EIA, large development projects and decision-making in the Nordic countries. Editor Tuija Hilding-Rydevik. Stockholm 2001. (Nordregio Report 2001:6)

The role of EIA in the planning and decision processes of large development projects in the Nordic countries

The case of the Gardermoen project

Morten Stenstadvold*

Introduction

This paper describes the role of Environmental Impact Assessment (EIA) on the planning and decision-making of the Gardermoen project. The paper itself forms part of the NORDREGIO project: The role of EIA in the planning and decision processes of large development projects in the Nordic countries

The paper is mainly based on studies carried out for the Commission for the Evaluation of the Gardermoen project (The Mydske Commission). This government appointed commission were given the task of evaluating all aspects of the Gardermoen project from the parliamentary decision to implement the project in 1992 through to it's completion in 1998. The structure of the paper is largely as given by the Common Terms of Reference (ToR) developed by Nordregio for the project.

The Gardermoen project – history and overview

The Gardermoen airport project was the culmination of more than 25 years of studies and debate in Norway, concerning the location of a new airport both serving the capital Oslo and functioning as a national hub for domestic and international flights. A number of alternative locations had been examined but for various reasons the development process never got beyond the preliminary study stage. Towards the end of the 1980's however, calls for the project to be resurrected gained momentum. In 1988 the Norwegian parliament decided,

* Senior researcher, Institute of Transport Economics. Oslo

against the wishes of the ruling Labour party, that the new airport serving the capital should be located southwest of Oslo in a place called Hurum. The ruling Labour party however continued to oppose this decision and two years later this location was abandoned, ostensibly because the prevalence of fog in the area would limit the regularity of aircraft operations. However, one can argue that this in fact was a case of scientific knowledge being used to legitimise what was mainly a political decision.

In June 1990 parliament halted planning on the Hurum airport, and the relevant authorities were instructed instead to initiate planning procedures for an airport at Gardermoen, approximately 40 km north of Oslo. On October 8, 1992, parliament made the final decision that the new airport serving the capital should indeed be located here at Gardermoen.

The Gardermoen airport project was in fact a collection of several linked projects – one primary project and two secondary ones. The primary project consisted of a two-runway airport and service area with a capacity to handle approximately 12 millions passengers and transport infrastructure in conjunction with the airport, including a high-speed rail link to Oslo, as well as roads and other transport related infrastructure. Of the two secondary projects, one focused on the effects of building the airport for the armed forces, including the relocation of military installations. Whilst the second focused on the regional effects of the projects (land use, employment, social effects etc).

One of the most disputed projects in modern Norwegian history?

The debate over a new national airport in Norway has a long history. The debate attracted enormous interest, and touched upon such varied issue areas as politics, economy, social relations, the environment and technology. The setting and context have moreover varied in tune with shifting political interests and economic outlooks. The project has in turn been linked with national security issues, regional economic policy, environmental policy and the fundamental workings of the democratic system of governance. The table below lists milestones in the process leading to the 1992 decision to commence with the project.

Table 1. Major milestones in the debate over the localisation of a new airport in the Oslo area

Year	Event
1970	The airport-committee for the Oslo area study (Tufte-Johnsen committee). A government appointed professional committee recommends five different locations, among them Gardermoen and Hurum.
1971	The Lundby-committee. A new professional government appointed committee recommends Hobøl and Ås, argues against Gardemoen.
1973	The Parliament designates Hobøl as the location for a new airport, but also secured land for additional runways at Gardermoen.
1984	In the Norwegian air transport plan, the Ministry of Transport recommends that Hobøl is abandoned as a possible location, due to low estimates for air transport growth. Gardermoen is proclaimed as the better alternative. No documentation for this claim is presented. The plan is approved by the parliament.
1986	The Norwegian Civil Air Authority recommends six different locations, among them Gardermoem, Hobøl and Hurum.
1986	A report by British Airports International favours Gardermoen. However the report was sponsored by organisations lobbying for an airport at Gardermoen.
1987	The Ministry of Transport presents three alternatives, either an airport at Gardermon or Hurum, or an alternative where air traffic is split between Gardermoen and the existing main airport Fornebu. The Minister of Transport from the Labour Party proposes Gardermoen as the site for the airport. This causes severe internal conflicts in the Labour party. Further studies are conducted.

1988	The Parliament decides that the airport should be located at Hurum. A majority for Hurum is secured when 14 Labour representatives vote with the opposition, against the Labour party cabinet, who prefer Gardermoen.
1990	A government committee issues a report, claiming that the weather conditions on Hurum will limit airport operations.
1990	Parliament halts the planning of an airport at Hurum, and initiates planning for an airport at Gardermoen in its place.
1991	After a planning period of 19 months the "master plan" for the airport and the high-speed rail link is presented.
1992	The Labour Party cabinet presents the plans for construction and financing of the airport and rail-link to Parliament.
1992	On October 8, parliament decides that the new airport shall be located at Gardermoen. Changing the voting order in parliament defeats an alternative proposition calling for further studies of the Hobøl site.

Early in the process to locate a new airport, the question was largely left in the hands of the professionals. The decision whether to build a new airport was always intended to be a political question, though the location and capacity of the site were initially viewed as a technocratic question. In the first localisation studies great care was made to ensure that a neutral and professional evaluation of all possible sites took place, and that this was carried out by government appointed commissions manned by professionals, and with little or no political interference from the outside. In these studies the main issues addressed concerned the different sites' suitability for air operations, and the impact of airport installations on the environment. In the 1980's this "technocratic" approach to the airport question was replaced by an increasing politicisation of the process. Issues of importance at this later stage related to defence policy and regional economic policies. By the early 1990's however even arrangements for the upcoming Lillehammer Olympics played a role.

In the late 1980's and early 1990's political divisions over the issue were quite clear. The Norwegian Labour Party favoured Gardermoen whilst the conservatives and the centrist parties generally favoured Hurum. Major actors in the business community and the air transport industry also initially preferred this location. In 1988 the Labour Party government suffered a severe defeat in parliament when Hurum was chosen as the site for the future airport, after 14 Labour representatives voted against the Labour party cabinets' position.

Accordingly, planning for an airport at Hurum was then initiated. At this time however a "dark horse" alternative location for the airport still lurked in the background, this was the site at Hobøl. In addition, a proposal for a split development encompassing Gardermoen and the existing airport Fornebu also remained on the table. Many politicians in parliament supported these alternatives although with different motivations. Regional economic development was one issue of interest as was concern for the environment, and a general scepticism towards the growth policies associated with the development of a completely new airport.

Although planning for the Hurum site was initiated and indeed well under way, the Labour party never really accepted this decision. Powerful elements in the party were constantly on the lookout for the opportunity to return to this localisation issue. Their main motivation being a desire to use the airport as an "engine of regional growth" in the economically lagging regions north of Oslo. The party also wished to redress the humiliating defeat they had suffered over the issue in parliament. The opportunity to indeed return to this question arose not however from the machinations of the political parties, but instead through developments in the field of meteorology.

Obviously one of the most important criteria pertaining to the localisation of an airport is the meteorological conditions prevalent to the site. As part of the planning process an exhaustive meteorological monitoring programme was initiated in order to ensure that the prevailing weather on the Hobøl site would allow for an acceptable regularity in air operations. In 1990, reports from this monitoring programme stated that the Hurum site was questionable in this respect. According to the reports one could not guarantee a regularity of operations to the level that was demanded. The reports raised an enormous amount of attention and supporters and opponents of the different sites soon mobilised. The monitoring programme's objectivity was then taken into question, and rumours of tampering and sabotage abounded. A government committee was formed to

evaluate the work done and concluded that the initial results were correct. Following this, the parliament ordered planning of the Hurum airport to be halted and planning for the Gardermoen alternative to commence.

Foggy bottom

The weather-monitoring programme that effectively buried Hurum as an airport alternative is to this day shrouded in mystery worthy of a crime novel. Allegations of manipulation and sabotage of the monitoring stations abounded. Indeed a number of faults in the measurements and adjustments of instruments were identified. A commission was appointed to conduct quality-assurance of the measurements and concluded that the measurements were indeed satisfactory. However, critics claimed that as several members of the commission also had been involved in the monitoring programme, the report could not be considered impartial. Following this a new committee was appointed. A high-ranking Labour politician led this committee and in turn this committee's objectivity was questioned. Simultaneously, a private company appointed an independent quality-assurance expert who then claimed to have discovered evidence of tampering with the measurement instruments at the Hobøl site. During this process he was subjected to telephone threats and his home was broken into. However before his findings were published the expert fell from his hotel window in Copenhagen and died, an apparent suicide. Ostensibly the expert was in Copenhagen to confer with another expert though his briefcase, presumably containing documents presenting his findings was never found. The identity of the expert he was to meet in Copenhagen has never been established. The label of the "dirty politics" has thus become synonymous with that of Gardermoen, a story, which now includes the possibility that the said expert was assassinated in order to prevent him from revealing that the Hobøl site was abandoned due to falsified meteorological measurements.

Although this rather fantastic story is hopefully fanciful the parliamentary hearings conducted in conjunction with the Gardermoen project in 1999 concluded that parliament was not given all of the relevant information regarding the weather conditions at Hobøl and Gardermoen. One finding was that the Norwegian Civil Aviation Authorities (CCA) were somewhat selective in the information they gave to parliament. Studies of fog conditions, which were recorded as negative for Hobøl as compared to Gardermoen, was submitted to

parliament, whilst studies on freezing rain and icing conditions were given as negative for Gardermoen compared to Hobøl when in fact they were not. According to the CAA and Ministry of Transport and Communications (MoTC) officials this was a coincidence and not intentional.

Environmental issues also played an important role in the debate over the localisation issue. Environmentalists were largely opposed to the whole idea of a new airport, claiming that it would lead to an increase in air traffic causing local environmental problems as well as contributing to global warming. In time, the environmental community realised that reversing the decision to build the new airport was futile. Therefore, their attention shifted towards influencing the execution of the project to ensure that it created as few negative environmental impacts as possible. Key issues in this respect were the capacity of the proposed airport and the means of transport to be provided for travellers between the airport and Oslo. In this context, environmentalists could claim a partial victory as it was established early on in the process that a high-speed rail link between the airport and Oslo was to be an integral part of the project, regardless of the airports final localisation.

A further important environmental argument against the Gardermoen site related to the extensive ground water basin that more or less surrounds the airport. The 1971 study of possible sites explicitly excluded Gardermoen on the grounds that this ground water basin would be in serious jeopardy if a major new airport were to be built. However these arguments failed to sufficiently influence the political decision made. Instead, issues of economic policy and regional development dominated the debate.

No EIA related preliminary studies

As has been mentioned above, numerous studies where carried out before the decision to build the airport at Gardermoen was made. These did to some extent focus on environmental issues, though they were mainly feasibility studies focusing on issues such as the site's suitability for air operations, and the cost and complexity of construction. On the other hand, after parliament first decided on the Hurum site, planning and studies commenced on this site. Although Norway by then had adopted an EIA system in the Planning and Building Act (PBA), it was still not as yet in operation. Nevertheless, proponents chose to initiate an EIA process in anticipation of the regulations coming into force.

Preparations for an EIA at Hurum

The CAA was chiefly responsible for the EIA at Hurum. Initially the CAA was mainly focused on noise as the prime environmental concern, though when the EIA approach was applied other issues – such as the impact on nature, societal and economic effects – were also incorporated. The EIA process at Hurum had however not progressed far when the decision was reversed and the planning focus shifted to Gardermoen.

One can therefore conclude that although many studies where carried out this was over a long period of time and with highly different motivations. There was therefore no comprehensive preliminary study carried out before the decision to abandon Hurum and focus on Gardermoen was made. This was mainly a political decision using the negative weather studies as justification. It is however apparent that there were other, more political agendas at play, and that this was the real reason for this decision.

The Gardermoen Airport project – a basic outline

The Gardermoen airport project was organised along the lines of several linked projects – encompassing one primary project and two secondary ones.

The primary project

The primary project consisted of the airport itself and transport infrastructure in conjunction with the airport, including the high-speed rail link to Oslo, roads and other transport related infrastructure.

The airport was built on the basis of two parallel runways with the terminal building located between them. It had a capacity of approximately 12 millions passengers per year though construction was to be done with further expansion in mind. In addition, the airport grounds contained hotels, aircraft servicing installations and other related services. It was predicted that 10-12 000 people would work at the airport. Extensive road systems and parking facilities handling traffic to and from the airport were constructed, as was the railway link, which passes underneath the airport with the station in the basement of the terminal. The total cost of the airport was approx. NOK 11,4 billion (1992). The airport was opened on time and on budget

The high-speed rail link project included the construction of approx. 65 km of new track including a 14 km long tunnel between

Oslo and Lillestrøm. Initially this was estimated to cost approx. NOK 4,6 billion (1992) but a 20% buffer was included due to uncertainty surrounding this estimate, bringing the cost up to NOK 6 billion. Inevitably however project overruns, additional appropriations (for example 16 train sets) and other project adjustments raised the total cost of the project to approx. NOK 8,3 billion. Moreover, due mainly to the water leakage problems encountered in tunnelling, the project as a whole was delayed. The rail-link was opened at the same time as the airport but as the tunnel was not finished the old main line was used on the Oslo – Lillestrøm stretch. The tunnel was not opened until almost a year later.

The third element of the primary project – the access roads and other road infrastructure projects were estimated to cost approx. 820 mill. NOK (1992 NOK). The most important road projects were completed on time though some secondary projects were delayed, mostly due to lack of funding.

The secondary projects

Of the two secondary projects, the first focused on the effects on the armed forces of building the airport, and included the issue of the relocation of military installations. The eastern location alternative for the airport, which was chosen, meant that major military installations had to be moved, and several military units relocated. The total cost of this relocation was estimated to be approx. NOK 3,35 billion (1992).

The other secondary project focused on the regional effects of the Gardermoen project (land use, economy, employment, social effects etc). This mainly consisted of various research projects, which were run in conjunction with the planning process. Results from several of these studies were used as inputs in the EIA process. Approx. NOK 20 mill. was reserved for these studies.

Planning of the Gardermoen project

The planning of the Gardermoen project was unique in that it employed a mix of planning tools, some being part of the formal planning system, others not.

The legal framework for planning in Norway

In Norway the PBA specifies planning instruments and procedures for the planning process. The main purpose of the PBA is to facilitate the co-ordination of state, county and municipal activity. Planning

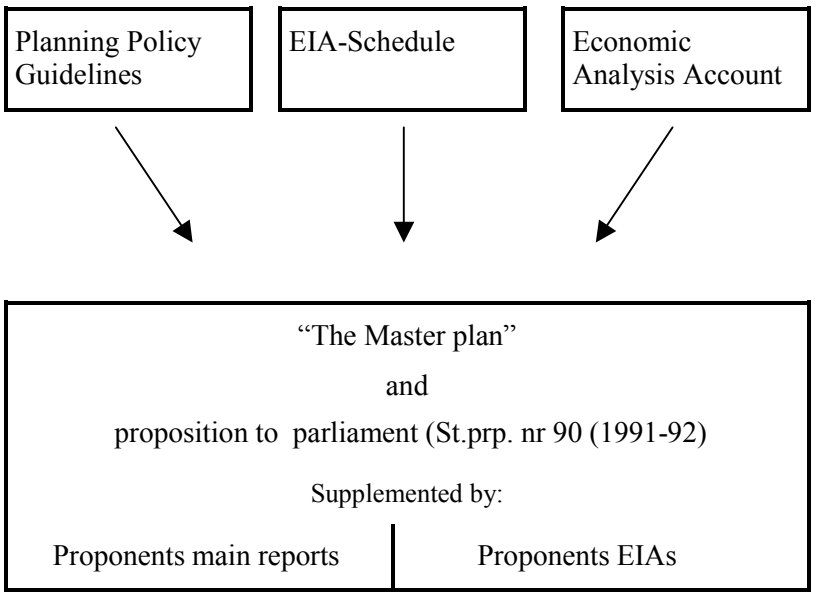
undertaken under the act shall provide a basis for decisions regarding the use, development and preservation of natural resources. Planning shall be led by elected bodies and shall encompass both land use, economic, social and cultural aspects. The provisions of the act are focused on providing procedural tools for ensuring a legitimate planning process. With regard to larger projects such as the Gardermoen project, the following aspects of the act are of special significance (St.meld 29, 1996-97):

- The act shall ensure the co-ordination of state, county and municipal activities.
- The act shall ensure that the principle of local self-governance is adhered to, including the mobilisation of local interests and their participation in the planning process.
- The act shall ensure that national development goals are taken into consideration.
- The act specifies the conditions for state intervention in local planning processes (PPG's, State initiated local plans).
- The act shall facilitate co-ordinated societal development and ensure that all relevant interests are given due consideration.
- The act shall ensure the function of the process as an arena for knowledge development.

The planning system for the Gardermoen project

The planning of the Gardermoen project was organised on the basis of a "master plan"-concept, a planning concept formerly used by the Norwegian Directorate of Public Roads. This concept is not part of the PBA and therefore not part of the formal planning system. The ordinary PBA planning instruments of county, municipal and detail plans was not used in the master plan phase. The main reason for this was that parliament had not at that time made a formal decision to implement the project, a necessary prerequisite for the PBA to come in to effect. However, important elements of the PBA were used, including the use of the EIA instrument and public review of the plans. Planning was structured as follows:

Table 2. The structure of the Gardermoen project planning



The MoTC had overall (and constitutional) responsibility for planning, through a dedicated project administration group called GARPRO (Initially entitled GAROL). GARPROs mission was to provide leadership and co-ordination in the process. GARPRO was located outside of the ministry though it answered directly to the Minister.

The three proponents; The Directorate of Public Roads (DPR), Norwegian National Railways (NR) and the Norwegian Civil Aviation Authorities (CAA) undertook the actual planning. In addition, the Ministry of Defence (MoD) was involved in the defence-related aspects of the project, and the Ministry of the Environment (MoE) in matters relating to the regional impact of the project.

There were also a number of co-ordinating bodies facilitating communication and co-ordination between the multitude of public authorities involved in the planning process, (other ministries, environmental agencies, regional authorities etc), economic analysis, technical matters and co-ordination between the proponents' projects on different levels.

Three planning instruments provided input to this so called "master-plan". Two of these, the Planning Policy Guidelines's (PPG), and the EIA itself, are instruments included in the PBA:

- The MoE provided planning PPGs for the "master plan" process. The PPG's themselves indicated the guidelines for regional planning and environmental standards to be employed in the project planning.
- The Economic Analysis Account also provided input. The role of this instrument was to provide a common system for economic analysis in the planning of the projects. The account defined important project parameters (capacity etc) that were to be examined in the planning of the projects, set down common economic premises for the analysis (interest rates, growth in GNP etc) and defined a basis for calculating social and business economic factors (prices, wages, taxes etc).
- The EIA provided input concerning a variety of impacts of the project.

Below we will discuss the EIA-system employed in the project.

The EIA-system used in the Gardermoen project

The PBA provides the legal basis for Norwegian EIA regulations. What follows below is a brief outline of the EIA-system then in force in Norway. It is worthwhile to note however that since then, the regulations have been substantially revised.

The purpose of the EIA in Norway is:

> "to assess the effects of proposed projects that may have significant impact on the environment, natural resources and the community. EIA are intended to ensure that such effects are taken into account in the in the planning or projects when a decision is as to whether and in the event under what conditions the project may be carried out." (Norwegian Planning and Building Act § 33-1).

In the EIA schedule for the Gardermoen project these intentions were formulated as follows (translated):

The purpose of the EIA was to:

- Reveal positive and negative effects of the project that could have a significant impact on the environment, natural resources and society.
- Ensure that these effects were given due consideration in the planning process, and that the effects were known to decision-makers.
- Clarify conditions for implementation of the project including mitigating measures and a monitoring programme.

According to EIA regulations, the proponent should notify the relevant authorities as early as possible, of any project falling within the scope of the regulations. Notification was to be sent to the competent authority (in this case the MoTC). Though the MoE retains overall professional responsibility, the sectoral ministries consider cases within their own areas of competence and responsibility. Notification was also distributed to the municipalities and to the County Governor of counties potentially affected by the project, and submitted to a public hearing. Based on the notification and the comments received, the competent authority should decide whether or not an EIA was required. In the Gardermoen project this was not relevant as it was obvious from the outset that an EIA would be required.

The regulations also stated that the EIA should be available at the same time as applications for approval of projects in accordance with the PBA or other legislation. The EIA should be sent to the municipalities, county municipalities and to the County Governor and should also be submitted to a public hearing. The competent authority should decide whether the EIA satisfied these requirements and could also order additional inquiries if this was deemed necessary. In this phase the MoE was also consulted in order to determine whether the EIA was satisfactory from a professional point of view.

Public participation

Public participation is ensured through the stipulation of mandatory public hearings during the notification/draft EIA-schedule phase, and through the hearings conducted after the EIA has been prepared. In special cases, the Ministry can grant exemptions, though this was never an issue in the Gardermoen case. The minimum time limit for such a hearing is 6 weeks.

Scooping

Preparation of the notification/draft EIA-schedule includes a scooping process. The responsibility for this process lies with the proponents. If the hearings of the notification/draft EIA- schedule produce comments that justify additional issues being addressed, then the competent authority can order this to be done.

Cost of EIA

As the proponents are responsible for carrying out the EIA they usually cover the cost of the procedure. The competent authority can however, in special cases, decide that the public should carry all or part of the cost. In the Gardermoen case the proponents were allocated funds in respect of planning by parliament.

The Gardermoen EIA process. Bigger, faster – better?

The Gardermoen EIA process was probably the most extensive EIA process undertaken in Norway up to this time A number of impacts were studied many of which were either complex, or involved extensive fieldwork. The area encompassed by the EIA stretched from Oslo to Gardermoen, covering approx. 3000 sq. km of land in 14 municipalities and stretching across 4 counties. The EIA was primarily prepared by the three proponents though it also involved a large number of consultants. The formal EIA process lasted from February 1991 until May 1992, though some preparatory work had already been undertaken for an EIA on the Hurum site, this was simply adapted for Gardermoen. Each of the three proponents conducted their own EIA-processes under the co-ordination of the CAA, who were also responsible for producing a comprehensive EIA report.

Milestones in the EIA process are:

February 1991:	Notice of planning and a draft EIA schedule released for public review.
July 1991:	The Ministry of Transport approves the final EIA schedule.

December 1991: The proponents present the EIAs as part of the "master plan".

December 1991-March 1992: The EIA is subjected to a public review as part of the comprehensive plan for the project.

May 1992: The EIA is approved by the Ministry of Transport.

The draft EIA schedule

As prescribed by the PBA, a notification and draft EIA-schedule was formulated by the proponents. The EIA regulations stated a number of elements that should be included in an EIA (§ 5 in the regulations, translated):

> "The EIA shall to a necessary degree encompass:
>
> a) A description of the project and the plans for its implementation.
> b) A description of project alternatives.
> c) An account of the projects land-use requirements and the projects relation to municipal and county plans.
> d) An account of public and private measures to be undertaken to implement the project.
> e) An account of the need for public permits in conjunction with the project.
> f) A description of the environment, natural resources and societal conditions in the areas affected by the project.
> g) A description of the projects' most important impacts on the environment, natural resources and society during construction and operation, in case of accidents, and in case of closure of the installation.
> h) A description of mitigating measures and their implementation.
> i) An analysis of possible impacts after mitigating measures have been implemented
> j) A proposal for a monitoring programme and follow-up studies of project impacts."

The draft EIA schedule was especially focused on outlining the scope of impacts to be analysed in the EIA. The following impacts were therefore targeted for assessment:

Table 3. Impacts targeted for assessment in the notification/draft EIA-schedule

Impacts related to pollution:	Noise Air pollution Global climate Local climate
Impacts related to natural resources and the natural environment:	Soil and forest resources Water-resources Recreational areas Landscape Minerals Flora and fauna/genetic resources
Impacts on historical sites:	General impacts
Impacts on society:	Indirect regional impacts Direct local impacts Economic impacts for local municipalities

In February 1991, the draft EIA schedule was released for public review. Numerous comments were submitted, from the public, interest groups, municipalities, counties and other state authorities. The collected comments pointed to a number of areas where the draft schedule was judged inadequate:

- Cumulative noise impacts should be more properly addressed. The major problem was that the impact of accumulated noise from the project (noise from planes, trains etc) was not considered.
- The need for new land areas for the relocation of military installations was inadequately addressed.
- Long-term impacts on water resources were inadequately addressed.
- The social and economic impacts of the project on local communities were insufficiently discussed.
- The EIA process did not comprise a real evaluation of alternative locations of the airport. According to some commentaries, this was in conflict with the basic concept of an EIA, as defined by the PBA. Criticism was also levelled at the planning process and decision-making during the planning process.

- The time constraints in the process implied that much of the input generated by the EIA process would only be available after important planning decisions had already been made.
- Many of the tasks of the EIA had already been initiated whilst the draft schedule was still open to public review. According to the comments gathered, this made it impossible to adjust or expand certain tasks in order to properly accommodate input from the hearings. This was judged by some parties to be in violation of the PBA.

The criticisms listed above cover issues that would later become the source of major conflicts in the project. There is however, little evidence that either the proponents or the MoTC gave these criticisms serious consideration at this time. In their comments to the public review process, the proponents stated that the public review had not produced information that required a revision of the EIA schedule. In the final EIA programme the proponents merely stated that input from the hearings had been incorporated into the programme without stating how this had been done. A comparison of the draft EIA schedule and the final EIA programme reveals that the final EIA programme is almost identical in content to the preliminary programme.

Preparation of the EIA

The proponents then prepared the EIA. This included baseline studies, assessment of impacts and mitigating measures, and follow-up studies. The proponents themselves carried out some of the tasks, though a large number of consultants were also involved. Impacts of primary importance for the proponents differed in accordance with the nature and extent of the project. The table below lists the most important impacts, according to the proponents, in conjunction with the different projects.

Table 4. Impacts of particular importance for the different projects

Airport	*Railway*	*Road system*
Noise impacts Impacts on the ground water Impacts on historical sites and artefacts	Noise impacts Impacts on natural resources (farmland and forests) Land-use impacts Impacts on historical sites and artefacts	Noise impacts Impacts on natural resources (farmland and forests)

For it's size, the EIA was conducted over a rather brief time span. The EIA process, from the publication of the notification and the preliminary EIA schedule, to approval of the EIA itself took approximately 16 months. The preparation of the EIA itself took approximately 5 months. After it's completion, the EIA was subjected to a final public review. This again resulted in substantial criticism of the EIAs content, mainly on issues such as air and noise pollution, the protection of natural resources, land-use, wildlife, and the social effects of the project. Again there is little evidence that this resulted in major changes or triggered extensive supplementary studies. Finally in May 1992, the MoTC approved the EIA. Besides approving the EIA, the MoTC's letter of approval outlined a programme for monitoring environmental factors during the construction phase. The MoTC also outlined a list of possible mitigating measures to be used.

Views on the EIA

An independent evaluation carried out in 1997 (ECON 1997) concludes that the EIA failed to supply sufficient input to the further planning of the project in the following areas:

- Noise and vibration.
- Defence matters.
- Social and health effects for the local population.
- The relation between future land-use options and restrictions on land-use around the airport.
- Effects on the natural environment north of the airport.

Again we can observe that these are largely the same areas that various review bodies and NGO's judged to be insufficiently covered in the public review at the start of the EIA process, and that were raised in response to the completed EIA.

The quality of the EIA was also addressed in the enquiry conducted by the Mydske-commission. This analysis, based on interviews with relevant actors and document studies, resulted in the following conclusions on the EIA:

Positive comments:

- The EIA programme and process was an important integrated part of the planning process and played an important role in providing a comprehensive planning perspective.
- The EIA functioned as "glue", melding the planning of the different projects and the proponents together.
- The EIA drew attention to areas otherwise ignored, for example the project's impact on historical sites.
- The EIA provided a good account of the project's impact on the natural environment.
- The EIA provided an important resource for decision-makers in parliament.

Critical comments:

- The EIA did not address the problems experienced during the construction of the Romeriksporten tunnel, itself a part of the rail-link project[1].
- The EIA did not give a proper account of the level and distribution of noise pollution, especially the cumulative impacts of noise from different sources.
- The EIA failed to give a proper account of the environmental effects in conjunction with the operation of the rail-link, again especially relating to noise.
- The EIA failed completely in describing the actual social effects of the project to the population directly affected by the project. (People were relocated because of the project).

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[1] The Romeriksporten tunnel project encountered severe problems due to excessive leakage of water into the tunnel, which led to a draining of lakes and lowering of the water table over and around the tunnel. Subsequent use of noxious chemical sealants led to some minor damage to adjacent waterways. Some tunnel workers were also affected though not sufficiently to cause permanent damage. Although the problem was minor technically, it had serious political repercussions. The problems were very similar to those experienced in the Hallandsåsen tunnel project in Sweden.

- The EIA failed to communicate the fact that several issues were simply not to be assessed at later stages in the planning process. Several municipalities chose not to respond to the "master-plan" and EIA review as they thought that issues important to them would be addressed later in the planning process. This led to conflicts over noise abatement and the actual location of the railtrack to Gardermoen.

Indications of systematic weaknesses in the EIA

As illustrated above, criticisms levelled at the EIA from the presentation of the preliminary EIA programme through to the completion of the EIA, concern more or less the same issues.

In several review processes at different stages of the EIA-process the same critical comments are raised. Each time the response of the proponents was that these questions were either sufficiently covered or will be taken into consideration at a later stage. Nevertheless, these same issues were later to cause serious conflict during the implementation phase of the project, provoking both legal action and state intervention. This can be viewed as indicating a systematic weakness in the EIA process, in which several important issues are ignored or given insufficient attention.

Possible explanations for the weaknesses

Time pressure

One likely explanation for the systematic weaknesses in EIA procedures is time pressure. As outlined above, the process from publication of the notification/preliminary EIA schedule to approval took approximately 16 months. In a study on experiences with EIA processes in Norway, conducted in 1995, the average EIA was found to take approximately 13 months to complete (Lerstang & Tesli 1995). Preparation of the EIA itself takes on average 6 months. For the Gardermoen project this phase took approximately 5 months. This means that the largest EIA conducted in Norway at the time was prepared in a period of time that is one month below the average for the preparation of all kinds of Norwegian EIAs.

In response to this perceived time pressure, many of the EIA tasks were already started before the EIA-schedule was itself approved. This would explain the reluctance of proponents to give input from the hearings serious consideration. They had already started the work, and initiating new tasks or revising ongoing ones

would thus potentially delay completion of the EIA within the time frame set by parliament. One effect of time constraints on actors is often a narrowing of attention, and a lack of willingness to consider alternatives and approaches outside of the actors' immediate area of responsibility.

The time constraints may also have had a negative effect on the role of the EIA in the planning of the project as such. Critics voiced the opinion that much of the input generated by the EIA process would not be available until after important decisions in the planning cycle had been made.

Another aspect of the "time pressure" problem is that whilst the proponents' planning phase was stretched over 23 months, most other actors (local municipalities, NGOs etc) only entered the planning process 10 months in (after the "master-plan"- phase) and therefore only had 13 months participation in the planning process. These actors also criticise the short response time for the public review of the master-plan/EIA, which was just 3 months. This is the shortest time allowed by the PBA. Many local actors judged this to be too short for a project with such extensive potential impacts. In their view, the pressure of time led to important facets of the EIA being left unattended or often underestimated, and contributed to the lack of participation by affected local actors in the process. This in turn, created a "democratic deficit" and eroded the legitimacy of the planning/EIA process. This view is to a large extent supported by a study of major infrastructure projects conducted by Gunnar Falkemark (1999). He found that in the projects covered by his study, where time pressure in the planning and decision-making process was evident, both the planning and the democratic nature of the process suffered.

In interviews conducted by the Mydske Commission, representatives of the proponents agree that time pressure was intense. However, in their view this did not reduce the quality of the EIA. Some representatives claim that the effect was quite the opposite in that the time pressure led to an increase in focus and effort to do as good a job as possible. As this was one of the largest EIA processes carried out so far in Norway, a pioneering spirit was generated, spurring the proponents to produce an exemplary EIA.

Other actors, primarily at the local level, disagree claiming instead that time pressure was used as an argument against expanding the scope of the EIA and conducting additional studies, for example on the cumulative effects of noise.

Professional shortcomings

Another possible explanation for the systematic weaknesses in the EIA could simply be lack of knowledge. For important impacts such as noise and other social impacts this can in our view largely be excluded. A large number of highly qualified consultants were employed in the EIA process, and any lack of knowledge in these areas would probably have been identified and rectified at an early stage. One exception may however be the EIAs total disregard of the problems with water leakage and lowering of the ground water table in the areas above the Romeriksporten tunnel. Although the Norwegian engineering community has extensive expertise in tunnelling the focus with regard to water in tunnels has been towards draining it out of the tunnels and not towards the effect this leakage could have on the area above the tunnel. The main reason for this seems to be that most tunnels have been built in sparsely populated areas where there little attention to the problem has been shown. This was not the case with Romeriksporten as the tunnel passes under built and popular recreational areas.

Organisational shortcomings

The organisation of the EIA process could also, to some extent, serve as an explanation. As earlier stated, each of the three proponents conducted their own EIAs. This had the potential to lead each the proponents into focusing on impacts or aspects of impacts of particular relevance to them and thus to them largely ignoring the cumulative impacts of he project as a whole. The Norwegian CAA was given the task of co-ordinating the process, and ensuring it's comprehensiveness, so issues such as this should ideally have been taken on board. On the other hand, environmental interest groups criticised the EIA for being particularistic and lacking an overall perspective on the sum total of the impacts from the project. This explanation does therefore have merit, though "how much" remains difficult to ascertain, as the effect of this kind of "tunnel" vision will be similar to that of the narrowing of attention due to time pressure. It is also quite likely that such an effect was caused by time pressure.

Political pressure

A further possible explanation is that political pressures marred the EIA-process from the outset. The labour Party's Minister of Transportation was an enthusiastic supporter of the project, and there are also indications that high-ranking civil servants in the MoTC shared this enthusiasm. It may be that a combination of time pressure

and political pressure led the MoTC to approve a "skeleton" EIA. If this was so, the goal could have been to conduct the EIA within the time limit and to downplay any negative impacts of the project in order to satisfy the political interests of the Labour government. Ideally, such a "perversion" of the EIA-instrument should have been countered by the MoE's role as quality assurance authority in the process. However, political pressures may also have come into play here. The task of overseeing quality assurance was moved from the department in the MoE normally responsible for such things and instead given to a task force especially assembled in the ministry for the Gardermoen project. The impact this had on the MoE's role in the quality assurance of the EIA has been difficult to establish, though informal contacts with the MoE's EIA experts reveal that they were deeply unhappy with the situation.

Regarding the quality of the EIA itself, one can conclude that systematic weaknesses in the EIA process did indeed exist. We have then discussed a number of alternative explanations for such weaknesses without reaching a firm conclusion as to the main reasons for them. Most probably all these explanations outlined above had some part to play and are as such relevant.

Was the EIA in compliance with EIA regulations?

As illustrated above the EIA for the Gardermoen project exhibited systematic weaknesses. Despite such failures however the EIA was approved. It is possible that this approval was "tainted" by time pressure and by political considerations, thus it is natural to pose the question whether the EIA did in fact comply with the rules and standards of general EIA regulations, and subsequently whether the MoTC should have approved it.

The Mydske commission did not conduct a detailed enquiry as to whether the EIA complied with EIA regulations, it did however point to weaknesses in the EIA, which makes this a relevant question:

- One important aspect in this context is that an EIA should contain more than merely a listing of expected effects and impacts of a project. It should also produce knowledge that is fed back into the planning process to be applied in the elaboration of real planning alternatives. A basic feature of any EIA is therefore that there shall be more then one alternative to choose from, and that mitigating measures should be tied to the alternatives. In the Gardermoen project there was no real alternative to the project as

such. The alternatives that were discussed were based on a concept that saw foreign and domestic traffic divided between Gardermoen and the existing main airport at Fornebu. Certain comparisons were also made between Gardermoen and another possible location in Hobøl, south-east of Oslo. Neither of these options was meant to be a real alternative and as such was only developed as a schematic for analytical purposes, mainly as a result of political pressure. These options can therefore hardly be seen as alternatives in EIA terms.

- EIA regulations also state that all major impacts on the environment, natural resources and society should be described. The systematic weaknesses revealed in the EIA, as illustrated above, implies that the EIA did not comply with this.

- Another weakness was that the EIA covered a large geographical area, and was conducted in quite general terms regarding its description of impacts on the affected population.[2] Consequently all those potentially affected would have great difficulty in discerning which of the described impacts would be relevant to them and their immediate surroundings. It would also be difficult to judge whether these effects would be major or not.

Several factors limited the influence of the EIA in the planning process

We have already argued that the EIA had systematic weaknesses that reduced its usefulness in the detailed planning process. This was so because the EIA was held at a general level, and because important impact issues were insufficiently covered. In this section we will argue that several other factors also reduced the influence of the EIA.

The EIA structured the planning process

The degree of feedback between the different elements in the planning process can be difficult to ascertain. According to the proponents, this feedback was quite extensive during the "master-plan" phase. They

[2] In the documents that were used in the public hearings, maps depicting impact areas around the airport were scale 1:50 000. The maps depicting impact areas for the region and the railway were scale 1: 200 000.

point to the fact that the EIA functioned as "glue" melding the different projects together. They also argue that due to the lack of formal content in the "master-plan" concept the provisions of the EIA regulations were used as a structuring element in the planning. This implies that the EIA played an important role in defining and supporting the planning *process*. A further question in this context is whether EIA *results* had the same importance for planning.

There are several factors that may have reduced the influence of the EIA results on the planning and decision-making process. One is that the processes were parallel, possibly leading to EIA results not being available until important project parameters had already been set. Another being an apparent mismatch between the level of detail in the decision-making procedure and in the EIA. This severely limited available options in the detailed planning and implementation of the project, when the EIA was meant to provide important input. The level and type of conflicts arising in the detailed planning, after the completion of the EIA, suggest that the EIA findings had a weak influence on actual planning. This is elaborated on further in what follows below.

The Mismatch between the EIA and the decision-making process

When the draft EIA schedule was presented the purpose of the EIA, with regards to decision-making, was stated be to provide for input into the decision whether to go ahead with the project and the choice relating to the general concept of the project. What was meant by "general concept" was not defined, and is not a formal planning term with a clear definition. As has been argued before, the EIA was held at a general level. Critics claimed that it was so general that it had to be considered a "regional" EIA and therefore was in violation of the EIA regulations concerning project EIA's. On this basis the approval of the EIA was brought before the ESA tribunal. The ESA tribunal's judgement is still pending.

As has been stated before, the proponents of the project and the MoTC judged the EIA to be an important input into the parliamentary decision-making process. However there is certainly cause to claim that a mismatch existed between the kind of decision that the EIA was designed to provide input to, and the form of decision that actually was made. It can be argued that the decision made by parliament was more detailed than the decision to which the EIA was supposed to contribute. The decision that was made did not only state whether or

not to go ahead with the project, and how to define the general concept, but also defined important "success criteria" for the airport and the rail link:

Table 5. Success criteria for the airport and rail-link, as defined by the parliamentary decision

Success criteria for the airport:	Total cost (NOK 11,4 bn) Date of completion (010199) Capacity (12 mill. pr year) The formal status of the developer (publicly owned private company) Net return on investments (7%)
Success criteria for the rail-link:	Total cost (NOK 4,6 bn +/- 20%) Date of completion (010199) Fare level (NOK 33 for travel to work, NOK 77 for ordinary passengers) Travel time (19 minutes) Modal split (in this case, the percentage using public transport to and from the airport; at least 50%) The formal status of the developer (publicly owned private company) Net return on investments (7%)

It's quite clear that the level of detail in the decision severely limited the available options in the detailed planning of the project, in which the EIA itself was meant to provide an important input.

This suggests that the EIA was either insufficient in relation to the decision that was made, or that the Parliament made a more detailed decision than the EIA provided for. As we will demonstrate below, this "mismatch" had a debilitating effect on the detailed planning after the decision.

The Effects of the "mismatch" on the detailed planning

We have previously pointed to three sources of conflict in the EIA:

- The systematic weaknesses in the EIAs handling of important impacts.

- The mismatch between the kind of decision that the EIA was designed to provide input to, and the form of decision that actually was made.
- The insufficiency of communication and the misunderstanding of the implications of the EIA/planning process on subsequent local abilities to influence the project.

These problems contributed to the severe conflicts in the detail-planning phase, where the EIA was meant to provide important input.

In Norway, according to the PBA, the municipalities are the formal planning authorities for detailed land-use planning. In relation to the role of the EIA in the detailed planning process, three questions can thus be raised:

1. In what way could the municipalities influence the project by referring to the EIA and to the "Master plan"?
2. What influence did the EIA have on the detailed land-use planning in relation to the actual solutions chosen?
3. To what degree was knowledge generated by the EIA utilised in detailed land-use planning?

The answer to the first question is that the municipalities had limited influence. One problem was that the "master-plan" concept had no formal basis in the PBA, and was therefore not subject to the PBA's procedural rules with regard to participation. Neither did the PPG's for the project contain any procedural principles. The proponents decided how the planning process should be run and therefore also the degree and the level of public participation in the planning process.

The EIA however, has a formal basis in the PBA, and through this, the EIA regulations regarding procedures for public participation were brought to bear. Accordingly, public participation was ensured in a manner that would probably not have taken place without the EIA process. Even so, the evaluation carried out in 1997 (ECON 1997) revealed that municipal participation in the "master-plan"/EIA-process was insufficient. Local interests did not have sufficient influence over the process to rectify the lack of relevant information regarding impacts due the general level of the EIA. Local interests could submit comments on the planning results, but could not influence the planning process as such. The level of detail in the parliamentary decision further reduced their influence. In this phase, important aspects of the project were fixed (for example the exact location of the rail-track). When the municipalities fully entered the planning process

in conjunction with the detail planning, the project was already "locked" in such a manner as to deny the municipalities substantial influence over the choice of solutions. Unfortunately, many municipalities did not discover this until it was too late. This led to severe conflict between the proponents and the municipalities. When the municipalities tried to induce changes and adjustments to the project the proponents would refer to the parliamentary decision and use it as an argument to counter any alternative proposals made by the municipalities. If this failed to subdue the municipalities, the proponents, being publicly owned institutions, threatened state intervention[3], as provided for in the PBA. State intervention did in fact take place in three of a total of 19 detail planning processes in conjunction with the planning of the rail-link[4].

In answer to the second question regarding the influence of the EIA, further data from the 1997 evaluation can be used. The municipalities were asked to judge the importance of the "master-plan"/EIA in the detail planning. Three of eight municipalities involved state that the "master-plan"/EIA was irrelevant to the detail planning. In relation to the actual detail planning processes conducted in the project, the "master-plan"/EIA was judged irrelevant to 10 of the 26 planning processes.

Based on the answers to the first and second question it seems clear that the knowledge produced by the EIA had reduced relevance for local interests particularly in terms of the detailed planning. The mismatch between the EIA and the decision made, and misunderstandings surrounding the importance of the level of detail in the parliamentary decision caused severe conflicts to arise. This was exacerbated by the fact that the EIA was particularly lacking in areas where such conflicts arose.

The main issues of conflict in the detailed planning phase were:

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[3] The PBA has a provision that allows the state to assume responsibility for local planning in cases of national importance. The municipalities can also request this if they find that the planning creates a conflict of interest between implementing national policy and protecting local interests.

[4] The airport was planned under state authority from the outset.

- The possibilities for local and regional adjustments of the rail-link in relation to economic limitations and the required travel time stated by the parliamentary decision.

- Details and limitations of the geographical extent of the airport.

- The possibilities to make real choices between alternatives within the planning corridors for the rail-link as defined by the parliamentary decision.

- Insufficient clarification of the area-needs for Defence purposes.

Effects of the mismatch on implementation

Conflicts also emerged in several other areas during the implementation of the project. Conflicts over noise impacts and mitigating measures along the rail corridor and around the airport can to a large degree be traced back to the EIA being too general. Local inhabitants were not initially aware of the noise impacts the project would have and later questioned the validity of the predictions made in the EIA. As far as the railway project was concerned this issue was brought before the courts that ruled in favour of the local interest's claim that the noise predictions were based on data that was not comparable to the situation at hand[5]. In spite of this finding however the courts did not award any damages or order a revision of the project. However, media coverage and political involvement forced the developer to include additional noise abatement measures along the rail-track.

There were also conflicts over the extent of noise abatement around the airport. After the opening of the airport, local interests claimed that the noise level was higher than predicted. A monitoring programme was enacted and is still ongoing. The matter is still a subject of contention.

Conflicts also emerged regarding the effects of lowering the water-table in the area over the Romeriksporten tunnel, including the draining of lakes, dehydration of soil and damage to buildings due to ground settlement. The EIA however only focused on impacts of the

[5] The predictions were based on measurements from a different rail-line, with different trains and lower speeds.

tunnelling itself in the areas surrounding the tunnel openings and did not account for impacts on nature and structures above the tunnel. In hindsight this can be judged to have been a major weakness in the EIA.

A legitimate EIA process?

The legitimacy of the EIA can be judged along different dimensions. One such dimension could be the organisation and structuring of the EIA itself, and the question of to what degree a proper account of the impacts of the project was made possible by such arrangements. Another possible dimension could be the quality of the EIA itself – was the work carried out in a proper manner?

The Mydske commission interviewed representatives of the proponents and members of the bureaucracy that approved the EIA. Their view is that although the implementation of the project revealed some weaknesses in the EIA, at the time that it was conducted, it was done so in state-of-the-art terms as regards the Norwegian EIA-arena.

Critics point to the weaknesses in the EIA as being the result of deliberate political choices on behalf of the government. Their view is that the aim of the proponents and the government was to produce an EIA that justified their choice of Gardermoen. According to such critics this is a common denominator for the whole planning process. In a way this view is supported by a formulation by one of the proponents (the Norwegian National Railway Company) in the "master-plan" for the rail-link, which notes that:

> "It is the goal and ambition of NSB (the company) to produce a plan that is sufficient for parliament to decide to build the rail-link"

If taken literally, their goal was not to deliver decision-relevant materiel, but to ensure that the parliament decided in favour of the project. According to the critics, an EIA produced with this goal in mind would not be a proper EIA.

The use of the ordinary EIA regulations was also criticised. The EIA regulations were primarily designed to handle more clearly defined projects with more localised impacts, not a project of this size and extent.

Views on the legitimacy of the EIA can be highly correlated with notions of "where you sit is where you stand" but in our study of the EIA-process for the Mydske Commission, the following findings

point towards elements in the process that could contribute to the of weakening its legitimacy:

- The final EIA-schedule did not include a proper discussion of the merits of the comments on the schedule, only general references to them. (This practice has subsequently been made compulsory in the regulations)
- The EIA lacked a proper connection to local interests and problems. The EIA failed to address the totality of impacts on the environment, natural resources and society of the project in a context based on local perspectives and problem definition. This created a "level of perspective"-problem in which the EIA was seen as too general and overreaching for local interests or individuals to determine what impacts the project would have for them.
- The systematic weakness in the EIA was in areas of great importance to local interests. Although the EIA-process did ensure a level of local participation, the process failed to improve the EIA with respect to issue areas that later became issues of contention in the detailed planning of the project.
- The EIA-process and its implications were poorly communicated to local level interests. Many local actors had the impression that the EIA was meant to provide an overview. They thought more that traditional EIA's related to the individual projects would supplement it at a later stage, where local impacts of direct relevance to them could then be addressed (ref. the complaint to ESA).
- The government itself played a double role in the process. The MoTC and its political leadership were among the protagonists of the project while also acting as the relevant "competent authority" for the EIA. The state agencies who where the "owners" of the proponents and developers were also subordinate to the MoTC. The links between the MoTC project administration and the proponents were also very close. The role of the MoE as "professional authority" may also have been undermined by the transfer of responsibility for quality assurance from the usual office within the MoE to the dedicated Gardermoen project group in the ministry.

On this basis one can conclude that there are numerous arguments for the EIA having a low level of legitimacy, especially with those directly affected by the project.

From a wider perspective, other incidents also contributed to local interests questioning the legitimacy of the project. The way in which the Romeriksporten scandal was handled, the way land appropriation for the airport was carried out, and the ongoing problems with ground water contamination at the airport are but a few examples. The project has also produced rich pickings for investigative journalism resulting in two books and several television documentaries. The fact that the Mydske Commission was appointed to evaluate the project, leading to the instigation of parliamentary hearings concerning the project speaks for itself.

Weak EIA performance

Barry Sadler (1996) has developed three criteria for judging the performance of an EIA. These are as follows:

- Achievement of substantive purposes (e.g. did the EIA result in environmental protection, were impacts minimised and mitigated as predicted?)
- Contribution to decision making (e.g. did the EIA assist in project redesign, provide information relevant to approval and condition setting, lead to new policy values?)
- Application of provisions and principles (e.g. did the EIA follow or conform to procedural, methodological and administrative guidelines?)

Based on these criteria the performance of the Gardermoen project EIA can be described as follows.

Achievement of substantive purpose

Regarding the achievement of substantive purpose, the performance has been varied. The following table gives a summery of developments on the different issue-areas covered by the EIA. Note that no studies with the specific purpose of evaluating EIA performance have been undertaken after project completion. The performance results presented here are based on interviews conducted by the Mydske commission, reports from operational monitoring programmes and information from the press.

Table 6. Overview of EIA performance in the issue areas covered by the EIA

Impact	Performance
Noise	Rail-link: Failure. Protests and legal action resulted in the use of mitigating measures to far greater extent than planned in the EIA/master-plan Airport: Inadequate. Mitigating measures around the airport partly inadequate. Excessive noise over large areas due to systematic deviations from planned flight paths.
Air pollution	Probably higher due to increased traffic
Local climate	No data
Global climate	No data
Soil and forest resources	Failure. EIA/PPG stated that valuable arable land in the region should be given special consideration. This has not happened. Increasing rate of development on arable land.
Water –resources	Failure. Mitigating measures insufficient. Repeated pollution of ground-water due to failure of mitigating measures or excessive use of de-icing agents.
Recreational areas	Partial failure. Excessive noise from aircraft due to systematic deviations from flight paths.
Landscape	No data

Minerals	No data
Flora and fauna/genetic resources	Partial failure. Increased barrier effects for wildlife. Mitigating measures not functioning as intended.
Historic sites	No data
Indirect regional impacts	Insufficient data. However, it is apparent that the land-use pattern has developed differently from that which was anticipated.
Direct local impacts	Possibly higher than anticipated due to higher traffic.
Economic impacts for local municipalities	No data

When judging the performance of the EIA it is also relevant to include the project impacts that were not part of the EIA, though they probably should have been.

- One was the social and health effect of the project on the population displaced by the project. Studies conducted independently of the EIS documented a significantly higher level of physical and psychological disorders among those displaced by the project compared to the general population as a whole (Smith & Holmsen 1998).
- Another was the impact of the lowering of the ground-water table due to water leakage in connection with the Romeriksporten railway tunnel. The EIA failed completely to take into account that this could happen and thus it failed to consider any subsequent effects there from. The lowering of the ground water table was discovered quite early in the process, though the developer at first denied that it was happening. This meant that they also failed to initiate mitigating measures until much of the damage had already been done. The result was that a small lake was completely drained, the water level in a larger lake was reduced and ground settlement caused extensive damage to a number of homes. Increasingly desperate attempts to stop the

leaks by using chemical sealants led to a pollution scandal[6] that effectively stopped the project for two weeks. The leakage is the main reason for the delays and cost overruns in the tunnel project.

Contribution to decision making

As for the contribution of the project to decision-making more generally, it has already been demonstrated that the EIA had little influence. With regards to the parliamentary decision, the fact that the EIA had been approved could mean that the politicians thought everything was in order and concentrated on other issues. The Mydske commission made a study of references to the EIA and environmental issues in the parliamentary process preceding the decision. The study shows that environmental issues did not play an important part in the process. Regarding decisions concerning the design and implementation of the project there is little evidence that the EIA played a significant role. The EIA did provide information regarding approval and the setting of standards, though much of this information would have had to be made available even if an EIA had not been conducted.

Application of provisions and principles

We have already demonstrated that although the EIA was approved, and thus should have been in compliance with EIA regulations, whether this was actually the case or not can be questioned. The systematic weaknesses of the EIA, the somewhat questionable impartiality of the competent authority, and the mismatch between the level of detail in the EIA and the parliamentary decision all point towards the questionable legitimacy of the EIA both formally and otherwise.

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[6] The use of noxious chemical sealants led to minor damage to adjacent waterways. Some tunnel workers were also affected though not sufficiently to cause permanent damage. Although the problem was minor technically it had serious political repercussions. The problems were very similar to those experienced in the Hallandsåsen tunnel project in Sweden.

An EIA system without merit?

This naturally leads to the question of the merits of the EIA system as a whole. Was the lacklustre performance of the Gardermoen project EIA an isolated occurrence, or is this the level of performance that can be expected, given the Norwegian EIA context?

The EIA system in force at the time had several weaknesses. One of which was that the proponents of the project were also responsible for conducting the EIA. This obviously has its own merits since it facilitates the integration of EIA findings into the planning process though it can also affect the quality of the EIA. Another weakness is that the competent authority is the ministry responsible for the issue area. This policy also has its merit as it ensures that the competent authority is in fact competent, though it can also threaten the impartiality of the competent authority. A more general problem however is the problematic legitimacy that the whole EIA system has with developers in general. The EIA system is more often than not seen as a nuisance rather than as an opportunity to systematically integrate environmental concerns into the planning, decision-making and implementation of a project.

However it would not be fair to lay all of the blame on the EIA system itself. No matter how well devised a system is, it is only as good as the will of the actors involved to use it in accordance with the intentions of the system. In our view, an important factor in this regard was that this was a public project. A continuing problem in the planning and implementation of the project was the somewhat fuzzy role played by the government, especially the MoTC and its project organisation GARPRO. On the one hand the MoTC represented the public authority of the State with the task of ensuring that the project was planned and implemented in accordance with the law and with relevant democratic procedures. On the other hand the political leadership was highly favourable towards the project, and this also seems to have been the case for important civil servants in the ministry. The project also had the full support of the Prime Minister and the cabinet. The proponents of the project, and the companies that were formed to build and later to operate both the airport and the railway were also publicly owned. In such a situation a clear division of the roles of public authority and proponent/developer is paramount. In the planning phase these roles were quite distinct, but in the implementation phase, when the most serious conflicts and problems arose, this distinction was less clear. In several cases GARPRO intervened directly in the railway project, effectively overruling the

developers. In other cases the developers acted more like public authorities than developers, forcing solutions that were in their own interest.

This problem of unclear roles was exacerbated by two significant weaknesses in the Norwegian legal system. The first being that the system is primarily designed to ensure the compliance of private actors. At times it seems that the State has problems enforcing the law upon itself. The second concerns the weak legal position of the individual vis-à-vis the State. In the Gardermoen project the multi-faceted role of the state coupled with the weak legal position of the individual caused much bitterness and disillusionment among those affected by the project.

Conclusions - Success or failure?

Was the Gardermoen project EIA a success or a failure? This is to a large extent a matter of perspective. From a critical perspective, the EIA itself was found to be severely lacking. It was too general in perspective, many important impacts were insufficiently assessed and others were left out altogether. It also became apparent that the EIA system itself has weaknesses, and that the way in which the EIA system was practised was probably was in violation of the intentions of the said system. Crucially moreover, the EIA failed to provide information for the planning process such that environmental and social problems in the implementation process could be avoided.

For the proponents on the other hand, the EIA was more successful. It provided for a comprehensive perspective to the planning process and it tied the planning of the different projects together. The EIA did not cause serious “disturbances” in the planning and decision-making process, whilst fulfilling the instrumental needs of the proponents with regard to a speedy and structured planning process and a positive decision by parliament. One could claim that this “backfired” in the implementation of the process, as problems and conflicts arose which the EIA ideally could have prevented arising in the planning phase.

Taking a more normative stand, the EIA must be described as at least in part a failure, though in the context of the project as a whole this is hardly surprising. A project of this size will always stir up controversy. A more appropriate conclusion might therefore be that the EIA failed because the EIA-system was never designed to handle a project of this scale (financially and geographically) with such a high

level of professional challenges and political controversy. The system simply did not have the strength to stand up to the combined pressures of politics, time and money.

From a wider perspective, in view of the controversy over the Gardermoen project, it is relevant to discuss whether the planning, decision-making and implementation of the project were conducted in a democratic fashion. This is a highly normative question as the concepts of democracy and democratic procedures are complex and multi-faceted. Gunnar Falkemark (1995) has examined the decision processes of several large development projects, among them the Öresund project. Questions arising from the role of politics, lobbyism and manipulation in planning and decision-making in conjunction with large infrastructure projects are further developed in Falkemarks book (Falkemark 1999). In connection with this, three criteria for judging whether a decision can be considered democratic are developed:

1) The decision must be made by an authorized body.
2) No relevant and important information may be withheld from the public or the decision makers.
3) There should be no "manipulation".

An exhaustive study of the democratic aspect of the Gardermoen project is not within the scope of this project, however some comments can be made based on the criteria Falkemark develops.

The decision must be made by an authorized body

Regarding the first criteria this is obviously the case in the Gardermoen project, as the decision was made by parliament. The parliament is the legislative assembly and the foremost decision-making body in the country.

No relevant and important information may be withheld from the public or the decision makers

With regards to the second criteria the situation is rather different. As have been mentioned before, the parliamentary hearings in the wake of the Mydske Commission report concluded that important information regarding the operational limitations due to meteorological conditions had been withheld from Parliament by either the CAA or by the MoTC. Findings questioning the validity of the claimed 50 %

share public transport would have of the market for transport to and from the airport was also withheld.

There should be no "manipulation"

With regard to the third criteria, the history of the project is rife with allegations of manipulation. According to critics of the project, the proponents and the government systematically exaggerated its positive aspects, whilst its negative impacts were constantly downplayed or suppressed. The findings of the Mydske Commission, and the subsequent parliamentary hearings support this claim to some degree. The most publicised example of this was the way in which the rail-link to Gardermoen was portrayed by the MoTC as an extremely profitable investment, even though calculations made for the ministry questioned the profitability of the project. With regard to the EIA, critics claim that the EIA process was conducted in order to produce a result that satisfied the goals of the dominant political actors (Tor Selstad, Østlandsforskning). The systematic weaknesses in the EIAs description of important impacts can be judged to support this claim.

The general impression is thus that we are dealing with a situation where the political interests of the ruling Labour Party and their allies influenced the way the planning, decision-making and to some degree the implementation of the project were conducted. Even if the EIA had been exempt form such pressure, the use of the results emanating from the EIA certainly was not.

In conclusion, questioning the democratic nature of the Gardermoen project decision seems to be both a relevant and a necessary exercise.

An alternative decision process?

The EIA could have been carried out in various ways, however had the intentions of the EIA regulations been adhered to, one probably would have needed to restructure the entire decision-making process.

A Two-tiered process

An alternative approach could have been to apply a two-tiered process. First, Parliament could have been invited to make a decision on whether to go ahead with the project or not. This decision could have outlined the main concept of the project, though without defining important success criteria. At this stage, a regional type of EIA may have been developed, providing a basis for more specific planning and

EIA processes later on. In this way both greater latitude could have be achieved, and public participation provided for in two steps. Subsequently, Parliament could have been invited to make a more detailed decision when the project had been further developed.

A stronger link to the formal planning system

It has to be said that the "master-plan" concept in itself created major problems, implying in particular the existence of an ad-hoc planning process. Choosing this concept led to insufficient public participation, causing conflict in the later planning stages. A related problem was that the EIA-system was designed to function in conjunction with planning conducted under the PBA. Where this is not the case it seems rather difficult to fulfil the intentions of the EIA system. In the Gardermoen planning process the detailed planning processes failed to recuperate the "losses" sustained in the master-plan/EIA process with regard to public participation and environmental focus. The latitude for adjustments in the project proved too limited for that purpose. In conjunction with a two-tiered process the established municipal planning system could have been used, establishing at a stroke better local influence. The evaluation of the planning process shows that in the cases were this planning form was used[7], the process and the result were less controversial (ECON 1997)

A better link between the EIA and the choice of alternatives

With regard to the EIA, one could wish for a more obvious linkage between the EIA and the choice of alternatives. This would also serve to expose the "net impacts" that remain after the project is implemented.

Independent review

Experience of the Gardermoen project also reveals the need for a system of professional independent review. A recurring feature in the Gardermoen project is the lack of distance between political and professional interests in the project. This was a public project where the proponents were public institutions that had both important professional roles and formal authority in the relation to the project. It

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[7] The Municipal Plan instrument was used in a few instances.

is clear that those concerned often had major difficulties in separating these roles. Furthermore an independent review could have strengthened the presence of environmental concerns in the process. One should therefore consider whether to employ such methods in the future conduction of EIAs to ensure independent expert review such as is the case in Canada or the Netherlands

Naturally neither of these alternatives guarantee a process devoid of conflict. However together they could have provided an arena for dialogue over EIA-issues before the completion of the EIA report itself.

Revisions have rectified some flaws in the EIA system

As we have already seen there are numerous flaws and weaknesses in the Norwegian EIA system. Since the Gardermoen project was concluded, revisions to the EIA regulations have rectified some of these flaws. Currently, after an EIA has been approved, the competent authority has to prepare a document summarising the content of the EIA. The document shall in a brief manner describe the impacts of the project, and measures to prevent or mitigate damage and inconvenience that may be caused by the project. The document shall also specify follow-up studies and monitoring during development, operation and eventual closure. The document shall also point out the parties responsible for this. This document shall be directed at the proponent but shall also be distributed to all that have submitted comments to the EIA and to the Ministry of the Environment. The document shall also follow the decision-making process for the project. Such a document was however not prepared for the Gardermoen project. It could have contributed to linking the EIA more directly to the decision-making process and could also have contributed to exposing the mismatch between the EIA and the decision that was made.

Another flaw that has been rectified was the summary treatment of comments in the EIA process. The current regulation now demands that all comments on the EIA schedule are summarised, and that propositions for changes or additions are explicitly considered. If comments are not acted upon, the arguments as to why this was so must be fully stated. The summary of comments and their treatment shall accompany the EIA schedule and shall be distributed to all that have submitted comments.

A study of SEA processes in the Nordic countries (Lerstang 1999) has also identified additional challenges concerning the development of EIA/SEA systems.

- If possible, independent review of the quality of the EIA/SEA should be secured.
- A more unitary standard for EIA/SEA documents should be implemented.
- A system for handling differing views should be developed allowing for a more transparent view of the positions of various actors regarding information produced in the EIA/SEA process.

The Gardermoen project EIA – definitely a special case

The Gardermoen EIA was clearly a special case in the Norwegian EIA context. It is the largest infrastructure project so far to be undertaken in Norway. It was also special in respect of the fact that planning was partially conducted outside the formal planning system.

Although the sheer scale of the process can hardly be viewed as representative of development projects in Norway as a whole, the project did set precedence for the future. One of the most tangible being that it has now become quite common to establish an environmental monitoring programme for the implementation of projects to ensure that the EIA also has a role in the implementation phase. In addition the Mydske Commission made a number of recommendations regarding future large projects:

- The establishment of publicly owned private companies to implement the project became appropriate. This clarifies the question of accountability and also enhances budgetary discipline and control. However one must be aware that this implies a reduction in responsibility towards those affected by the project. Therefore one must balance the need for rationality and efficiency with the needs of local support and legitimacy.
- In order to ensure proper political control over a project it is important to establish a project organisation body at a high level in the competent authority (Ministry) to serve in a "controller" role. The challenge is to ensure balance. If such a controller function were to have direct instructional authority (as it did on occasion during the Gardermoen project) over the developers, the justification for organising the developers as private companies would be eroded. On the other hand, the competent authority (ministry) will ultimately have the constitutional responsibility for

the project and will therefore need to have a direct instructional authority. This dilemma can only be resolved by defining crystal clear areas of responsibility, and thus will in itself constitute a considerable challenge.

- In the Gardermoen project the private companies were made subject to the same laws regarding public disclosure that the government is subject to. This should be implemented in future public projects of this nature.
- Planning and decision-making in future projects should be organised into a two-phased process in which a decision on the implementation of the project based on preliminary cost projections and possible alternatives is followed by a more detailed decision after further planning has been completed. The EIA process should be structured accordingly.
- Independent bodies should be established for the handling of emergencies occurring during the project. This body should be part of, and have total access to the project, though it should otherwise remain independent of the developer.
- The question of uncertainty in the planning and implementation of large projects should be given closer attention with the aim of developing specific guidelines for handling uncertainty.
- A special group should be established in the Ministry of Finance, or under the Prime Ministers Office, to develop better methods of quality assurance in large public projects.
- The quality of contracts, co-ordination between developer and subcontractors, organisation, lines of responsibility and monitoring should all be given special consideration in future projects.
- Projects involving the acquisition of private property should pay special attention to the social and psychological aspects of such processes.

Other experiences regarding EIAs on airport projects

At the 20th IAIA convention in Hong Kong (2000) the summary of the session focusing on EIAs and major Airport Developments neatly outlines key learning points, most of which are of great relevance to the Gardermoen project.

- Most airports are located near big population centres and cause considerable inconvenience to people living there.

- Most inconvenience is noise related, particularly resulting in sleep disturbance. External safety, impact on air quality and loss of natural habitat and biodiversity present additional environmental concerns
- In EIA processes, the main focus is usually on describing the physical aspects of certain impacts. Little attention is given to feelings of anxiety over perceived and/or real nuisances, or to attitudes towards the competent authorities and airport managers held by the local populace.
- Communication between all stakeholders is extremely important. If communication is restricted to simply informing stakeholders of developments in a "top down" fashion, then there is a considerable risk of mistrust and loss of confidence in the reliability of government and the developers. This happens particularly when the EIA is not applied properly and decisions are made without proper communication and consultation.
- The adoption of dual objectives including growth of air traffic while simultaneously maintaining environmental quality is difficult to implement as any technical improvements enabling reduction of such impacts are usually overtaken by growth in traffic volume. However, the adoption of dual objectives forces decision-makers and developers to consider projects' need and justification of the proposed developments, and helps to formulate alternatives.

Conclusions – The rationality of power?

Experience of the Gardermoen project tends to confirm observations made by Nordic students of planning, decision-making and implementation processes (Bent Flyvbjerg, Gunnar Falkemark). One such finding is that politics and power can pervert or disrupt any attempt at instilling rationality into a process, seemingly regardless of regulations, formal procedures or organisation. Another is that the accelerated pace in these processes tends to reduce the quality of planning, and reduces the influence of democratic procedures. This in turn erodes the legitimacy of the project and the political system that produces it.

A further observation is that large projects seem to create their own culture, defining a common framework within the project for deciding what is right or wrong, and identifying what problems and goals are important (Hughes 1987). Information regarding issues

relating to the project that are in conflict with the views of the project culture are deemed irrational or extreme and can therefore be ignored. In both the ground water pollution scandal at the airport, and the Romeriksporten scandal, ample warning about the risks was given but these warnings were not heeded.

Experiences from the EIA process

The Gardermoen EIA can be viewed as an example of system overload. The combined pressure of politics, time, economy and the sheer scale of the task at hand overwhelmed the EIA system and the result was a "mediocre" EIA. To summarise experiences from the EIA we can return to the original purpose of the EIA as stated in its schedule:

- Reveal positive and negative effects of the project that could have a significant impact on the environment, natural resources and society.
- Ensure that these effects were given consideration in the planning and that the effects were known to the decision-makers.
- Clarify conditions for implementation of the project including mitigating measures and a monitoring programme.

We have shown that the EIA failed to reveal the positive and negative effects that could have a significant impact on the environment, natural resources and society. The EIA had systematic weaknesses, it failed to include important impacts, and failed to take notice of warnings on its own inadequacies that surfaced during the its own consultation process. Due to time pressure, impacts were not given proper consideration and it is highly likely that information given to the decision-makers was "sifted" in order to satisfy the political interests of the government and its allies who enthusiastically supported the project. The EIA also partly failed to clarify the conditions for implementation of the project due to the "mismatch" in level of detail between the EIA and the decision-making process itself.

How does this compare with the general practice of EIAs in Norway? An evaluation of the practice of the EIA system from 1990-1996 (Husby et. al. 1997) gives a basis for comparison. According to the evaluation, the draft EIA schedule plays a fundamental role in Norwegian EIA process. However they vary in quality, and are often completed late in the process after important decisions regarding the project have already been taken. For the Gardermoen EIA, the draft

was completed quite early in the process, though it was somewhat questionable with regards to quality.

The average time used for completion of an EIA process is 43 weeks, with EIAs of industry and office developments taking the least time, and EIAs of infrastructure taking the most. The Gardermoen EIA is above average time wise, though when compared to the size of the task, this time frame still seems rather short.

With regard to participation, the general experience has been that the EIA contributes to increased participation and the more efficient dissemination of information. It is clear that the Gardermoen EIA secured participation, but not to the extent that conflicts were avoided, or to the extent that the local population accepted the process as legitimate.

The quality of the EIA document was generally of a good standard. However recurrent weaknesses appeared in its handling of alternatives and mitigating measures. Other areas of weakness often include the treatment of cumulative effects and follow up studies. The Gardermoen EIA apparently shared these habitual weaknesses.

The EIA system is part of the PBA. Even today however co-ordination between the EIA process and planning conducted according to the PBA is difficult to achieve. In the Gardermoen project, with the planning being conducted outside the PBA this presented an even greater challenge than was usually the case.

The EIA regulations state that the competent authority can request a supplementary assessment if the EIA identifies new significant impacts. This is very rarely done. In the Gardermoen project the social impacts of the dislocation of those living within the designated airport area was raised as an issue, but it did not trigger new studies. The approval often orders follow-up studies within the issues covered by the EIA. This was also the case with the Gardermoen EIA.

In conclusion the Gardermoen EIA does not distinguish itself favourably when compared to other EIA processes. In some aspects it can legitimately be labelled "below average". It is paradoxical that the largest and most prominent projects often seem to produce the most mediocre EIA processes. But this might just be the reason why this is so. Prominent projects tend to attract the interest of the powerful, and the rationality of the EIA process is often then subverted by the rationality of power.

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