaries. The tactical objective was to achieve increased consumption of clean water in the target population. This is a technical objective which would appear to be realistically achievable. The strategic objective was reduced incidents of water-related diseases in the target population. This is also a technical objective which appear achievable if other conditions such as hygiene is improved simultaneously. The problem was therefore not the strategy per se but the mismatch between the strategy and the needs and priorities of the beneficiaries. This problem was aggravated further since the project failed to specify target group. The ruling ethnic group therefore automatically became beneficiaries.

Tactics
In tactical terms the main weakness of the project was that it was implemented by a government institution. For all practical purposes this was a donor-driven initiative which did not originate in genuine local priorities. It was rather obvious that an already bankrupt government would not be in the position to continue investing in water supplies for the rural population after donor funds had been exhausted. The
project set out to strengthen a public institution to construct facilities. This was a slow and expensive process, which in the end was doomed to be wasted.

Uncertainties and risks
A main uncertainty in this project is related to the users’ need for the project. In reality, this type of projects were initiated in the international conference rooms of the United Nations and not based on an assessment in rural areas of the users’ need and priorities. With basic knowledge of the geographic (and hydro-geological) characteristics of the area, the problems could have been foreseen, although it was complicated in this particular case by the existence of two distinct ethnic groups. This added a political uncertainty of whether or not the disadvantaged group would be left out of the project. In a society where the favoured group was in control of all political and administrative bodies - this was exactly what happened.

A second main uncertainty was institutional in terms of whether or not the project would be continued. Would it be worth while building up institutional capacity for this purpose? Based on general experience in this particular country and the resources available from government, this was also largely predictable. The answer would be negative and an obvious alternative would therefore be to commission all construction work to private contractors and let the water authorities coordinate their work, only.

A third type of main uncertainty was related to the personnel situation in the donor agency. Because of the extended implementation period and the high turnover of staff in the organisation where desk officers and decision-makers were changed every second year on average, decisions were very much left with the expatriate project staff, the water authorities, and a third party consultant assigned to monitor the project on behalf of the water authorities. They all had vested interests in continuing the project. All support from the donor was provided on the basis of budgetary commitments. The donor was therefore hostage to it’s own personnel policy. With it’s high turn-over of desk officers and decision-makers the donor was not able to raise or respond to major questions like those described above. This type of uncertainty is also very much predictable.

The final major uncertainty is related to the selection of technology. The lack of experience in this particular field among the international experts resulted in a trial and error process with regard to technology, which resulted in high failure rates and increased expenses. Because of the tremendous overhead costs in the project, the total investment cost per well was exorbitant and far beyond the users’ financial abilities.
In summary, this project failed both strategically and tactically. There was no genuine need for the project in the target group. Also, the government was not able or willing to make financial commitments in this field, and still the project attempted to build a permanent institution which would rely on government funding in the future. Clearly, the project should not have been started.

11.6 Discussion

The findings above are summarised in Table 11.1. What these four project cases have in common is that they were all based on a realistic design in terms of probabilities: the operational objectives were realistically achievable, and the tactical and strategic objectives were limited technical objectives which one would imagine would be realised under favourable conditions if resources were sufficient. And still, in two cases the strategy did not work: Refugee Entrepreneurs (no. 2) and Water Supply (no. 4). In both cases the priority accorded to the project by recipients was low. This goes for part of the target group as well as for the recipient government. In one of these cases the host government had not even been consulted.

<table>
<thead>
<tr>
<th>Case no 1</th>
<th>Case no 2</th>
<th>Case no 3</th>
<th>Case no 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earthquake Centre</td>
<td>Refugee Entrepr.</td>
<td>Quality Assurance</td>
<td>Water Supply</td>
</tr>
<tr>
<td>Adequacy of tactics</td>
<td>++</td>
<td>+-</td>
<td>++</td>
</tr>
<tr>
<td>Adequacy of strategy</td>
<td>+</td>
<td>-</td>
<td>+</td>
</tr>
</tbody>
</table>

**Tactics**

| Reliance of qualified local staff | ++ | + | + | - |
| Clear, but not too detailed agreement | + | + | - | - |
| Careful monitoring by the donor | + | + | - | - |
| Degree of compliance required by donor | + | + | - | - |
| Use of contractors in implementation | + | + | - | - |

**Strategy**

| Realism of project design | ++ | + | + | + |
| Priority accorded by recipient | + | - | + | - |
| Appraisal before project was planned | + | - | (+) | - |
| Quality of planning | + | - | + | - |
| Availability of funds for future operation | + | - | (+) | - |

Table 11.1 Summary of project characteristics

In both cases no proper appraisal was done before the projects were designed and initiated. Project no. 2 was based on a rigid detailed plan made at the Headquarters in
Europe according to a standard scheme but without sufficient information about local conditions. Project no. 4 also suffered from an analysis of fundamental determinants, and was guided by a plan which was very rich in operational details but which lacked an overall perspective to guide the projects interventions in the field. Both projects were therefore planned without taking notice of a few major stumbling stones which subsequently caused the projects to fail. In both cases this was in terms of a potential ethnic conflict between target groups. It is reasonable to suggest that these major issues could have been detected had comprehensive feasibility studies been made in advance and the projects been adequately appraised before they were planned.

In the Earthquake Centre (no. 1) and the Quality Assurance programme (no. 3) the situation was almost exactly the opposite. The projects were accorded a high priority both by the recipient governments and the target groups. Project no. 1 was highly successful and was the result of a very thorough appraisal process which extended over one and a half year, based on a joint feasibility study and three subsequent appraisal missions undertaken by the donor to clarify the basic principles that should guide the agreement between the two parties. This process resulted in an agreement which was brief and focused on the main issues of concern, not the details. This obviously made it easier for the two parties to monitor and follow up the projects. Project no. 3, the Quality Assurance programme, was designed by a highly specialised company with an unique expertise in the field, and based on a feasibility study with visits to some of the cooperating institutions and target companies. Unfortunately, the project was guided by several documents produced by the executing company that were not consistent regarding how the project should be implemented. The status of the different documents was unclear. This was mainly because of inadequate follow-up by the donor and the regional organisation representing the recipient governments. As the result, the executing company took a short-cut when implementing the strategy, which would produce short-term results at the expense of the more long-term effects of the initial strategy. By doing so, the company also developed a market for its own services in the region. This conflict of interests between the executing company and the donor may not have been easily predicted at an early stage. However, with proper decision-making documents and adequate follow-up from the donor side it is reasonable to assume that the problem could have been avoided.

In terms of tactics, the pattern is consistent in these cases. The projects were implemented using private contractors to a large extent, except for the Water Supply project (no. 4) where the construction was done by a government institution. The two

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23 In case no. 4, the Water Supply project, the situation was entirely different. The main guiding document was a very detailed Plan of Operation which diverted attention from the main issues and could hardly be used as a management instrument by the two parties.
projects that were most successful in tactical terms, no. 1 the Earthquake Centre and no. 2 the Refugee Entrepreneur project, strongly relied on the use of qualified local personnel in key positions, whereas the other two projects were managed almost exclusively by expatriate staff. The two successful projects were monitored meticulously by the donors according to an agreed set of performance indicators. In both cases the donor exerted considerable pressure on the recipients to comply with the agreed strategy. In the two other projects the situation was the opposite. There were no agreed reporting formats, and the follow-up by the donor was erratic to the extent that the executing organisation in the quality assurance project was able to choose its own venue, different from the agreed one when the project was implemented. In the case of the water supply project it developed along a trial-and-error path with an abundance of resources made available, and operating under an unclear strategy and with inadequate control by the donor.

Two main questions to be answered are whether a better strategy in projects nos. 2 and 4 would have resulted in successful projects and whether improved tactics in projects 3 and 4 would have improved success rates. In the Refugee Entrepreneur project (no. 2) it seems reasonable to suggest that with a more thorough pre-study and appraisal,\(^{24}\) the refugee target group would have been included in ongoing programmes on equal terms with the country’s own residents and the problem been avoided. The project would still be under professional supervision of the UN agency with its specialised expertise, and training would be done by the same competent local institutions. In the Quality Assurance programme (no. 3), the main problem was the coordination and follow-up of the executing company. Since both the donor and the recipient governments were unable to perform adequately, an external coordinator or overseer could have been assigned to the project to control and supervise the implementing organisation. This would have been a cost-effective solution to focus resources on a more long term strategy to build local quality assurance capability in the involved countries. In the short term the results in industry might be meagre, but in the long term the strategy could prove to be more cost-effective.

In the water supply project (no. 4) the situation is less obvious. The project was designed to produce a specified number of simple wells. A reasonable suggestion would be to have construction and maintenance done by local contractors answerable to the water authorities. A limited institutional build-up would be necessary to enable the water authorities to control and supervise the contractors. Construction would be done rapidly and at a much lower cost than was the case. A number of technological and institutional questions would be left in the hands of the contractors to solve. But still the problem of the needs of the target groups remain. Ideally, the project should

\(^{24}\) In fact, an initial dialogue with the host government would probably be sufficient
have focused on the disadvantaged ethnic group. In this particular case water was relatively easily available for all people in the area. Since both population groups are relatively poor, it is reasonable to assume that both groups would consider improved water supply a relatively low priority compared with other needs. A thorough feasibility study would have disclosed the priorities and would probably concluded that a water supply project would not be feasible in this particular area.

All projects encountered numerous operational difficulties during implementation that had to be handled if the project should succeed. Most of these were problems associated with the project’s operational objectives and related to cost, timing and quality of outputs. This is the main focus of project management and the most common techniques and tools of the trade.

Such tools lay the framework for the tactical performance of the project manager, seen in relation to the project’s strategy. At the same time, they tend to limit his focus to the operational perspective. Project failure can be achieved even in a favourable environment if internal factors are unsuccessful. On the other hand, success can only be achieved if the external factors are favourable. In the first instance the strategy may be appropriate but tactics may be a failure. In the latter case both tactics and strategy will have to be appropriate.

What the cases above show is that there are a few major issues that are critical in determining success and failure of projects. These are related both to the tactical and strategic objectives. The challenge for the project manager is to apply the appropriate mix between strategic planning to avoid the main stumbling stones while guiding the project in the right direction - at the same time be able to respond tactically to unforeseen events in order to coach the project towards a successful conclusion.

Much of the answer to the problems seems to lie in the quality of information at entry, how this information is interpreted in terms of probabilities and utilities, and how these findings are used to assert the realism of the strategy as discussed in chapter 8 and 9.

11.7 Measuring success

While success is the combined result of the project strategy and tactics, measuring success will have to be done according to other criteria. The success criteria described in chapter 4 have been applied on the four project cases described above, to illustrate their significance in providing an “objective” verdict of project’s success:
1. Efficiency - the achievement of operational objectives in terms of cost, timing and quality of outputs
2. Effectiveness - the achievement of the tactical objective
3. Impact - all other effects of the project, positive of negative, foreseen or unforeseen
4. Relevance - The significance of the tactical objective seen in relation to needs and priorities
5. Sustainability - the extent to which the positive achievements of the project will be continued in the future

The assessments of the four projects are summarised in Table 11.2. As can be seen, the Earthquake Centre (no. 1) scores high on all variables. In terms of efficiency it was completed on date, within budget and with the planned quality. In terms of effectiveness it significantly contributed to an improved disaster prevention capability in the country through its early warning systems, its research and information activities. The impact of the project was positive. The centre rapidly expanded into new areas such as volcano surveillance and chemical hazards. It became a national coordinator in it's field and carefully avoided duplicating the work of other institutes involved in more theoretical research. The relevance of the project was unquestionable because of frequent earthquakes and volcano eruptions in the country, some with devastating effects, and particularly since this was the first centre of its kind. Finally, the project was sustainable in the sense that all commitments were taken over by the recipient government, which provided funds and qualified manpower for future operations. The project is therefore a highly successful category 1 project as indicated in figure 10.1. See also figure 10.2.

<table>
<thead>
<tr>
<th>Success measures</th>
<th>Case no 1 Earthquake Centre</th>
<th>Case no 2 Refugee Entrepr.</th>
<th>Case no 3 Quality Assurance</th>
<th>Case no 4 Water Supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Efficiency</td>
<td>+</td>
<td>+/-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2. Effectiveness</td>
<td>+</td>
<td>+/-</td>
<td>+/-</td>
<td>-</td>
</tr>
<tr>
<td>3. Impact</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>4. Relevance</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>5. Sustainability</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>-</td>
</tr>
</tbody>
</table>

*Table 11.2 Performance of the project cases*

The Refugee Enterprise project (no. 2) was successfully implemented but the wrong type of project in its societal setting. In terms of efficiency it was conducted on time,
within budget and with acceptable quality. However, without an expatriate coordinator it could have been considerably cheaper. In terms of **effectiveness** it was successful in setting up enterprises for the qualified part of the refugees that had settled permanently in the country, but it failed with the larger parts of the target group. The positive **impact** of the project was in terms of improved income for part of the target group and employment opportunities for local people. The negative impact was in terms of exploitation of local labour and an emerging ethnic conflict. In total, the project may have been successful in reducing the UN agency’s payment of emoluments to resident refugees, but the combined effects were predominantly negative. The project was designed primarily in response to the needs of the agency itself. It did not focus specifically on the needs and priorities of the target group of permanently settled refugees. It was not in tune with the needs of the larger group of temporarily settled younger refugees or the unqualified refugees, and it also may have been in conflict with the priorities of the government in the host country. In total therefore, the project was not **relevant**. Finally, the project was **sustainable** only to the extent that the small number of businesses that was established would actually survive.

The Quality Assurance project (no. 3) was the right type of project, but implemented inappropriately. In terms of **efficiency**, it wasted expensive resources by servicing industry directly, instead of transferring the necessary expertise to existing institutions in the countries involved so that they could perform the services at lower costs. As the result, the project was not **effective** since it was only able to service a part of the target industries. The **impact** however, was predominantly positive with no obvious negative effects. There were signs of quality improvement of products, increased productivity, better working conditions, reduced pollution, recycling of waste, etc. in some of the companies. In terms of **relevance** all parties seemed to agree that there was a strong need for the project in order to develop a competitive industry. Finally, the project was **sustainable** in the sense that most companies were sufficiently motivated to pay for quality assurance services in the future and apply quality assurance measures in their activities.

The Water Supply project (no. 4) was the wrong type of project under the prevailing conditions, and implemented inappropriately. In terms of **efficiency** it caused tremendous cost and time over-runs in its attempt to turn a government technical department into a construction unit. The lack of the right type of technical expertise resulted in a trial and error approach with a lot of defective water supplies. Because of this, and since the facilities frequently broke down and were not maintained, the project was not **efficient** in providing safe water for the target population. The **impact** of the project was correspondingly limited. The main reason for these failures was
that the project was not relevant in terms of people’s priorities and needs. Since water was easily accessible in the area, and people were poor, their needs would rather be to improve agricultural production than improve the quality of domestic water. For the same reason the project was not sustainable. People were not able or willing to pay for water, and there were no funds available to repair facilities when they broke down. Government was not willing to provide funds for further construction, and the investments in technical equipment and human resources in the government institution were therefore wasted.

In conclusion, the significance of the success criteria used above is exactly that they are expressions of tactical and strategic performance of a project. Comparing table 11.1 and table 11.2 the pattern is almost exactly the same. This is because efficiency is a direct indicator of tactical performance, which is measured for instance in terms of compliance with budgets, time schedule and the realisation of operational objectives quantitatively and qualitatively. Effectiveness is to some extent also an indicator of tactical performance as regards whether the outputs produced by the project are sufficient seen in relation to the longer-term fulfilment of the tactical objective. Impact, however, is an indicator of the strategy in the sense that the agreed direction of the project has been such that the positive effects outweigh the negative effect by a safe margin. The same goes for relevance, which is an indicator on whether objectives have been in rooted in genuine needs and priorities in society. And finally, sustainability is also an indicator of the strategy that will provide the final proof of the impact and relevance of the project as seen in a longer term perspective.

In international development assistance these five criteria have been adopted by several of the main donor agencies as the formal evaluation criteria. As such, they have only been used retrospectively to provide qualified statements of success or failure. In my experience with development projects they have been used systematically in only a smaller share of the vast amount of projects and programmed financed by development aid.

From what has been discussed above, the five criteria could be used pro-actively to establish design and performance standards that could ensure not only quality at entry, but also guide the tactical performance of projects. Applied systematically in the initial pre-study it could be used to elicit relevant information to improve project design: In order to design a relevant and sustainable project information must be produced on the needs and priorities that would justify the project both in the short- and long term. This would require studies of the relevant policies, market needs and user capabilities. In order to ensure that the impact of the project is essentially
positively information would be needed on what could possibly go wrong, what
would be the likely negative effects of the project, how likely these effects would be
and how they could be avoided. In order to design an effective project a combined
analysis would have to be done taking all these aspects into consideration to identify
risks and opportunities, as well as the resources available and the time perspective -
in the pursuit to define a realistic tactical objective. An finally, in order to ensure an
efficient project, information would be needed on the institutional setting, logistics,
market capacities, technology, etc. to establish operational objectives that are
realistically achievable, and also substantial enough to facilitate the realisation of the
tactical and strategic objectives.

If conducted under a policy which is not only risk averse but also opportunity seeking,
this could make a considerable difference as compared with past and present practices,
both in terms of the quality of strategy at entry and the tactical choices open to those
responsible for implementing the project.
12. Managing uncertainty

Summary: A main conclusion in this study is that past strategies intended to reduce uncertainty and risk in development assistance has failed, and that more of the same medicine will hardly help solving the problems. Emerging policies of recipient responsibility may be more appropriate if it is operationalised in a way so that the responsibility is vested in those best versed to handle risks and opportunities. A key role of the financing party is to ascertain quality at entry, before a decision is made to finance a development project. The methods adopted by the agencies for project appraisal are appropriate, the problem is that they are not used as intended, and that the results are not adhered to when the projects are implemented. Donor agencies need guidelines on risk assessment and risk management which establish limits for acceptable risks, which makes it possible to alter a predominantly uncertainty averse attitude in donor agencies and explore and formulate more innovative and effective modes of cooperation. Transfer of risk to the recipient is a key to successful recipient-driven development projects.

Under the presently used contract strategies, donor agencies are left with most of the risk, and the associated costs. There is a need to explore different contract strategies where there is an effective transfer of risk to the implementing party at a reasonable cost. Finally, there is a need to introduce different control systems to reduce the administrative burden of the donor agencies, and allow the implementing party the flexibility necessary to take the responsibility for the project, manage the risks and opportunities encountered, and bring the project to a successful conclusion.

12.1 Summary of findings

Failure in development projects is frequently explained - and excused - by the uncertainty and risk that these projects are exposed to in the countries where they are implemented. This has been expressed by most donors. In the Norwegian Government’s white paper to the Parliament number 19 (1995 - 96) it is recommended that “The uncertainty associated with development projects caused by circumstances
beyond what Norway can control or influence need to be identified and appraised”. The Norwegian aid agency has in its main strategy stated specifically that, *NORAD* (1992) “The assessment of risk factors must be included in the total evaluation that is carried out when new development projects are selected, and when the degree of follow-up of ongoing measures is decided. It is not NORAD’s intention to avoid any high-risk situation. Development cooperation will always be subject to economic uncertainties. However, the analysis and evaluation of individual risk factors must affect the choice of approach, organisational factors in relation to projects, control routines, and the degree of monitoring.”

The World Bank also emphasises the need for risk analysis as part of quality assurance of planning and implementation of development projects. The Bank is the only agency that has analysed its projects or operations systematically using a concept of uncertainty that distinguishes between opportunities (rewards) and risks. *Morra and Thumm* (1997). The British aid agency ODA is in the process of developing a policy on risk management. It highlights as a paradox that the organisation is simultaneously risk averse and obliged to take risks and emphasises the organisation’s need for principles about what degrees of risk are acceptable. *Roberts* (1995). *UNDP* requires risks to be identified as part of its project and programme formulation framework and makes the distinction between risks of a magnitude that threaten the viability of the project (and thus require a redesign to lower or limit the risks); and those that can be accepted at the time of formulation of the project. *UNDP* (1997). Most of the major donor agencies have in varying degrees endorsed the use of target oriented planning techniques, which include a rudimentary identification and analysis of risk factors similar to the one adopted by UNDP. What all agencies except the World Bank have in common is that the focus is only on the negative aspects of uncertainty.

The phenomenon of uncertainty and risk in developing countries as compared with industrial countries has not been studied specifically. A large material of evaluation reports gives indications that uncertainty and risk is higher in projects implemented in developing countries. However, such material has not yet been analysed systematically to focus on risk and uncertainty. The present study, based on a limited survey administered to a small sample of specialists in this field, indicate that there is a strong belief that risk and uncertainty is higher and also different from the type of uncertainty and risk that projects in developed countries are exposed to. Typically, the political, socio-cultural and environmental aspects seem to get more attention than what empirical findings indicate would be reasonable.

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25 Author’s translation
In the absence of empirical evidence, a wide-spread belief of strong exposure to uncertainty and risk has resulted in risk averse attitudes among the majority of those working with development assistance, see Chapter 5. This attitude goes beyond risk averseness and could be interpreted as uncertainty averseness - which results in a restricted attitude not only to negative risks but implicitly and involuntarily also to positive opportunities inherent in an uncertain situation. The attitude is reflected in how development assistance has been operationalised. For instance, projects and programmes have been used as a main instrument for channelling funds to developing countries, despite the fact that this is a most administratively demanding mode of cooperation. For the same reason, donor agencies have been directly involved in planning, management and control of activities. A main reason behind these practices is probably the urge to avoid or reduce risk and uncertainty. At the same time, donors are ambitious beyond the operational perspective, to ensure that the projects are relevant in a wide social perspective, to avoid negative impact in society, and to ensure that the positive effects of projects can be sustained in the future. These ambitious intentions may have diverted attention away from the perspective of project managers: to ensure that operational outputs are produced as planned.

The results of development projects have not been satisfactory as evidenced by numerous evaluations over the last three to four decades. The cost of risk averseness has been high, resulting from extensive use of expatriate personnel, administrative systems of the donors that extend into the recipient countries, extensive activities to improve planning, management and control, including broad interdisciplinary studies and evaluations.

In the lack of evidence that these measures have paid off in terms of improved performance, several donors have changed their policies during recent years for instance to shift the responsibility for planning and implementation entirely to the recipient, and to channel more funds through higher administrative levels for instance in terms of sectoral support or institutional development programmes rather than project assistance. Such policies may be less administratively demanding, but they probably increase rather than decrease uncertainty and the need for risk analysis and risk management.

The present study is an attempt to look at a small part of the vast evaluation material generated by donor agencies specifically from the point of view of risk and uncertainty. Some of the results are presented in Annex 5 and Chapters 6-7. A main conclusion is that the main problems affecting projects in developing countries are caused predominantly by institutional, economic and technological uncertainties - not
by uncertainties of a socio-cultural or political nature. Most of the uncertainties are operational - not contextual as widely believed.

What this means is that the uncertainty affecting projects in developing countries is not grossly different from what project managers in developed countries are trained to handle. Further, that the obvious means to master the problems would be to improve planning, management and control. However, this is exactly what has been done in the past. A fair conclusion therefore would be that our past strategies have failed to address the problems that we are specialised in solving at home. A pertinent question then would be: can the problem be solved by using more of the same medicine? The logical answer is negative. The next question would be: are project managers and institutions in developing countries better equipped to handle uncertainty and risk in their environment than we are? The answer could be affirmative.

In general terms, the best strategy for handling uncertainty and risk is to let those that are best versed to do it be responsible. A useful contribution to the field would therefore be to study risk management and risk analysis in indigenous projects and institutions in developing countries. Or rather uncertainty management and uncertainty analysis to study how the local manager handle both the upside of uncertainty (opportunities) and the downside (risks).

Obviously, uncertainty which is associated mostly with risk by one party can be associated more with opportunity by another. To what extent do donors and recipients have different views on uncertainty and risk? What would be the likely result of a project implemented under a risk-averse regime, if it had been conducted under a regime with a more opportunity-seeking attitude. Would it be more or less successful? The answers are not obvious. Would the opportunity seeking manager be able to realise the positive opportunities inherent in the uncertain situation and thereby produce a better result? These are questions that need to be explored by donor agencies in their quest for more efficient development policies. Under a policy which is not only risk-averse but also uncertainty-averse, some of the positive opportunities inherent in the uncertain situation may be ruled out by the strategic and tactical choices that are made.

There are apparently several options available to the donor to escape some of the dilemmas of risk and uncertainty in development projects. One is to avoid the project concept altogether and support coordinated clusters of projects and programmes at a higher administrative level for instance in terms of sectoral programmes. Another option is to finance projects where the recipient is responsible for all parts of planning and implementation. Both cases will involve activities at project or organisation level.
Emphasising recipient responsibility may represent an opportunity to exploit the positive opportunities inherent in uncertainty. Emphasis on institutional development, for instance in twinning arrangements with institutions in developed countries focus specifically on what was regarded as the major area of uncertainty in Chapter 6, the institutional area. Such policies therefore make sense in the perspective presented in this study.

![Figure 12.1 Distribution of responses regarding operational measures to master uncertainty and risk in a group of researchers and consultants working with development assistance (n=36)](image)

In the survey of researchers and consultants working in the field of development assistance, included in Annex 6, respondents were asked what type of operational measures to master uncertainty and risks should be given priority by donors. The result is illustrated in Figure 12.1. More than two third of the respondents were in favour of alternatives 1 - 9, while there is little or no consensus on whether donors should use alternatives 10 - 15 in managing uncertainty and risk. This indirectly confirms a risk-averse attitude among the respondents. The preferred alternatives are the type of measures that have been used in the past, apparently with limited success. They essentially fall into three separate types of strategies:
One strategy is to improve the information basis through pre-studies of needs, priorities and possible impact (items 1 and 4), and improve the basis for planning and the requirements on reporting (items 6 and 7). The second strategy is strongly related, and is to improve the human resources involved at both the donor and recipient side through training (items 2 and 3). The third strategy is that of enforcement, where the donor helps improving the recipient’s procedures for managing the projects (item 9), and makes its demands on the recipient more explicit and uses stronger sanctions in cases where the recipient violates agreed responsibilities (items 5 and 8). What these strategies have in common is that they are intended to reduce risk and uncertainty and that they have been employed by the agencies for decades.

The remaining options in Figure 12.1 (item 10-15) are operational measures that are more intended to transfer the responsibly for handling risks and uncertainties to those best suited to deal with them, and to create enabling systems to handle uncertainty and risks. Most of these options have not been used to any extent or in a systematic way by donor agencies. This may be the main reason why there was no consensus among respondents regarding their usefulness in mastering uncertainty and risk in development projects.

There are many unresolved issues pertaining to management of risk and uncertainty that have to be addressed, in the continued efforts towards more efficient development assistance. Based on the findings in this study, they could be clustered into four specific areas:

1. Methods used to analyse and manage uncertainty.
2. Attitudes and policy of donor agencies.
4. Enabling systems to handle risk and facilitate opportunities

These issues are discussed briefly in chapters 12.2 - 12.6 to illustrate some principles and practices.

12.2 Methods in risk assessment and risk management

One reportedly authentic incidence which is frequently referred to in risk management literature is about a platoon of soldiers which, after three nights in the snowy, isolated high Alps, returned to base camp where everybody feared that they had

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26 Kristensen og Kreiner (1994)
perished. Their commander explained afterwards that they had got lost, and feared they would die. Then one of the men found an old map in his pocket. That gave the men new courage and they made a camp and waited for the snow storm to calm down. Then they used the map to get out of the area. To everybody’s surprise they discovered later that the map was for the Pyrenees - not for the Alps.

The story is used to illustrate that in a high uncertainty situation the critical factor may not be the quality of the strategic instrument but the tactical response to the situation. The strategy may be of use even if it is entirely wrong. The analogy with development projects operating in a high uncertainty environment is that strategies frequently will prove to be inadequate, but without a good strategy the chance of failure is high. The quality of the strategy matters, but only in pointing out the main direction and providing a rough outline of how to go about. A very detailed strategy can be worse than no strategy, if followed in detail. In other words, the direction and the main features of a strategy is essential but the precision of the strategy is less essential.

Operational uncertainty can be handled to some extent by establishing realistic operational objectives for the project and through a combination of realistic planning and appropriate tactical responses. The means available to handle contextual uncertainty are more limited. This is so, partly because the roots of uncertainty are beyond the scope and authority of the project, partly because some of the uncertainty is visible only in retrospect, when the positive or negative consequences are already manifest. However, some of the uncertainties are predictable and should be taken into consideration when the strategy is laid. But rather than attempting to eliminate contextual uncertainty, the rational and natural strategy is to allow a certain flexibility and learn how to cope with uncertainty along the line.
Figure 12.2  *The elements in the “integrated approach”. The strategy is defined to the left. Evaluation criteria (to the right) are used in making strategic and tactical decisions, and the cross-cutting issues are used to identify key uncertainties.*

All major donor agencies have adopted some variant of the logical framework methodology to improve objective-oriented planning. The methodology provides a framework for both strategic planning and risk assessment. This is used essentially to generate an aggregated picture of the project based on available information. Various methods can be used to generate the information, but usually limited to simple economic and financial analyses, surveys, environmental impact assessments, etc. The extraction and processing of information to be included in the analytical framework is done either individually or in groups assisted with various procedures, most commonly visualisation techniques used in sequential analytical steps. The final analysis of the strategy and the associated uncertainties is based on judgmental assessments of probabilities and utilities, individually or in groups. In its most comprehensive variant the methodology prescribes a combined use of strategic planning and evaluation criteria discussed in chapters 4 and 10, and the cross-cutting issues discussed in chapter 8, in a so-called integrated approach, see figure 12.2. Systematic use of the evaluation criteria helps in focusing on both the strategy and tactics of the project, as discussed in chapter 10. Using the cross-cutting issues in the initial analysis helps identifying key uncertainties.

27 See European Commission (1992) and Samset (1994)
These tools are simple in methodological terms and meant for establishing the broad perspective. The main weakness is not that they are simple, since more precise tools may still be used to provide the information inputs and to make the final analysis within the framework. The weakness may rather be that the method attempts to fathom the whole problem from all possible angles. This results frequently in too ambitious strategies. On the other hand, if used as intended, the methodology is specifically designed to arrive at realistic objectives through systematic application of probability assessments.

In sum, the methodology seems appropriate to many of the needs of development agencies regarding design and appraisal of development projects operated under high-uncertainty conditions. The problem is not the methodological tools, but rather that (1) they are not used as intended, and (2) the results are not adhered to when the projects are implemented.

The result of the first problem is deficient strategies, which to some extent may explain the second problem, that the strategy is not followed. In my experience in the field where I have analysed more than 100 project designs in some detail, I have found none without major design faults of the types reported in the study in Annex 8. Most projects have several major design faults. The two most common problems are firstly that the strategies have not been assessed in probabilistic terms and therefore usually are too ambitious and consist of several confounding or conflicting objectives at various ambition levels; and secondly that too little has been done to identify and analyse the effect of major uncertainties. It would therefore be worth while to look more closely at the scope and quality of the design and appraisal to determine their effect on project performance. Agencies also may need to look for methodological tools that are better suited to their needs for risk analysis, and at the same time sufficiently simple to use, such as scenario planning and sensitivity analyses.
12.3 Attitudes and policy in donor agencies

Opinions and attitudes

The uncertainty averse attitude documented in the survey in Annex 6 is presumably valid also for a majority of decision-makers in donor agencies. The origin of this attitude is probably a perceived high incidence of failure throughout the history of development assistance. As mentioned above, donor agencies are by virtue of their mandates risk seeking, in the sense that they are obliged to invest in projects and programmes that are implemented under difficult circumstances. Two ways to influence the risk-averse attitude may be through better knowledge about uncertainty affecting development projects, and through policies on how to manage uncertainty at different levels.

Studies show that when an organisation applies negative sanctions to managers who exceed budgets and, say, takes no action of praise or reward when projects come in on or under budget, then there will be a natural tendency to overestimate forecasts of project costs and to underestimate forecasts of project returns. Raftery (1994). When an organisation has developed a pattern of risk reduction as the common response to uncertainty, and attempts to test or develop alternative, opportunity seeking responses are not encouraged, the tendency is probably an increased risk averseness. If there is no policy specifically on risk management this is likely to further contribute to a risk averse attitude. In the survey included in Annex 6 more than 80 per cent of the respondents meant that training in risk management at both the recipient and donor side should be given priority. However, only half of the respondents thought guidelines on risk management should be a priority issue, while the other half thought it should be given limited or low priority. See figure 12.1.

Training would require that a policy on risk management exists. A core in such a policy would probably be a set of rules about what degrees and types of risks are acceptable and what measures can be applied to realise opportunities. As an example, the British agency’s proposed policy on risk management suggests that the donor agency should be, Roberts (1994):

I. Highly averse to the dangers of financial impropriety or mismanagement
II. Highly averse to cases likely to cause political embarrassment
III. Highly averse to catastrophic risks affecting people in developing countries
IV. Averse to highly visible instances of aid failure
V. Prepared, so long as expected benefits succeed costs and provided that failure would be political acceptable, to:
   A. venture relatively small sums of aid on risky activities of a research or pilot project nature,
   B. venture larger sums on aid on risky activities if in the company of respected donors, and
   C. venture larger sums on aid on risky activities if required to meet the organisations departmental objectives.

Developing a policy in this field would require a systematic analysis of the current situation to define principles that can be applied at different levels. Some thoughts on this are included below.

![Figure 12.3 The investor’s risk-reward perspective](image)

In general terms, the investor’s perspective of risk is illustrated in figure 12.3 making the distinction between the potential reward of the investment and the risk of a loss. The most common risk policy is that high risks are only acceptable if the potential reward is high. Investments in stocks and options are frequently justified based on this principle. If the potential reward is low the investor should not be willing to take risks. Or phrased in a different way: if you are not willing to take risk, you should only expect a low reward, which is the reason why people make bank instalments at a relatively low interest rate. The investor’s perspective switches between the risk-seeking (2) and the risk averse (3) in figure 12.3. The ideal situation would be the high reward/low risk investment (1). However, this is the exceptional investment opportunity that only comes occasionally but does not follow the rules of the game.
Finally, the high risk/low reward investment (4) is of course unacceptable to the investor.

If this is the typical situation for an investor, the situation for a donor agency is somewhat different because most of its operations are considered high risk investments, and it is obliged not to omit all investments with high risk/low potential reward (4). On the contrary, it is encouraged to invest in areas where the potential reward is uncertain. In other words there is no safe-haven (3) available for the donor and no financial scoops (1) can be expected. Instead most investments are done under what seems to be higher than normal risk. The risk policy will therefore essentially focus on what is the limit to acceptable potential reward under the prevailing situation of risk - and what are the limits to acceptable risks.

The situation at a country-to-country level is depicted in figure 12.4. Several studies conclude that performance of development projects is correlated to some extent to the country economic environment in which it is implemented, Cassen (1994), Morra and Thumm (1997). Dividing the portfolio of development operations in four categories as illustrated, gives a similar perspective to that of the investor. High performance in a country environment with poor economic performance (1) is unexpected and considered an exceptional case above reasonable performance standards. In countries with a conducive economic environment (2) the performance standard can be higher than in countries with a poor economic environment (3) where expectations are reduced and the tolerance of failure is higher. Finally, low performance in countries with a conducive economic environment (4) is less acceptable.

A dilemma for the donor is that most projects are in category (3) where high project performance is less likely. The policy will be to move as many as possible of these towards category (1). This raises the policy question of what should be lowest acceptable standard for projects operating in countries with different economic performance. But also the distribution of projects between countries with different economic performance. And the question of what type of investments should be done in different economic environments. No doubt, these are complex questions but nevertheless, useful to address to develop pro-active policies to guide investment and thereby reducing the number of unacceptable cases.
At country level, the policy would focus on the risks and (potential) rewards in the portfolio of projects or operations as illustrated in figure 12.5, which is essentially the same as figure 12.3. The consideration would be on the risks affecting the projects and the actual or anticipated rewards. Again the question will be to define the limits to rewards and risk for category (2), (3) and (4) projects as indicated with the grey area, and what measures should be taken to improve performance and reduce risk, respectively, in the remaining projects.

At project or programme level policy would guide the analysis to include both risks and opportunities affecting individual projects/programmes as illustrated in figure
12.6. The challenge, as discussed in previous chapters, is to open the perspective not only to include risks but also opportunities. On the one hand, to identify the fatal risks that would warrant redesign or rejection of the project. Then to eliminate the low impact, low probability risks from the analysis, and finally to assess the combined effect of the remaining risks on the project. On the other hand, firstly to identify the high probability, high impact opportunities to be included as part of the basis for planning. Then to eliminate low probability, low impact opportunities from the analysis, and finally to assert the effect of the remaining opportunities on the project and find ways to improve the chance that these will occur.

Figure 12.6  Project level perspective on risk and opportunity. The policy issue is to open up the perspective to analyse both the up-side and the down-side of uncertainty and define acceptable measures to manage risks and opportunities.

In conclusion, studies on risk attitudes and their impact on decisions in development assistance could provide a useful input to policy debate in the field. Also, there is a need to clarify general principles regarding what type of risks can be accepted under different conditions and what types can not.

In order to foster a less risk averse and more opportunity-seeking attitude and practice in international development projects there is obviously a need to distinguish between
different types of risks. Some types of risks are unacceptable, for instance risks of mismanagement of funds, while other types of risks are more acceptable, such as risk of time overrun. Apparently, common guidelines on risk assessment and risk management which also establishes limits for acceptable risks could be effective both in altering predominant attitudes in donor agencies, but also in exploring and formulating more innovative and effective modes of cooperation based on the principle of recipient responsibility.

12.4 Strategies to transfer risk.

As discussed earlier, risk is not an objective phenomenon. The subjective value of risk may differ substantially depending on perspective and the ability to handle uncertainty. For example, in the donor's assessment, the risk associated with a political situation may be considered high - while the implementing party in a recipient country would consider the situation as "business as usual", being confident to be able to operate despite political changes. Uncertainty can be perceived entirely different by two parties: as risk by one but opportunity by another. Again some of the explanation is the individual’s ability to handle the uncertainties involved.

One major problem in development assistance has been that donor financed projects often have been implemented by government institutions - not by private institutions by means of government funding. As the result, public sector employment has been inflated, and the attention of key government institutions diverted away from policy-making and enforcement of policy - towards management of development projects at a detailed level. Also it has resulted in ineffective and low quality outputs, and left out and even undermined the capability of private sector.

The reason for a high reliance on government-implemented projects was partly the centralist policy of recipient governments, partly convenience for the donor, but also because of the belief that uncertainty would be less and risk easier managed if government institutions implemented the projects than if private companies were used.

Another contributing factor was the fear of corruption, as a key risk factor. However, what is called corruption in the public sector is often called economic incentives in the private sector and accepted as a mode of making operations move more efficiently. It is probably a delusion that mis-management of funds will be reduced if the responsibility is left with the government.
The obvious alternative to the government implemented mode of cooperation is to channel funds through government institutions who then commission private institutions to implement most of the projects and provide much of the services, as is the tradition in industrial countries. Corruption and mis-management of funds will probably persist in both cases but by employing private sector institutions the problem may result not only in wasted resources but also improved performance.

One of the main issues here is the transfer of risks and responsibilities. Managing risk has a cost which is presumably a smaller part of the total implementation costs. By keeping the responsibility for implementation in the public sector, risks would have to be handled there, and the costs of handling risks would probably be equally high as if the responsibility was transferred to the private sector. The private sector would often be able to perform more efficient in producing outputs and performing services than public sector institutions, and often at a lower cost. In financial terms the result of government-implemented projects may therefore easily be a higher cost - and no savings on risk management. Seen in a wider perspective the additional economic costs can be substantial, in terms of increased public expenses, reduced efficiency in the government and reduced spin-offs and investments in the private sector.

Current policies of recipient responsibility can be interpreted as an attempt to transfer risk to the recipient. It is reasonable to assume that it will succeed only to the extent that the recipient actually is well versed to handle risks. If the recipient choose to leave the responsibility for implementation with public sector institutions this may not be the case. The policy therefore must be explicit regarding the division of responsibilities and roles of the public and private sector in relation to implementation of development interventions.

A major challenge in development assistance is therefore to find workable mechanisms to employ the private sector in donor-funded activities where the responsibility for handling uncertainty is transferred according to agreed principles. The American Project Management Institute has suggested the following principles:

1. The party that controls the causes of uncertainty should be responsible for handling uncertainty
2. The party that is best versed to handle uncertainty should be responsible
3. If neither parties are able to control uncertainty, it must be defined explicitly which party should be responsible
4. Uncertainty has a cost, and the cost should be realistically estimated and defined
5. The party responsible for handling uncertainty must have financial strength to bear the consequences of uncertainty.

Transfer of risks would call for new modes of cooperation and new contract strategies. In the past, projects have frequently been designed by one party, implemented by a second party, and operated by a third. An alternative contract strategy could be a more extensive use of all-inclusive contracts, where the contractor is responsible for all parts of the project. Another contract strategy that is feasible in developing countries with limited capital is the so-called BOOT contract (Build, Own, Operate, Transfer). In this case the contractor does the design and construction, for instance of a power plant or a highway, then owns and operates the facilities for a period of e.g. 20 years, and finally transfers the ownership to the recipient government without compensation. The contractor finances the project and cover his expenses in the operational phase. He is responsible for all uncertainty related to the project and the market situation.

The issue of transferring risk has apparently not been explored to any extent by donor agencies. Transfer of risk is common in other sectors, particularly in large projects in the oil industry, aerospace, construction industry, etc. from the financing party to the contractor, from contractor and sub-contractor, etc. The risks to one party is reduced or transferred, at a cost, to another party by the terms of a contract.

In general terms, the financing party and the contractor have some fundamentally conflicting preferences in the project. The financing party wants the project to be implemented as specified at a reasonable, preferably the lowest possible cost. The contractor wants a high profit and may try to reduce costs, which may compromise the quality of the project. Both parties want to reduce uncertainty. The differences between the parties are regulated by the type of contract chosen. The three most common types of contracts include:

1. Reimbursement contract
2. Fixed price contract
3. Incentive contract

The distribution of risks and incentives in these three types of contracts is illustrated in figure 12.7.
With a *reimbursement contract* the financing party pays a fixed fee and in addition reimburses the contractor for all costs incurred by the project. The cost of overcoming errors, omissions, and other charges is borne by the financing party. The advantages for the financing party are that costs are limited to what is actually expended; the contractor cannot earn excessive profits; and the possibility that a potential loss for a contractor will lead to adverse effects is avoided. Also, the financing party has maximum flexibility to influence the project and make changes.

However, the financing party theoretically carries all the risk. Also, there is an absence of incentive on contractors to control costs, and cost overrun can therefore be excessive. The financing party will therefore need a comprehensive control system that not only cover the financial side but also the qualitative aspects of the project. Reimbursement contracts also present problems in selecting a contractor who can perform the work for the lowest cost.

With a *fixed price* contract the financing party aims to transfer all risk to the contractor. Typically, a contract is awarded to the lowest fixed price bid in a competitive tender. The financing party pays a fixed price to the contractor regardless of what the contract actually costs the contractor to perform. The contractor carries all the risk of loss if costs run higher than expected, but benefits if costs turn out to be less than expected.

Under a fixed price contract, the financing party has no flexibility to influence or change the project during implementation. The contractor’s motivation is to manage project costs downwards, and the financing party is therefore exposed to quality...
degradation risk if quality is not completely specified and verifiable. In high risk projects, additional risks are introduced if the fixed price is too low. For example, the contractor may be unable to fulfil contractual conditions and go into liquidation, or use every means to generate claims. It is therefore important that the cost of managing uncertainty is taken into account in fixed price contracts and that such costs are added to allow the contractor to fulfil his obligations.

Incentive contracts offer the possibility of sharing risk between the financing party and the contractor and is an intermediary position between fixed price and reimbursement contracts. This is potentially a more risk efficient alternative for both the financing party and the contractor.

The contractor will increase his profit if actual costs are less than target costs, and reduce his profit if the situation is the opposite. Risk sharing is regulated by the sharing rate $b$. The optimum value of $b$ increases the more risk averse the financing party, and the more costs are controllable by the contractor. When $b = 1$, the contract corresponds to a fixed price contract. When $b = 0$, the contract corresponds to a reimbursement contract.

General experience suggests that fixed price contracts should be avoided in the early stages of a project when specifications may be incomplete and realistic performance objectives difficult to set. A more appropriate strategy might be to break the project into a number of stages, and to move from reimbursement contracts for early stages through to fixed price contracts in later stages as project objectives and specifications become better defined.

In my experience working with development projects, donor agencies frequently do it the opposite way. Most contracts are reimbursement contracts - also for implementation of larger projects. Fixed price contracts may be applied mostly in cases where international contractors or industry are involved. Fixed price contracts are, however, used extensively in pre-studies/appraisals, evaluations, etc. This is contrary to what is generally recommended. Such studies represent a small part of the total costs. The result of the studies, however, can have a large impact on the cost, quality and effect of the total project. Competitive bidding to reduce the costs of such

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28 In the simplest form of incentive contract, payment by the financier to the contractor is

$$C = F + bE + C(1 - b)$$

and the profit to the contractor is

$$P = F + b(E-C).$$

$C$ = the actual project cost (which is uncertain at the start of the project),

$E$ = target cost,

$b$ = the sharing rate, $0 < b < 1$,

$F$ = the target profit level,

$E$, $b$, and $F$ are fixed at the commencement of the contract
studies could therefore be exceptionally bad economy. The donor is then involuntarily exposed to a degradation risk resulting from a deficit project design, and in addition carries all risk in the project when it is based on a reimbursement contract.

In terms of contract strategy, the present extensive use of reimbursement contracts results in the donor being stuck with the risk, which will eventually be translated into added expenses. As a compensation, the donor will have ample opportunities to influence the project or process. However, this is an unwanted benefit which also translates into an added administrative burden for the donor that is both unwanted and unnecessary.

Contract management is therefore obviously an avenue which needs to be explored. For instance, there are few examples of the use of incentive contracts in development assistance where risk and rewards are shared between the parties. In a situation where implementation of development activities in recipient countries is frequently transferred to the private sector, the donor agencies’ use of contracts need to be analysed to look at the effect on risk sharing and what improvements can be done to facilitate risk transfer from donor to recipient.

12.5 Enabling systems to handle risk and facilitate opportunities.

The policy of recipient responsibility will necessitate a certain flexibility which allows the recipient to exploit positive opportunities and avoid risks. A parallel to recipient responsibility in development assistance is the principle of empowerment in management theory. This has been used frequently to describe self-directed teams which are empowered not only to handle their job responsibilities, but also plan and schedule their work, make production-related decisions, take action to solve problems and share leadership responsibilities. The assumption behind such groups is that those closest to the work know best how to perform and improve their jobs. The question is whether such groups also perform better in handling risk and uncertainty than a more centralised management system.

Some managers are sceptical about decentralised empowerment, and emphasises the need to “balance empowerment and control”. Williams (1997) describes four sets of control systems:

- diagnostic control systems (management controls);
- beliefs systems (general policy direction);
- interactive control systems (formal information systems)
- boundary systems (what not to do)
A project or programme is an example of a system based on decentralised empowerment. In international development assistance considerable efforts have been made to establish and maintain control essentially based on the three first control systems: diagnostic control by means of monitoring and evaluation systems; belief systems by means of development policies and project strategies; and interactive control through regular reporting, periodic management meetings, etc. The control systems have been a link not only between the implementor and the recipient authorities, but between the implementor and the donor organisation. In other words a highly centralised and for the donor administratively demanding control system imposed by the party which is left with most of the risk, i.e. the donor.

Under the present policy the formal responsibility will be transferred to the recipient government. This will probably make the system less centralised. However, the risk will essentially remain with the donor, if transactions are still done essentially on a cost reimbursement basis.

One observation is that the latter of the four control systems listed above, i.e. the boundary system, has not been used to any extent by donors. Budgets have been agreed, but objectives have often been vague, incomplete, conflicting and not expressed in verifiable terms, as discussed in the study in Annex 8. Responsibilities between the donor and the recipient side have not been clearly spelled out, and performance standards and sanctions not specified. Projects have in effect been defined as open ended processes based on the fundamental principle that all costs be refunded by the donor.

![Diagram](image)

Figure 12.8  Boundary control system for a project operating under uncertainty
A main question in this situation is whether boundary systems can be used to replace some of the other control systems listed above. The boundary system transfers the responsibility for implementing the project entirely to the implementor by introducing boundaries which allow some flexibility or room for manoeuvre for the project. As illustrated in figure 12.8, the boundaries should be defined in precise terms and allow sufficient flexibility for the implementor to make appropriate tactical manoeuvres in face of uncertainties when the project is implemented. The arrangement can be interpreted as a fixed price contract that transfers all risks to the implementor. The difference is that the price is not necessarily established on the basis of competitive bidding but on the basis of a realistic assessment of uncertainties to stipulate the flexibility needed to fulfil obligations as agreed. This flexibility has a cost in terms of funds, time and quality. The additional cost is paid by the financing side.

The boundary control system requires a realistic strategy and a thorough assessment of uncertainties and risks to ensure quality at entry of the project. The main problem would be to define the boundaries as precise and realistic as possible. The control system would be preoccupied not with the progress of the project but with the implementor’s compliance with the boundaries. It would dramatically reduce the administrative burden and the demand on control systems on behalf of the donor because the number of parameters involved would be reduced substantially.

To illustrate, the number of parameters needed by the financing institution to define the borders for a project to construct a building can ideally be limited to six, i.e. a statement of the purpose/use of the building, the number of square meters, total costs, completion date, quality standard to be used, and that the design should be done by a qualified and experienced architect. If these parameters are set at a realistic level, the entire project can be handled by one contractor according to a fixed price contract without much involvement from the financing side. The financing side would demand full compliance with the six conditions that have been agreed, and would intervene only if these few conditions are violated by the contractor. If the cost of risk is realistically stipulated so that it allows the contractor to complete the project without a loss, then the chance that the financing side will be satisfied is relatively high.

In a development project the agreement is frequently based on a detailed description of the project with a large number of parameters defining what the project should achieve and how it should be done. A control system based on these variables will necessarily be complex and resource demanding to operate. In face of uncertainty, the donor will frequently have to make compromises on many of the parameters. The control system will therefore not be effective and it will undermine the donor’s authority. A boundary system have few control parameters. They are defined with
precision. With sufficient authority behind the control system the chance of compliance is considerably larger than in the more detailed control system. The result would therefore be an enabling system with effective transfer of risk from the donor to the implementor (at a cost), that allows the implementor to make the appropriate tactical moves to reduce risk and exploit opportunities without much interference from the financing party.

Figure 12.8  Management of uncertainty (UM) seen in relation to other management tasks (GM) in an administrative system

The distinction between management tasks in general and management of uncertainty is artificial in the sense that it is entirely a matter of choice where the line is drawn, or whether the two are separated at all. In figure 12.8 the two areas of activity are separated to illustrate the role of uncertainty management in an administrative system. It could be considered a support function in the system as indicated in figure 12.8.a, or a main task of the top management as in figure 12.8.b. A third view would be that it should be an integral part of general management at all levels, see figure 12.8.c.

Management of uncertainty has so far not been pronounced explicitly in the relationship between the donor and recipient institutions. Under a policy of recipient responsibility where the emphasis of the donor is to support enabling systems of development and transfer risks to those best equipped to handle it, the division of roles should probably be as depicted in figure 12.8.d. The largest share of the donor’s involvement would be uncertainty management in terms of appraisals of design and
the associated uncertainties, and defining the borders that the recipient should adhere to, while most other activities would be done by the recipient.

Based on the discussion above, it is reasonable to conclude that some of the trends in international development assistance today may help relieving past problems of risk management as discussed in this study. However, the problems of uncertainty and risk are not addressed specifically. The policy may have changed, but the means to operationalise the policy has not been sufficiently developed. It would require systematic studies and experiments along the lines described above - intended to transfer risks and create enabling systems that allow the implementing party to take advantage of opportunities, to make international development assistance more successful.

12.6 Discussion

The present study challenges some of the common views among those working with international development assistance regarding uncertainty and risk, success and failure, and means to handle uncertainty in planning and implementation of development projects. The findings do not, however, challenge any part of project management or risk management theory. The conclusion is that the situation in developing countries and industrial countries is not fundamentally different, and that the same theory can be applied in both cases.

The study demonstrates with some confidence that past strategies of involvement and supervision by the financing side in planning and implementing projects was unsound and left the financing side with most of the risks and the implementing party with a rigidity that may have ruled out important options in handling uncertainty.

On this basis the study argues the need for a more pragmatic approach where risk and opportunities are identified and analysed more systematically when projects are appraised, and where the financing party seeks to stipulate a realistic cost of handling uncertainties and risks, and allocating the responsibility to those with the highest ability to manage risks and realise opportunities, at that cost.

As mentioned initially, the time and resources available for the present study made it possible only to scratch the surface and look for major patterns, while the possibility to verify the findings was limited. The purpose was therefore more to raise some questions than provide the answers.
The question whether development projects are less successful than similar projects in industrial countries is still unanswered. A more thorough study is needed to explore whether such projects are exposed to higher degrees of uncertainty and risk and if these are of a different nature or composition than in similar projects in industrial countries. The perception of and attitudes towards uncertainty and risk of management and staff in donor agencies should need to be examined further, and also the attitude of the implementing parties. The cost of risk in development projects as compared with the extra cost of past uncertainty-averse practices should be analysed, in order to determine the potential savings of transferring risks to the appropriate parties. And finally, the ability of different parties at the financing and recipients side to handle uncertainty need to be tested and studied, in order to determine how the allocation of risk should be done.

The present study did not have the resources to go into these questions in greater detail. The ambition of the study as well as the results were therefore limited. However, what the present study show with confidence is that the focus on uncertainty and risk as key management parameters in development projects can prove to be worth while, in the endeavour to improve performance of such projects, make more efficient use of resources and promote development in poor countries.

At the time of submission of this thesis, a second survey of opinions and attitudes towards uncertainty and risk in development project has been conducted by the author. The survey was administred to a larger sample of managers and professional staff in the Swedish development administration, in order to verify the findings presented in Annex 6 and explore the field further. The findings will be presented to the international conference of the European Evaluation Society in Rome, October 1998.

Also, the terms for a study of risk and contract management in a sample of Norwegian funded development projects are being negotiated. The study will explore past management practices in more detail, particularly in terms of the division of responsibilities, the prevalence of risk and its allocation between the different parties involved in the projects. It will discuss the possible consequences of the application of systematic assessment of risks and opportunities, the use of risk management and alternative contract strategies. Such a study would shed some light on the effect of management techniques deriving from the ‘market’ economy in society when applied on activities in a ‘gift’ economy. This could prove to be useful both in the field of project management itself in terms of testing present practices under extreme conditions, but also in the field of development assistance in terms of suggesting more effective and less administrative demanding management practices.
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