Further experiences on EIA in The Netherlands

Process, Methodology, Case Study

Commission for Environmental Impact Assessment
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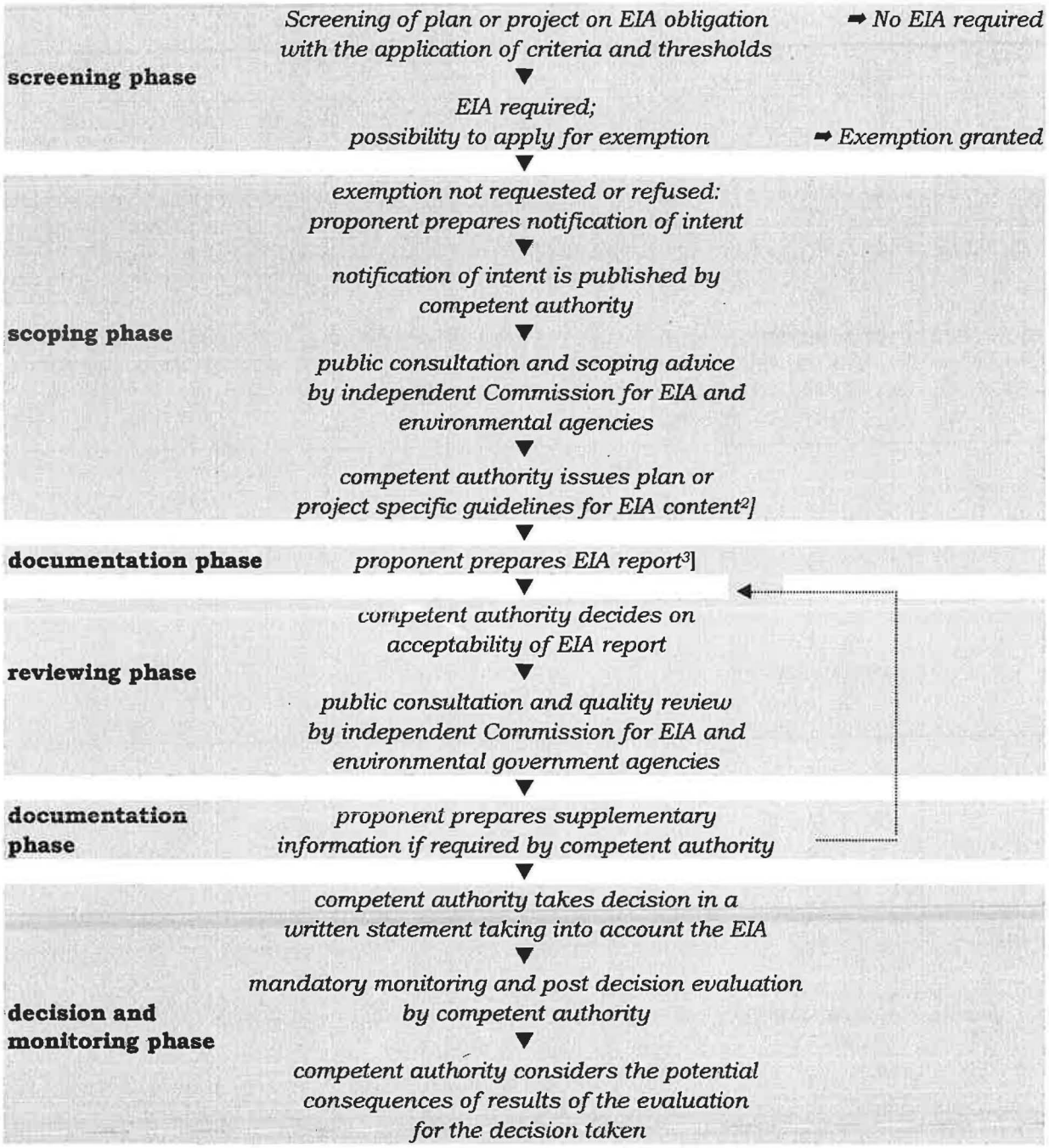
Main steps in the Dutch SEA and EIA process[1]]



1 SEA of national and regional plans and programmes follows the same procedure as EIA for projects. In the flow chart the term EIA is used for both strategic and project EIA.

2 Legal requirements include the description of alternatives, including the one that would be best from an environmental viewpoint. Social impacts directly stemming from environmental effects are typically included; other social impacts and economic impacts are no legally required part of an EIA.

3 Also called: Environmental Impact Statement

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PREFACE

In the Environmental Impact Assessment (EIA) procedure in the Netherlands, the Commission for EIA has a special and formal role as independent advisor to the pertinent competent authorities. It advises decision makers – government ministers and provincial and municipal councils – on the quality of the environmental information in plans and projects that must follow the EIA procedure. Since 1987, when the obligation came into force to carry out EIA for certain proposed plans and projects, more than 1000 EIA procedures have started in the Netherlands.
In addition, the Commission also supports the Directorate General for International Co-operation of the Ministry of Foreign Affairs in matters related to EIA for activities in developing countries.
In both these roles the Commission has gathered considerable experience in the execution and management of EIA and Strategic EIA.

As there is a wide interest in the Dutch experience, the Commission prepares papers in English for presentation during conferences and workshops to EIA practitioners abroad. In order to increase their accessibility selections of these papers are published over periods of two or three years in special volumes. This particular volume is the fourth of its kind in this series. It comprises five papers that are grouped into three different categories: process, methodology and project experience.

The Commission hopes that this new volume will inform EIA practitioners about the most recent developments in the Netherlands and will contribute to the international exchange of experiences.

Niek Ketting

Chairman

ABSTRACTS

PROCESS

Strategic Environmental Assessment (SEA): one concept, multiple forms

Rob A.A. Verheem and Jos A.M.N. Tonk

Several approaches to Strategic Environmental Assessment (SEA) have been developed recently, differing, for example, in openness, scope, intensity and duration. Differences stem from the specific contexts in which the SEA processes are meant to be used. This is illustrated with two current SEA processes in the Netherlands for drafting legislation (environmental test), and for plans and programmes (strategic environmental impact assessment). Although design for purpose enhances the effectiveness of SEA, the variety of approaches may also lead to confusion among non-SEA experts, such as politicians and other senior decision makers, about what SEA is. This could create an impediment to the acceptance and development of SEA in situations where currently no obligation for it exists. A set of principles is proposed as a starting point for further discussion.

EIA & Industry in The Netherlands

Rob A.A. Verheem

Since 1987 some 150 EIAs of industrial projects have now been carried out in The Netherlands. Starting with some degree of hesitation in the beginning most companies now seem to be enthusiastic about the instrument, though under certain preconditions. To mention some: EIA should be carried out when necessary only, requirements should be clear beforehand and equal for all companies, governments should stick to agreed time schedules and decide quickly after the EIA is published and the EIA should be credible in the eyes of the public. Under these preconditions the advantages EIA has to offer are felt to justify the time and money needed for it. Advantages often mentioned are a better insight in financial demands of necessary mitigation and compensation, a greener image and a better communication with affected parties, leading to less litigation. The article gives some practice examples and describes current developments and future issues in the Netherlands to fulfil the preconditions. These include options to make the use of EIA more selective, to endorse its use for strategic decision making and the value to industry of independent quality review. Extra benefit may be gained if EIA can be used to avoid the NIMBY syndrome and create public support for industry's plans and projects. For this, it is felt important that in all EIAs societal discussion is an integral part of the EIA process.

METHODOLOGY

Integrated Environmental Impact Assessment, a step towards integrated impact assessment

Stefan A.A. Morel, Reinoud A.M. Post and Jules J. Scholten

Regulatory agencies and developers have to cope with different forms of impact assessment; various forms of cost-benefit analyses, risk assessment, ecological assessment, health assessment, gender assessment studies and so on. The diversity of fields and their separate requirements are making effective regulation and well informed decision making excessively complex. There is an urgent need for a truly Integrated Impact Assessment.
But there appears to be good reason for a careful and gradual approach. The economic and social interests are the driving force behind most development initiatives that also have major environmental consequences. As yet, the environmental interest is insufficiently strong to opt at once for a fully Integrated Impact Assessment. Therefore, as an intermediate step towards full integration, Integrated Environmental Impact Assessment is being developed in which the environmental consequences are tuned with the economic and social motives and consequences of development initiatives.

The role of (S)EA in balancing economic development and environmental concerns in the spectacular growth of Amsterdam Airport Schiphol

Jules J. Scholten

In 1995, the Netherlands government decided that Amsterdam Airport Schiphol (AAS) could be expanded with a fifth runway and could grow to a maximum of 432.000 plane movements in the year 2015 handling a total of 44 million passengers annually. This decision was made on the condition that the development can only take place while reducing the noise impact and freezing the impact of the airport on external safety and air quality to the level of 1990. In the years following 1995 however, actual growth of the airport exceeded all predictions and expectations.

A new Environmental Assessment (SEA) has started for the period after 2010 and furthermore, a project EIA was carried out between 1998 and 2000 about changing the current noise hindrance zones around the airport for the period up to 2003 when the fifth runway will become operational. The latter project EIA-report proved that reduction of the noise impact is not possible and that at best, stand still is achievable. Also, there are strong indications that the current method to calculate the noise hinder is depicting too rosy a picture. Air quality in the region has not deteriorated but that is due to a considerable reduction in emissions by road traffic in the area around the airport whereas aircraft emissions actually increased. Furthermore, the external safety situation is developing unfavourably and odour problems have aggravated substantially .
Thus, the dual objectives of enabling economic growth while simultaneously improving the impact on the environment have to be uncoupled or growth must be stopped. Yet, another long term option, to transfer the national airport to a new island in the North Sea was put on hold by the national government in view of its high cost of development and construction.

CASE STUDY

Colombia : Tidal inlet project

Ineke Steinhauer

The Ciénaga de la Virgen lagoon lies close to the town of Cartagena. Waste water is discharged directly into the lagoon, and as a result the quality of the water in the lagoon has declined considerably in recent years. There is no longer a permanent open channel between the lagoon and the Caribbean Sea and the self-cleaning capacity of the lagoon has been impaired, leading to environmental and health risks. The lagoon can be restored by creating a 'stabilised tidal inlet' to allow unpolluted seawater to mix with the polluted lagoon water. This would bring the level of pollution down to an acceptable level.

This project is financed by the Colombian Ministry of Transport and the Netherlands Ministry for Development Co-operation. According to Colombian environmental law and Netherlands environmental policy in the framework of development co-operation, an EIA was required. A joint scoping and review of the EIA-report was performed by the Netherlands Commission for EIA and CARDIQUE (Corporación Autónoma del Canal del Dique, the local environmental authority) to support decision making in both countries.

The execution of the project started in 1999 and CARDIQUE and the Commission for EIA were asked to re-activate their collaboration through following the contents and outcomes of the monitoring programme. The operation of the Tidal Inlet started in November 2000.

This paper will focus on the added value of EIA for this project and on the added value of the close collaboration between CARDIQUE and the Commission for EIA.

STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA):ONE CONCEPT, MULTIPLE FORMS

Rob A.A. Verheem and Jos A.M.N. Tonk[1] (Paper presented at the Annual Meeting of the International Association for Impact Assessment in Christ Church, April 1999).

Although they sometimes use different definitions, most strategic environmental assessment (SEA) practitioners do agree on what the overall concept of SEA is: a structured, proactive process to strengthen the role of environmental issues in strategic decision making[2]. Several approaches to SEA have been developed from this concept in different parts of the world[3]. These approaches differ, for example, in their openness (for instance with or without participation of the general public), their scope (for instance with or without the mandatory description of alternatives) or their intensity and duration (for instance from one day to several years).

Differences stem from the specific contexts in which the SEA processes are meant to be used, for example in drafting legislation, in designing broad policies, in preparing concrete programmes and in either developed or in developing countries. Specific design for specific use increases the effectiveness of SEA processes. This is illustrated below by two current SEA processes in the Netherlands: 'Strategic Environmental Impact Assessment (SEIA) for plans and programmes and the 'environmental test' for draft legislation.

However, the variety of approaches may also lead to some confusion with non-SEA experts, such as politicians and other senior decision makers, about 'what SEA is'. These groups decide on whether or not SEA should be implemented as a tool for incorporating environmental concerns in strategic planning and decision making. Any confusion, therefore, may create an impediment to the acceptance and introduction of SEA in situations where currently no obligation to do so exists. What people do not know, they do not like.

Solution?

To remove this potential hurdle to the ongoing development and application of SEA as a tool for environmental protection, it would be a useful first step if SEA experts world-wide could succeed in the adoption of a clear set of principles that underlies all forms of best-practice SEA. This 'standardised'

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The authors wish to thank Jules Scholten (Netherlands Commission for EIA), Yvonne de Vries (Joint Support Centre, Ministry of Economic Affairs) and Barry Sadler (Institute of Environmental Assessment) for valuable comments on drafts of the paper. The views expressed are those of the authors and do not necessarily reflect the position of the institutions in which they work.

[2] See, for example, Thérivel *et al* , 1992; Sadler and Verheem, 1996; Thérivel and Partidário, 1996).

[3] For example, Bass, 1991; Wood and Djeddour, 1992; Webb and Sigal, 1992; Lancashire County Council, 1993; Gibson, 1993; Gow, 1994; Goodland and Tillman, 1995; de Vries and Tonk, 1997; Kessler, 1997; Brown, 1997).

set of principles could then be used — by government officials, NGOs (Non-Governmental Organisations) or trainers — to clarify what SEA is to those who may decide on its introduction.

Useful starting points for the definition of principles could be existing sets, such as those in the SEA Effectiveness Study (Sadler and Verheem, 1996):

- *initiating agencies are accountable* for assessing the environmental impacts of new or amended policies, plans and programmes;
- the assessment process should be *applied as early as possible* to proposed designs;
- *the scope of assessment must be commensurate* with the proposal's potential impact or consequence for the environment;
- *objectives and terms of reference* should be clearly defined;
- *alternatives* to, as well as the *environmental impacts* of, a proposal should be considered;
- *other factors*, including socio-economic considerations, should be included as necessary and appropriate;
- the evaluation of *significance* and determination of *acceptability* is to be made against a policy framework of *environmental objectives and standards*;
- provision should be made for *public involvement* consistent with the potential degree of concern and controversy of the proposal;
- there should be *public reporting* of assessment and decisions (unless explicit, stated limitations on confidentiality are given);
- there is a need for *independent supervision* of process implementation, agency compliance and government-wide performance;
- SEA should result in *incorporation* of environmental factors into policy making; and
- be *linked* to other SEAs, project EIAs and/or monitoring for proposals that initiate further actions.

In this, care should be taken that agreement on principles does not lead to dogmatism. Since the 'best' SEA process does not exist, principles should be broad enough to include effective approaches designed for a wide range of specific uses — approaches that may differ considerably and range from very simple to very comprehensive procedures or cover different material. Of course, this presents a dilemma: how to be clear on 'what SEA is' while at the same time allowing for enough 'room to move'.

Existing principles

Most existing principles are defined as a set of procedural or content requirements. In other words, they not only tell people what is important (the *goals* of SEA: for instance 'make sure you know what the public thinks about what should be done') but also how to do it (the means: for instance, 'make

provision for public involvement'). While this certainly has advantages in terms of clarity, it does not allow SEA process developers much flexibility, and there may be more than one way to achieve the same goal, depending on the circumstances. For example, when confidentiality is required, in those countries with a parliament, information on public views may also be gained by consulting the parliament instead of by direct public involvement.

Goals rather than means

One way to create flexibility, therefore, could be to focus SEA principles on goals to be achieved, rather than on *specified process requirements*. How the SEA process in a specific situation should be designed to achieve these goals is then dependent on its intended purpose, the level of decision making and the traditional/cultural decision making context. For example, in such an approach a SEA principle would not be formulated as 'public participation should be part of SEA' but rather as 'sufficient information on the views of the public affected is ensured'. When drafting legislation this could be achieved in a different way from developing a spatial plan or a concrete programme of measures.

Review criteria

Once basic principles have been formulated and accepted, they not only offer a basis from which a process may be designed, but can also be used to assess the quality of any proposed SEA process. In other words, when formulated as goals, the principles can also serve as review criteria for process quality. A SEA process should only be considered to be of good quality if it can be explained how the application of the process will ensure that the goals for each of the principles are achieved[4].

A first attempt at formulating a set of SEA principles is made in the next section. To specify and exemplify this set of principles, it is related to the two previously mentioned Dutch SEA processes in section 6.

Proposal

In summary: any SEA process should achieve certain goals, although the means by which they are achieved may differ. These goals could be defined as SEA 'principles'. Definition should take place in discussion between SEA and decision making experts world-wide, representing different cultural and traditional backgrounds and levels of decision making.

As a starting point for this discussion a first attempt to formulate principles in the form of goals is shown in Box 1. These, of course, should be amended, integrating information from relevant countries and experiences with the use of SEA in developing countries.

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[4] Starting from the same goals, the means by which goals are achieved can then be quite different, depending on the circumstances. This explains the current development of a wide variety of SEA processes with an equally wide variety of names, such as 'environmental test', 'environmental appraisal', 'environmental overview' and 'strategic environmental analysis'.

Box 1 Generic SEA principles - a proposal for discussion

	A SEA process ensures that:
Screening	an appropriate environmental assessment is carried out for all strategic decisions with potentially significant (positive or negative) environmental consequences by the agencies initiating these decisions
Publication	it is clear to all parties affected by the decision how the assessment results were taken into account when coming to a decision
Monitoring	sufficient information on the actual impacts of implementing the decision is gained to judge whether the decision should be amended
Timing	the results of the assessment are available sufficiently early to be used effectively in the preparation of the strategic decision
Environmental scoping	all relevant environmental information is provided, and all irrelevant information is excluded, to judge whether an initiative should go ahead or whether the objectives of the initiative could be achieved in a more environmentally friendly way
Socio-economic scoping	sufficient information on other factors, including socio-economic considerations, is available, either parallel to, or integrated in, the assessment
Views of the public	sufficient information is available on the views of the public affected by the strategic decision early enough to be used effectively in the preparation of the strategic decision
Documentation	the results of the assessment are identifiable, understandable and available to all parties affected by the decision
Quality review	the quality of process and information is safeguarded by an effective review mechanism.

The Dutch 'strategic EIA' process (SEIA)

Under Dutch legislation, there has been an obligation since 1987 to carry out an EIA for a number of spatial and sectoral plans and programmes. These include national plans on waste management, electricity production, land development and drinking water supply, and regional plans on waste management and the location of new housing and industrial areas.

Traditionally, these plans were developed in open, structured processes, including public participation and consultations with (environmental) agencies. For example, many national plans follow the 'National Spatial Planning Key Decision' procedure in which the final plan or programme is developed in four steps. At the end of each step a new draft of the plan or a review of comments received is made public[5].

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[5] This procedure starts with the publication of the policy proposal (Part 1), followed by a 5-7 month period in which the public, other government authorities and (environmental) agencies are consulted. The results of consulation are published in Part 2, which is used by the Cabinet when coming to its own

It is for this reason that in the late 70s and early 80s it was decided that the SEIA process should match the open nature and step-by-step structure of the procedures in which it should be integrated. The process developed has these same characteristics[6]:

- detailed procedure
- integration of information in multiple steps of plan/programme development
- full public involvement in scoping and reviewing
- mandatory advice from an independent group of experts
- mandatory examination of alternatives
- mandatory evaluation and monitoring.

Since 1987 more than 40 SEIAs have been carried out some of which have been described in the literature[7]. From these it may be concluded that SEIA works well in the context for which it was intended. However, the process will probably not work very effectively in other contexts, for example in decision making processes that are not open (maybe for reasons of confidentiality) or where little time is available (for instance in annual budget allocations). Another process needs to be developed for these types of decisions. An example is the Dutch 'E-test' that was developed to assist the design of new legislation.

The Dutch 'E-test'

Legislation is intended to have beneficial effects, but there often are unintended (side) effects. Consequently, legislation can unintentionally undermine other main objectives of government policy. In the 80s, the Dutch Government became aware of this problem and started to review its legislative processes. Initially, this consisted mainly of a fixed entry on a form for the Council of Ministers, stating that the effects of the legislation in question had been investigated. This, however, did not include environmental effects. Furthermore, questions were formulated in a highly abstract manner.

This quickly became an automatic procedure with no real content or influence on planning. Ministries often dismissed questions with stock replies such as 'the probable effects of this legislation are acceptable and, in view of its importance, the costs involved are justified'. It was clear that this was not the proper way to improve the quality of legislation.

Therefore, in 1994 the Dutch government set a new course for the assessment of legislation when it presented the 'Market Operation, Deregulation and

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decision (Part 3). After approval by Parliament, the policy becomes legally valid and is published as Part 4.

[6] See Ten Holder and Verheem (1996) for a more detailed description of the SEIA process.

[7] See, for example, Verheem, 1992; Ten Holder and Verheem, 1996; Sadler and Verheem, 1996

Legislative Quality' Project (in Dutch: MDW Project). This plan includes a new approach to the environmental assessment of new legislation (the 'E-test') linked to an assessment of its enforcability and feasibility and its effects on business.
The main challenge for the Government was to develop a system that stimulates, rather than forces, departments to make good assessments of their legislation. Key objectives of the system, therefore, were threefold: it should be client-orientated, selective and easy to integrate in the existing process for developing new legislation.

The first objective was achieved by creating a helpdesk (the Joint Support Centre for Draft Legislation) and by co-ordinating the environmental assessment with other required assessments. The second objective was achieved by keeping the number of questions to be addressed in the assessment as low as possible and by being selective in the legislation for which an assessment is needed.

The third objective was achieved by making sure that the characteristics of the E-test procedure matched the characteristics of the process by which legislation is drafted in the Netherlands: an informal, internal process, with no mandatory direct public participation and based on trust and co-operation between civil servants. The E-test has these same features: a simple, flexible procedure, with no public participation or independent external review and in which representatives of several departments work together[8].

One concept – multiple forms

As an example, in Box 2 it is exemplified how the principles formulated above are interpreted in the Dutch SEIA and E-test processes. This illustrates the quite different processes that can stem from the application of the same principles, depending on the varying contexts in which the assessment processes are meant to be effective.

With one exception – the absence of a monitoring requirement in the E-test – both processes have installed mechanisms to fulfil the same objectives, although these mechanisms in some cases are quite different. The need for inclusion of a monitoring requirement as part of the E-test is currently being discussed within the ministry and would definitely be an improvement to the process.

[8] See De Vries and Tonk (1997) for a more detailed description of the E-test.

Box 2 SEA principles and the Dutch SEA processes

Principle	E-test	SEIA
Screening	legislation with potential substantial effects on the environment is listed each year by an interdepartmental working group	plans and programmes for which an assessment is mandatory are listed in the EIA Decree
Publication	when relevant, the Explanatory Note describes how the results of the assessment were taken into account	it is mandatory to publicly report how the result of the assessment was taken into account in the plan or programme developed
Monitoring	post-decision evaluation is not mandatory, but may be carried out voluntarily	a management plan should be part of the plan or programme; post decision evaluation is mandatory, including the publication of its results
Timing	the Joint Support Centre stimulates the assessment to take place as early as possible and at least before legislation is discussed in the Council of Ministers	the first step in both assessment and plan/programme development is the publication of a notification of intent, followed by scoping
Environmental scoping	the interdepartmental working group on draft legislation determines which of the standard questions of the E-test are relevant and should be answered; in co-operation with the Joint Support Centre, the proponent collects all relevant information to judge whether its objectives could be achieved in a more environmentally friendly way	terms of reference (or 'guidelines') for the content of the assessment statement are published by the competent authority, after comments and advice from the public, environmental agencies and an independent expert committee; the examination of alternatives is mandatory, including the alternative most favourable to the environment
Socio-economic scoping	socio-economic information is gathered in a Business Effect Test' as well as in existing procedures parallel to the E-test; integration takes place during the legislative process	socio-economic information is gathered in existing procedures parallel to the environmental assessment; integration usually takes place in the plan or programme itself9
Views of the public	information becomes available through informal consultation of interest groups (outside the E-test) and public debate in Parliament	mandatory public consultation in both scoping and reviewing stage; for this a minimum of four weeks should be available
Documentation	results of the E-test are documented in the Explanatory Note to the draft legislation	mandatory publication of a separate report on the assessment results, including an executive summary
Quality review	the Joint Support Centre reviews, in co-operation with the Ministry of Justice, the quality of the information before draft legislation is sent to Cabinet	an independent expert committee publishes advice to the competent authority in both scoping and reviewing the quality of the results of the assessment; for this a minimum of nine weeks should be available

[9] Motivation: traditionally, Dutch strategic decision making focuses strongly on socio-economic issues and adequate instruments for the assessment of these are often already in place.

When to do what

If the most effective form of SEA should be chosen according to the context in which it should operate, an obvious next question would be 'when to apply which form'. This question is, of course, hard to answer in a general article such as this. It should be dealt with in the specific context of strategic decision making in a certain country, region or sector. Nevertheless, on the basis of Dutch SEA experience a first attempt for a more general and very broad answer could be as follows.

In most countries, in the planning process from the national to the regional/local level at some point the following four questions have to be answered: why do anything, what to do, where to do it and how to do it? The *why*-question deals with the need, objectives and principles of new actions. Once these have been established, the *what*-question deals with selecting the best methods and the capacities needed for each of these methods. The *where*-question is about the location of facilities, installations, and so on. The *how*-question deals with topics such as the detailed design of projects, necessary mitigation measures and compensation issues.

For example, in The Netherlands these questions in waste management planning are addressed at the following levels of decision making:

- need, objectives and principles are laid down in legislation and in the Dutch National Environmental Policy Plan
- methods and capacities are decided in the National Waste Management Plan
- provincial authorities decide on locations in provincial spatial plans
- design, mitigation and compensation are dealt with in the licensing process for concrete projects.

EIA is traditionally applied for 'how'-questions and SEA for 'why', 'what' and 'where' questions. One of the important differences within the latter category is that 'why'-questions (typically addressed at the highest strategic level) often do not touch directly on the interests of the general public, while 'what' and 'where' questions often do. Also, in answering 'why' questions it is typically hard do define a distinct set of alternative options and environmental consequences can only be estimated in a qualitative sense. Defining alternatives and assessing effects quantitatively is easier in addressing most 'what' and 'where' questions.

Because of these differences 'why' questions need another type of SEA from 'what' and 'where' questions. In particular, the direct effect on property and living conditions of individuals of most 'what' and 'where' decisions asks for an open, well structured process, with built-in safeguards ensuring sufficient opportunity for public participation, a clearly motivated choice from alternatives and the use of an independent review body, as arbitrator in case of controversies over the content of assessments between the public and the government. The SEIA process in The Netherlands is an example.

More abstract 'why' decisions, on the other hand, ask for a SEA process that integrates well into the more abstract, visionary and informal discussions in which these type of decisions are made. In other words, that is flexible and has a minimum of procedural requirements. The E-test, for example, is such a process. In the example of the Dutch waste management process this means that in The Netherlands an E-test is carried out for waste legislation, while SEIA is mandatory for the National Waste Management Plan and the provincial spatial plans.

Conclusion: harmony in diversity

The acceptance of SEA including a wide range of different processes all achieving the same goals but fine-tuned to the needs of a specific planning level, is of importance to both SEA scientists, trainers and planners:

- SEA planners should be better aware of the variety of SEA processes that exist and play an active role in selecting the SEA process that works best for their planning process, rather than regarding SEA as a straitjacket into which this planning should be forced.

- In communicating the key features and results of SEA processes, SEA scientists should place more emphasis on the specific decision making context and culture within, and for which, a process has been designed. This should include, if possible, an indication of situations in which it will probably be less effective. This will make it much easier for experts and planners in other sectors or countries to select SEA processes that are suited to their purposes.

- SEA trainers should try not to focus on one specific SEA process in their training sessions, suggesting that this one would be 'the best'. SEA training should always start with clarifying the type of decision making in which trainees would like to integrate environmental concerns (for instance, drafting legislation or developing policy plans, spatial or sector planning, strategic guidance or concrete programmes). The second step should then be to indicate the (successful) SEA processes that have been developed for similar purposes in similar circumstances.

A generally accepted set of SEA principles as a starting point, the notion that more than one SEA process may 'do the trick' and information on the specific context for which a process is meant, will hopefully make it easier for SEA experts and planners around the world to learn and 'borrow' SEA processes from each other. Building on existing knowledge rather than reinventing the wheel in each country will be beneficial for the further development of SEA and its acceptance by politicians.

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EIA & INDUSTRY IN THE NETHERLANDS

Rob A.A. Verheem[10] (Paper presented at the International Workshop on EIA & Industry needs in Milan, 28 November 2000).

Over a 1000 EIAs and SEAs have now been carried out in The Netherlands since 1987. Roughly one sixth of these facilitated decision making on industrial activities such as power stations, mineral extraction, oil and gas extraction, chemical installations and the designation of industrial parks[11]. In this article a brief and personal analysis is given of some experiences gained, lessons learned and what appears to constitute an EIA process that industry, at least in The Netherlands, would seem to embrace. This analysis is based largely on a survey of available literature and practice experience gained during the work of the Dutch EIA Commission.

Practice examples

The appreciation of EIA by industry in The Netherlands proves to be diverse. Some practice examples:

- In the case of a new chemical plant in the Rotterdam harbour area the proponent declared that despite the fact that Dutch environmental legislation, including EIA, is among the strictest in the world, they still decided to settle in The Netherlands. The disadvantage of strict legislation is outweighed by the fact that environmental requirements are clear and fulfilling them guarantees the activity to go ahead.

- In the case of the expansion of a car paint factory a modified and shortened EIA process was followed because much of the required environmental information was already present at the start of the EIA process. The proponent was enthusiastic about the flexibility of the process to adapt to specific circumstances.

- In the case of a large integrated chemical complex in the south-east of the Netherlands the proponent stated that EIA is useless in environmental licensing, because at that stage of the decision making process site and techniques are already fixed. EIA should be applied for the site selection of new chemical plants.

- In the case of the replacement of old chemical plants by new ones in the south-west of The Netherlands the proponent stated that the EIA had been useless, since the project was not controversial and the public wasn't interested in the EIA at all.

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[11] In the Netherlands above a certain threshold EIA is mandatory for decision making on chemical installations, industrial parks, mineral extraction, oil and gas extraction, oil and chemicals storage facilities, electricity production and certain factories, such as paper mills and cement factories

- In the case of a polymer producing plant in the north of the Netherlands the plant's emissions were reduced substantively because of the EIA process. Also, the acceptability of the new plant to the public was increased to such extent that no litigation procedures were started.

Industry's opinion on EIA

Overall, the impression is that time and money involved in EIA does not seem to be a company's biggest concern. As long as EIA requirements are clear and it is possible to plan the process (i.e. to agree on a time schedule beforehand that all parties stick to) the EIA can be integrated into the company's planning.

What is a big concern, however, is the slow decision making process after the EIA is completed. In a letter published by the association of private industries in the north of the Netherlands this is underlined: a quick EIA process is often followed by slow government decision making. The same complaint is heard in the case of, for example, the new land reclamation for the extension of the Rotterdam harbour and oil and gas extraction activities in the north of the Netherlands (the example was given of a gas extraction whose licensing process – without an EIA – took more than 15 years). However, this issue is outside the scope of EIA and cannot be solved by modification of the EIA process.

A second main concern is that EIA should only be carried out when necessary. In the 80's and early 90's the added value of EIA was – in hindsight acknowledged – clear to most companies. It placed environmental issues on the agenda and taught industry to always look at alternatives, where it previously hadn't done so. Now, however, the situation is different. Strengthened environmental legislation means that in all licensing procedures – with or without EIA – it is necessary to look at alternatives because of the requirement to find the Best Available Technique (e.g. under the EU IPPC Directive) or because of the ALARA principle (emissions and risks 'As Low As Reasonably Achievable).

For this reason, most industry representatives now claim that EIA in its current form often is not necessary any more for licensing. Subsequently, two suggestions are made. Firstly, flexibility should be build into the process, enabling EIA to adapt to the needs of specific licensing processes. Secondly, EIA should be applied more at a strategic level (e.g. site selection or setting environmental standards for industrial development), making EIA at project level unnecessary.

Advantages and issues

When applied effectively, and when necessary only, the advantages of EIA are nowadays acknowledged by most companies. Often mentioned are: a better insight in environmental constraints and opportunities in the design of new activities, better communication with all parties affected, a greener image and therefore less delay during decision making and implementation of a project and a better insight in the (financial consequences) of mitigation and compensation requirements.

In all cases, the following issues are of great concern to industry in EIA processes:

- consistency: environmental requirements should be equal to all companies to ensure fair competition;
- environmental requirements should be clear beforehand and not be changed during the process;
- government should stick to agreed time schedules;
- EIA is only useful to industry if the public accepts the credibility of its results.

As to the last concern mentioned, the value of an independent review committee in this is often emphasised by industry. The national gas company of the Netherlands for example indicates that this is one of their main reasons to carry out voluntary EIAs. Credibility is also build by sufficient and visible attention in the EIA to concerns of stakeholders.

Current developments

In response to the above experiences in the Netherlands now the following EIA developments relevant to industry take place or are discussed:

- For many industrial activities an EIA is no longer in all cases required; the need for EIA is established on a case by case approach and is required when special circumstances apply only.
- It is discussed whether for certain industrial activities the EIA requirement should be replaced by an 'extended' licensing process. For this, however, the licensing process should be improved, e.g. be more open to the public, include a mandatory communication plan, should pay more attention to sustainable alternatives and risk assessment and build in some form of independent quality review. Compared to the existing EIA process effectively this would mean the EIA process, but without the scoping stage.
- The Dutch EIA Commission is taking the lead in experimenting with the flexibility the existing EIA process offers to adapt to the needs of individual licensing processes. Especially promising is the opportunity to include all relevant information as much as possible in the 'starting note' early in the process. The EIA then focuses on additional information (if required after public participation) and can be completed quickly.

Future issues

For the long run the following opportunities for further improvement are discussed:

- to move EIA upstream in the planning process, e.g. to carry out SEA for plans and programmes providing a framework for industry projects. For projects staying within the framework an EIA would then no longer be needed;

- to carry out EIA to establish the 'environmental space' that may be consumed by an installation or plant; the proponent is then free to decide how to do this. Preconditions to this, however, are clarity about a companies emissions, an effective environmental management system, sufficient knowledge about how impacts accumulate and interact, effective monitoring by government and a change in environmental legislation.

Conclusion

With some degree of hesitation in the beginning, EIA now appears to be regarded a useful instrument by most industry. There are some conditions, however. The most important being that it should only be used when needed and then in the most effective form. In other words, EIA should be selective and flexible. Extra benefit may be gained if EIA can be used to avoid the NIMBY syndrome and create public support. For this it is important that in all EIAs societal discussion is an integral part of the EIA process. Or, in the words of Shell Netherlands Director-President Henk Dijkgraaf: 'EIA should evolve into the main mechanism to confront the concerns of all relevant stakeholders'.

INTEGRATED ENVIRONMENTAL IMPACT ASSESSMENT, A STEP TOWARDS INTEGRATED IMPACT ASSESSMENT

Stefan A.A. Morel, Reinoud A.M. Post and Jules J. Scholten[12] (Paper presented at the Annual Meeting of the International Association for Impact Assessment in Cartagena, May 2001).

The growing need for integration in impact studies

A growing interest in a more integrated approach to evaluating the effects of plans, programmes and projects has emerged in the last few years in the circles working in impact studies all over the world. This increase in interest has its origins in the problems development organisations were experiencing when preparing development projects. These organisations started out by setting up aid programmes of a purely technical and/or economic nature. Over the course of three decades (1950-1980), however, these organisations became aware that technical aid projects can have tremendous social and environmental consequences, and that the negative social and environmental consequences must be mitigated within the scope of the project itself, since many developing countries do not have sufficient mechanisms for protecting these interests. These organisations also have realised more fully that sufficient capacity must be developed in the recipient countries to enable them to examine the social and environmental ramifications of implementation of projects themselves. Besides the traditional cost-benefit analyses and determining the Internal Rate of Return (IRR), various impact studies were carried out to enable organisations to better anticipate these impacts.

Halfway into the 1990s the realisation was growing that performing separate studies on the economic, social and environmental effects of project proposals was not the most efficient or effective method of preparing projects. Driven by the sectorally compartmentalised aid organisation, the separate studies often used different principles and timetables and investigated different alternatives. The recommendations which emerged from these studies were far from consistent or reconcilable with each other, which saddled the project co-ordinator in charge with the daunting task of drawing up a coherent and acceptable proposal for making the decision. Second-order effects such as the environmental effects of social changes caused by the project, as well as other crosscutting issues, were not studied, with the result that the quality of the resulting project proposal could not always be guaranteed[13].

Thus, the development co-operation world is currently showing interest in the concept of integrated impact assessment. For example, in its Operational

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[13] Brown, L., Integrating crosscutting issues in the environmental assessment of development assistance; Scholten, Jules J. and Post, Reinoud, Strengthening the integrated approach for impact assessment in development co-operation. In: Sustainable Development and Integrated Appraisal in a Developing World, edited by Norman Lee and Colin Kirkpatrick, 2000. Edward Elgar, UK.

Policy 4.01 (WB, OP 4.01, 1998) the World Bank requires that the social and economic consequences and capacity development be described in the Environmental Impact Statement (EIS).

However, the developments in this idea are no longer confined to the world of development co-operation; interest in an integrated approach has arisen in developed countries as well. This is primarily because the number of interests to be considered when making a decision has increased (the list now includes safety risks, public health, nature management and nature development, liveability and cultural/historical heritage, in addition to the already established economic and social interests) and because the expertise for evaluating the impact on each interest has become more specialised.
In the developed world, positions of power and competencies have usually taken shape and are entrenched to a high if not excessive degree. Since a completely integrated approach could encroach upon established competencies and positions of power, caution should be exercised when introducing the idea into the administrative echelons. Another reason for caution is that even after approximately thirty years of environmental policies, the environmental interest is not yet sufficiently internalised in decision making to withstand the potential threat from the economic and social interests (these still are the driving forces behind most plans and project initiatives which also have environmental consequences). In other words, the environmental interest is, at least for now, not strong enough to be completely integrated with the vested economic and social interests into a single decision making instrument in which all interests are considered equal to each other.

This chapter describes recent thinking (and its elaboration in the Netherlands) about an integrated approach to impact assessment which encompasses both of the reasons mentioned above. It presents the Integrated Environmental Impact Assessment (IEIA)[14], a cautious approach and intermediate stage in the development towards a fully Integrated Impact Assessment (IIA).

What is IEIA?

IEIA aims to show environmental interests in relation to others from the very beginning of the decision making process in project development. The IEIA report makes these interests apparent by showing alternatives and their consequences, enabling decision makers to make a justified assessment. The environmental aspect remains the principal aspect in this balancing process; insight is provided into other interests to the extent there is a relationship with the environmental aspect. The legally required Environmental Impact Assessment (EIA) procedure therefore remains the vehicle for the decision making procedure.

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[14] The term IEIA was consciously chosen to avoid confusion with the term IEA described in the article by Siebout Nooteboom & Keimpe Wieringa: Comparing Strategic Environmental Assessment and Integrated Environmental Assessment in Journal of EAPM, vol. 1, no 4, Dec. 1999. This article makes it clear that IEA is an instrument with an entirely different goal than IEIA. For example, IEA does not need to be used in making a given decision, while IEIA is always performed in the process of making a given decision.

IEIA can be the first step in the development towards a fully integrated impact assessment (IIA). IIA goes further than IEIA, because in IIA the environmental aspect is not the main principle: in IIA the relations between the interests are clearly set out even if the environment does not play a role.
Since more experience first needs to be gained in IEIA, it is still too early to give an indication of how long it could take for IIA to be applied and which guarantees it should meet. As far as this last point is concerned, transparency and public accessibility should be characteristics of IIA just as in IEIA.

Why is IEIA necessary?

More and more often, projects which require EIA are based on multiple objectives in diverse fields. Decision makers are now confronted with sectoral impact studies for the environment, economics, safety and social aspects, especially in large infrastructure projects. The lack of sufficient rapport between these aspects can hamper decision makers, who need an integrated, coherent relationship between the various disciplines. There is therefore ample reason to suppose that developing IEIA is desirable. Our reasoning is based on the following considerations:

Promoting synergy and coherence in the decision

IEIA offers the opportunity to find synergy between (for instance) environment and economics at an early stage. Goals and alternative solutions can be elaborated by looking at the various component interests in relation to each other. This is especially valuable when projects have multiple (environmental and economic) goals; examples of such projects are the expansion of the country's main airport, Amsterdan Airport Schiphol, and the development of the world's largest seaport, Rotterdam.[15]
More economic and environmental profit can be gained if the multiple objectives can be maintained flexibly while developing alternatives (for example, if the economic or environmental objective can be expressed in terms of several variants which each offer an acceptable solution to the problem). IEIA promotes the evaluation of the project as a whole and prevents fragmented decision making about component aspects.

Promoting quality of information and transparency in decision making

In IEIA the environmental and social as well as economic aspects are as much as possible expressed in measurable quantities. This enables the parties involved in the IEIA procedure to better verify the various objectives. It also clarifies which interests are being considered in relation to each other, and how sound each of the objectives is. IEIA promotes a better quality of information by describing what are known as second-order effects, for example, environmental impacts of people's behavioural changes caused by the changes in their social and economic conditions brought about by the project.

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[15] Inherent in the term multiple objectives is the idea that control over and mitigation of environmental effects as well as promotion of nature development must simultaneously allow for economic development.

Although these indirect effects can be important factors in decision making, they were not incorporated in EIA since the behavioural changes resulting from the project were not being studied.

Clear discussions of purpose and need

IEIA contributes to an explicit discussion about the purpose of and need for a project, by naming the various interests to be weighed against each other, expressing them in numbers, and connecting them with each other at an early stage. This will prevent the purpose and need of a project and the economic feasibility of solutions repeatedly being brought up for discussion in the decision making process, as has happened, for example, with the decision about a new freight rail line connecting Rotterdam with the German hinterland (the "Betuweroute"). A clear-headed discussion of purpose and need and the participation IEIA fosters can increase support for some activities.

Streamlining of information provision and procedures

The information provided to assist a decision maker usually consists of an EIS, technical studies and an economic feasibility study; for projects such as housing construction, there is also a recommendation from the equal opportunity council and an operational plan. Decision makers and officials have to read between the lines to find out how the various components relate to each other. This fragmentation could be avoided if all the information were provided in a single integrated document. It has become apparent in practice that this streamlining is badly needed.
Following the example set by EIA, in the last few years new instruments such as safety, liveability, health and cultural-historical impact studies have been proposed for impact reporting. These instruments were created from the view that these diverse aspects were receiving too little attention in current EIA. Since, however, in a broad sense these aspects are all part of the environment, it has always been possible to integrate them in EIA and thus avoid procedural compartmentalisation in decision making. Meanwhile another new development has been presented; the Dutch minister of Transport, Public Works and Water Management (Verkeer en Waterstaat) has made public her intention to conduct a complete Social and Economic Cost-Benefit Analysis for large-scale infrastructure projects. The aim of this analysis is to provide decision makers with information about a project's social and economic output, including nature and environmental interests. In those projects for which such an analysis must be conducted, there is clearly a need for a direct rapport between economic, social and environmental aspects, and thus for performing an IEIA.

Are there possible stumbling blocks with IEIA?

Overlooking of the environmental interest?

The term Integrated Environmental Impact Assessment is sometimes misunderstood. The word Integrated can create the impression that the environmental interest must surrender to the other aspects and is ultimately overlooked. This will compromise the original goal of EIA to fully weigh the environmental interest when making decisions. We can make the following remarks with regard to this line of reasoning:

- Coupling the integration to an EIA process retains the safeguards entailed in an EIA. This means that the three most important characteristics of EIA are not limited to the environmental aspect but also extend to include the economic and social aspects. These characteristics are: (1) accessibility and public participation, during both the scoping and assessment phases, (2) drafting and considering alternative solutions and (3) evaluation of the information by an impartial committee of experts (Commission for EIA). IEIA thus does not surrender environmental quality to other interests but strengthens the quality of these other interests.
- Recent experience has shown that in addition to the environmental aspect, social and economic aspects are being included in a number of EIA categories. For example, in dike improvement projects, the costs of implementing measures and interventions for protecting cultural/historical aspects, nature and landscape are now being considered in addition to safety considerations in connection with flood protection. The experience of the Commission for EIA indicates that the environmental aspect is not being considered any less in these cases.
- Since the elaboration of the most environmentally friendly alternative retains a core concept in IEIA, the environmental interest will continue to be the guiding principle and will be elaborated and presented in the EIS. The environmental aspect will therefore retain, and may even strengthen, its prominent position in decision making. This alternative also has an integrated approach since its social and economic consequences are described in detail.

Organisation of the process

The co-ordination and rapport needed between sectors requires good timing and organisation of the process. This synchronisation makes the organisation of IEIA more complex than that of EIA. From the side of the competent authority and the initiator (proponent), the developers of the plan will at the very least have to synchronise the environmental and social-economic studies. At crucial points, experts from various disciplines will have to be brought together, for example, when performing the problem analysis, setting the ambitions, goals and the alternatives to be studied and comparing the results of these alternatives. In the Dutch context, the independent Commission for EIA will also have to bring together economic, social and environmental experts in its work groups which advise on the IEIA reports.
It has yet to be seen in practice which stumbling blocks will arise and how they can be dealt with in the integration process.

How far removed from IEIA is current practice?

An inventory was made of the Commission of EIA's guidelines and recommendations to answer the following questions:

- To what extent are other aspects (e.g., social, economic) already considered in EIA in the Netherlands?
- If other aspects besides environmental aspects are being considered in EIA, what (if any) is the relationship between these aspects and are they integrated in the process?

In its recommendations on EIA in development co-operation projects for the Directorate-General for International Co-operation of the Ministry of Foreign Affairs, the Commission for EIA always considers social, economic and institutional aspects. In projects within the Netherlands as well, the Commission

already takes social and economic aspects into consideration in its scoping recommendations (EIA for land-use, housing construction, office/industrial parks, dike construction and railway/road placement studies), with particular attention given to the social aspects. Further analysis of the recommendations that are presented in the review of EISs indicates that social aspects for the time being do not play an important part. If they have received too little attention in the EIS, in the review they are not seen as a reason to ask for additional information or to make recommendations for further decision making. A relationship between environmental and economic aspects has less often been observed in guideline recommendations and, logically, will play a smaller part in assessment recommendations. There is now more experience with multiple-objective projects.

How can IEIA be developed?

Experiments

IEIA will have to be developed in collaboration with other involved parties such as the ministries of Housing, Spatial Planning and Environment (VROM) and Agriculture, Nature Management and Fisheries (LNV), which are responsible for regulating EIA, the authorised agencies for decisions requiring EIA (particularly the ministries of Economic Affairs and Transport, Public Works and Water Management, and the provincial authorities) and consultancy firms.
Experiments with IEIA offer the best opportunities for testing its potential and limitations. The following selection criteria have been proposed for the projects which could employ IEIA:

- *Projects with multiple objectives*
  In these projects, social and/or economic goals have been formulated alongside specific environmental goals. Significant discrepancies between the economic, social and environmental interests are a challenge to finding harmonious solutions which do justice to all the goals. In general, a social and economic cost-benefit analysis usually must be performed for these projects as well.

- *Projects without an explicitly formulated multiple objective but in which social and economic aspects are important*
  Examples of this type are current projects for which the guidelines suggest attention to social and/or economic aspects. In new projects to be selected, principally in the area of spatial planning (housing construction, office/industrial parks, land-use, road and rail infrastructure), the Commission for EIA, in consultation with the competent authority, can request that explicit attention be paid to economic and social aspects in its guideline recommendations. This can allow for experiments such as including the costs or economic growth scenarios for the various alternatives, including the most environmentally friendly, in EIA. This results in a clearer picture of the cost/benefit ratio of the alternatives and their environmental measures. For example, it may clearly emerge that the cost of environmental measures is negligible in relation to the total investment, or that rosy predictions of economic growth will take a heavy toll on the environment.

- *Projects influencing areas and/or animal or plant species having a special protection status under the European Habitat and Bird Directives*
  The European Union Habitat and Bird Directives have a protection formula for areas and/or species designated for special protection under these guidelines. If new projects will negatively influence these areas and/or species, the first step must be to seek alternatives to the proposed activity which avoid these negative impacts. If such alternatives do not exist, it must be demonstrated in the decision that there are compelling reasons of paramount public interest justifying the proposed activity.[16]
  In these cases, the EU directives require a purpose and need investigation for the proposed activity as part of the decision making process. This will come down to weighing the environmental and nature interests against the economic and social interests or public health and safety interests.

What can the Commission for EIA do?

The ministries of VROM and LNV, which are responsible for the correct application of the EIA instrument, have given their approval to the Commission for EIA to experiment with IEIA. There is thus no impediment to the Commission's ordering its work groups involved with selected projects to draw up guidelines for IEIA and to assess the resulting IEIA reports. Once there is a sufficient body of experience, it must be evaluated and discussed with the ministries of VROM and LNV to ascertain if a further step can be taken in the integration process. There must also be co-ordination with the Ministry of Transport, Public Works and Water Management due to the social and economic cost-benefit analysis required for large-scale infrastructure projects.

[16] Article 6, paragraphs 3 and 4 and article 16, paragraph 1 of the Habitat Directive.

THE ROLE OF (S)EA IN BALANCING ECONOMIC DEVELOPMENT AND ENVIRONMENTAL CONCERNS IN THE SPECTACULAR GROWTH OF AMSTERDAM AIRPORT SCHIPHOL

Jules J. Scholten[17] (Paper presented at the Annual Meeting of the International Association for Impact Assessment in Hong Kong, June 2000).

Over the past decade several (S)EAs have been carried out in support of decision making about expansion of the national airport near Amsterdam (Amsterdam Airport Schiphol or abbreviated: AAS)[18]. In 1995 the national government decided that the existing system of four runways would be expanded with a fifth runway which would become operational in 2003. The 5-runway system would allow AAS to grow to a maximum of 432.000 plane movements in 2015. It became the objective of the government that AAS would grow to a position among the 3 to 4 leading major airports in Europe. AAS does not only serve the domestic market in the Netherlands; it also should develop into a large transit airport in the so-called *hub and spoke system* moving and channelling people and air cargo between destinations in Europe and different continents. To that end, KLM the national carrier, had to ally itself with other carriers (Northwest Airlines, Air UK and recently the attempt to link with Alitalia) to create a truly global network of connections. The strategy worked very well and growth of AAS surpassed all expectations. In 2000 the number of plane movements will reach 420.000 and in 2002, that is the last year of operating the existing 4-runway system, the number of movements will grow to 460.000. The portion of passengers that pass through AAS in transit is about 50 per cent and therefore it is about equal to the group of passengers who start or end their air journey at AAS.
In another SEA that started in 1999 the government has announced that AAS with a 5-runway system may further grow to approximately 600.000 movements in 2010. These numbers exceed widely the number of 432.000 movements that were predicted for the year 2015 in the strategic decision that was taken in 1995.

The decision of 1995 allowing AAS to considerably grow was made on the condition that the development can only take place while reducing the noise impact and freezing the impact of the airport on external safety and air quality including odour nuisance. The reference point was fixed on the year 1990. Reducing the noise impact would have to take place already while operating the 4-runway system whereas the requirement for stand still with regard to external safety and air quality would only come into force in 2003 when the 5-runway system would become operational. The reason behind

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[18] Between 1992 and 1995 an SEA was carried out for the strategic decision to enlarge and intensify the use of AAS. Simultaneously two project EIAs were conducted for licensing the 4-runway and the 5-runway systems respectively (prior to and after 2003) as follow up for the strategic decision. Between 1998 and 2000 a new project EIA was performed to adapt the licensing for the 4-runway system. This adaptation was needed as it had appeared that the licensed noise zones around the airport showed a number of inadequacies. Finally, in 1999 a new SEA started to help determine the future of AAS in the long run after 2010; the decision focuses on either to further expand on the current location or to move the airport to another location, i.e. to an island in the North Sea west of Amsterdam.

these stipulations was that AAS is able to master the environmental risks and emissions once the fifth runway would become available.

The principle of two objectives: balancing economic development and environment quality

In allowing AAS to grow in a controlled manner while at the same time keeping in check the environmental impacts, the government has adopted a policy of two objectives that are equal in strength and that must accommodate economic development and improvement or maintenance of the environmental quality simultaneously. The theoretical advantages of implementing this policy are attractive as it strives for a situation in which all stakeholders are winners. Nevertheless, it is obvious that in trying to maintain a balance between these two conflicting interests considerable friction will occur. Although in principle, the two objectives have been assigned equal strength, it is clear that economic development and growth of the airport are the driving force that tends to be dominant in the struggle to maintain a balance.

The dominant strength of growth has resulted already in adaptations by the government of the environmental criteria governing the principle of the two equal objectives.

The stand still principle for odour nuisance has been abandoned as being unfeasible. Odour problems occur due to unburned or partially burned kerosene. Kerosene is only used as fuel by aircraft. A continuous increase in the number of plane movements taking off and landing can only aggravate the odour problem. Odour nuisance will further increase when the fifth runway will become operational. This new runway is located at greater distance from the terminals than the other four runways. Hence, aircraft taking off from this runway and landing on it will have to cover larger taxiing distances to and from the terminals.
Air quality around the airport has not deteriorated since 1990 but that is due to a considerable reduction in emissions by road traffic whereas aircraft emissions actually increased. So, the stand still principle for aircraft emissions will be replaced by permissible maximum levels for individual exhaust gases that will be established periodically.
The requirement that noise impacts will have to improve already now during the operation of the 4-runway system, has been replaced in practice by acceptance of stand still as the result that is at best achievable.
A motion by Parliament to apply the principle of stand still before 2003 already to external safety (and particularly to individual risk) was adopted by Parliament in 1998 but the motion was not implemented by the Cabinet.
In view of these developments, it can be stated that since its establishment in 1995 the principle of the two objectives putting economic development and concerns for the environment at par, has eroded already appreciably.

New EA information

Recently, an EA was carried out for a change in the current noise zoning around AAS (see footnote 18). The resulting EA report permitted to review the environmental situation around the airport as an interim check before the

fifth runway will become operational and the environmental objective must be revisited in 2003.
The review by the independent national Commission for EA concluded from the EA report that the environmental situation is developing unfavourably thereby seriously challenging the compatibility of the two objectives.

The emission of odour from kerosene has increased with a factor of 1.5 since 1990 and the number of people within the various odour contours will have doubled by 2003[19].

The contribution of aircraft emissions to the total amounts of emissions that determine air quality has grown since 1990 and will further grow[20]. The increase in emissions from aircraft takes place for all substances. This is not surprising in view of the growing number of plane movements that obliterate gains that are made by the introduction of cleaner and more fuel-efficient engines. Still, it must be noted that the contribution for all substances to the total amount of emissions is less than 3 per cent in the study area around the airport and that only carbon dioxide and black smoke increase in absolute terms. Total emissions for the other substances decrease due to cleaner car engines. Nevertheless, in spite of its small contribution, stand still for aircraft emissions is not feasible.

It has been indicated already that the expectation that noise impacts could be reduced in the operation of the 4-runway system will not materialise. Instead, stand still is at best achievable. Moreover, there is a strong indication that noise impacts are severely underrated. Noise impacts are calculated and expressed in two different units and related contours[21]. One of these, the Ke-unit follows a formal calculation instruction dictating that over-flying aircraft with peak noise levels below 65 d(B)A are not taken into account in the calculation. This cut-off level of 65 d(B)A results in a considerable under-valuation of the noise impact and related nuisance. In the EA report a calculation is presented observing a cut-off level of 50 d(B)A instead of the formal

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[19] In the Netherlands, the standard for exposure to odour is expressed as the average hourly concentration in 'odour units' per cubic meter. Contours are calculated and plotted as 98 and 99.5 percentiles for 1 and 10 odour units per cubic meter. However, there is no clear correlation between these contours and the percentage of persons residing within these contours adversely affected by the odour as this is dependent on both the sensitivity of the individuals and the type of odorous substance.

[20] The compounds and substances influencing air quality within a radius of 10 km around the airport are carbon dioxide, carbon monoxide, nitrogen oxides, sulphur dioxide, volatile organic substances, polycyclical aromatic hydrocarbons and black smoke.

[21] By law, a 'Ke-noise zone' and a separate 'LAeq night noise zone' have to be drawn around each airport in the Netherlands. The noise load related to disturbance caused by aircraft is expressed in 'cost units' (Kosten eenheden: Ke)'. This unit takes into account the maximum A-weighted noise levels (LAMax) of aircraft, the total number of over-flying aircraft per year and weighting factors for early morning, evening and night-time flights. The percentage of the population highly disturbed by aircraft noise roughly equals the Ke value minus 10 (e.g. within the 35 Ke-contour 25 per cent of the population suffers high noise disturbance). Ke-contours are computed for values between 20 and 65 Ke with intervals of 5 Ke. The Ke-noise zone around airports envelops all annual 35 Ke-contours in view of the meteorological conditions that differ from year to year. The construction of new houses is prohibited within this zone. Buildings within the 40 Ke-contour must be insulated. The noise load related to sleep disturbance caused by night time flights is expressed in the A-weighted equivalent noise level (LAeq) experienced inside bedrooms (windows closed) by aircraft movements between 23.00 in the evening and 06.00 in the morning during the course of one year. The limit for the night-time noise zone is set at LAeq 26 d(B)A inside bedrooms (that equals about 48 d(B)A outside). At this level, about 20 per cent of the people residing within that zone experience sleep disturbance by over-flying aircraft. Inside the night zone but outside the 40 Ke-contour only bedrooms are insulated.

level 65 d(B)A. This calculation shows that that the numbers of houses within the two most important noise contours (35 and 20 Ke) increase with a factor of 2.4.

The external safety situation[22] is developing unfavourably for the simple reason that the number of plane movements is growing and that mean take-off weight of the aircraft that is using AAS is growing as well. In case of a crash, heavier aircraft will have a larger impact area than lighter aircraft and consequently there is a higher risk that more persons will die in the crash. Calculations using two different sets of input data for assessment of individual risk yielded figures showing an increase in risk of either 1.4 or 2.2.

Conclusion

Through the application of (S)EA it is becoming increasingly clear that the dual objectives of enabling economic growth while simultaneously improving the quality of the environment appear to be incompatible. If that is the case, it would mean for AAS that either the dual objectives for growth and the environment have to be uncoupled or growth must be stopped. Another long term option that could enable further growth of civil aviation in the Netherlands, is to transfer the national airport to another location on a new island in the North Sea, preferably within the 12 mile zone, that is the coastal area where the Netherlands has formal territorial jurisdiction. In order to address the site selection for the future situation after 2010, an SEA was initiated in October 1999. In that SEA the two sites would be described and compared in terms of their environmental consequences as related to their economic potentials and opportunities. However, in December 1999 shortly after the start of the SEA, the island option was put on hold by the central government in view of its high cost of development and construction. That means that the central government intends to regard the present location as the site that will accommodate the national airport for an indefinite period of time.

The (S)EAs contributed to the decision making process in still another distinct way. They enabled the public, environmental pressure groups and local authorities to voice their remarks and concerns about the proposed developments. Particularly, the dual objectives of economic development and improvement of the environmental quality have been the subject of many interventions by third parties in the decision making process. In the review of the last project EA for adapting the noise zoning around AAS, about 3,600 interventions have been submitted to the competent authority (the ministers of Transport and Environment). Increasingly, these interventions drive home the point that a considerable part of the population has little confidence in the government in keeping its promises and in not manipulating the interpretation of the

[22] For external safety individual and group risk are calculated. Individual risk is the annual chance that a person permanently residing in one place will die as a result of an aircraft crash. Individual risk is expressed and plotted in IR (individual risk) contours: $5 * 10^{-5}$, 10^{-5}, 10^{-6} and 10^{-7}. In the Netherlands the $5 * 10^{-5}$ and the 10^{-5} IR contours have planning implications. Within the 10^{-5} contour no new construction is permitted whereas within the $5 * 10^{-5}$ contour buildings must be demolished. Group risk is defined as the annual chance that a group of persons permanently residing in one place will die as result of aircraft crash. Group risk cannot be expressed in contours but is expressed in FN Diagrams (F = chance, N = number of terminally wounded victims).

environmental objective. Of all developments in the decision making concerning the airport, this is probably the most worrisome. It will take much effort on the part of the central government and the aviation sector to restore the credibility of decision making with this segment of the population.

TIDAL INLET PROJECT, CARTAGENA, COLOMBIA

Joint[23] scoping, review and monitoring of the EIA for the Ciénaga de la Virgen lagoon

Ineke Steinhauer[24] (Paper presented at the Annual Meeting of the International Association for Impact Assessment in Cartagena, May 2001).

The project

The lagoon 'Ciénaga de la Virgen' is situated near the city of Cartagena (675.000 inhabitants) and covers 22 square kilometres with a volume of 26 million cubic meters. Sewage water and waste are dumped directly into the lagoon. During the last two decades the water quality has deteriorated rapidly. There is no permanent open connection between the Caribbean Sea and the lagoon. La Boquilla, in the northern part of the lagoon, forms a connection between the lagoon and the sea, but this connection is only open 5-6 months per year, due to seasonal sedimentation patterns. The auto-regenerating capacity of the lagoon is thus limited, causing environmental and health problems. The project proposes the construction of a so called tidal inlet to allow the 'clean' seawater to mix with the contaminated water of the lagoon. Through dilution and dispersion of the sea water with the polluted water in the lagoon, the contamination can be reduced to an acceptable level of the water quality. Induced effects expected are a reduction in health problems, improved possibilities for fisheries, a stimulating effect on tourism and an increase in value of ground prices.

The National Planning Department in Colombia has established an Integral Sanitation Plan for Cartagena in order to solve the environmental and sanitation problems in Cartagena. One of the components of this plan is the rehabilitation of the Ciénaga lagoon. Another part consists of a Sewerage Masterplan concerning the upgrading of the existing sewerage system and the construction of waste water treatment installations.

The EIA-process

The Colombian Environment Minister is responsible for issuing an environmental permit drawn up by an approved local authority, in this case the Corporación Autónoma Regional del Canal del Dique (CARDIQUE). CARDIQUE has adopted Terms of Reference (ToR) for an Environmental Impact Statement (EIS), submitted these to the Ministry of Transport (responsible for the construction of the Tidal Inlet) and requested that an application for an environmental permit be lodged. The Ministry of Transport has appointed a Dutch consultant to compile the EIS, and the work is

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undertaken with ORET funding[25]. The EIS, therefore, could inform decisions on implementation. The Minister for Development Co-operation has requested a joint review of the EIS by the Commission for EIA and CARDIQUE to support decision making in both countries.

The joint review was carried out according to the Terms of Reference adopted by CARDIQUE and an additional checklist prepared by the Commission. In June 1996 a visit was made to the site in Colombia and the advisory review was submitted. Both CARDIQUE and the Commission concluded that the EIS dealt insufficiently with a number of points relevant to the decision making and recommended that a supplement be prepared. The supplement was, again, reviewed by both bodies in November 1996, this time in the Netherlands, and CARDIQUE sent a representative to the Netherlands for this purpose. The conclusion of the additional review was that there was now sufficient information to allow environmental considerations to play a full part in the decision making. Recommendations were made for attaching a number of conditions to the environmental permit. The environmental permit states that the activity must comply with all measures and actions proposed in the Environmental Management Plan and the recommendations in the additional advisory review by the Commission and CARDIQUE (which forms an integral part of the permit). CARDIQUE was allowed to prescribe additional mitigating or compensating measures if the situation so required.

The execution of the project started early 1999. In light of this development, the Minister for Development Co-operation, endorsed by the Colombian Ministry of Transport, requested the Commission to review the progress of the project, environmentally and technically, by re-activating the collaboration with CARDIQUE in the evaluation of the review reports which would be drawn up during the execution of the works. In March 1999 the Commission and CARDIQUE received the report containing the monitoring programme: 'Programa de Monitoreo Ambiental', febrero 1999. The environmental licence of CARDIQUE and the letters of the Colombian and Netherlands Ministries formed the motive for a first advisory review of the environmental monitoring programme, which was published in June 1999. This review was endorsed by CARDIQUE.

While re-activating the collaboration with CARDIQUE, the Commission and CARDIQUE experienced that collaboration at two widely separated geographical locations renders effective interaction and exchange of ideas very difficult. It was proposed to plan a visit to Cartagena when the results of first sampling-campaigns (executed by the contractor) would be available. On the basis of these results and on basis of the first advisory review of June 1999, a final monitoring strategy could then be determined. Site visit took place in October 1999.

In October 2000 a mid-term evaluation mission was carried out with a site visit to Cartagena by the Ministry of Development Co-operation. During preparation for this mission the Commission was asked to formulate points of special attention. In November 2000 the tidal inlet was put into operation. At first sight the results were satisfactory. The monitoring programme will follow the project critically in 2001 as well.

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[25] Ontwikkelings Relevante Export Transacties, Export Transactions relevant for Development

Added value of EIA

The added value of EIA for this project has been most prominent during the review of the EIS on the subject of alternatives. In the EIS not all realistic alternative solutions had been described, although asked for in the ToR. An overview was missing of all possible alternative solutions to improve the auto-regeneration capacity of the lagoon, including a motivation for the selection of the proposed solution.

Alternatives which had been described

The project proponent did consider alternative options for the location of the tidal inlet, including environmental impacts of each alternative. All alternative options presumed the timely construction of a waste water treatment plant. These project alternatives had been worked out very well.

Two lacking alternatives

However, a description was lacking of the alternative in which the tidal inlet is constructed, but the treatment plant will not be constructed. This alternative had to be considered as a realistic one, as the construction of the waste water treatment plant was not yet decided due to lack of funds. If the waste water treatment plant will not be constructed, the contamination of the lagoon will continue (the source of the pollution is not tackled), and will even spread to the Caribbean Sea. The tidal inlet will be able to improve the situation for a time span of 5-8 years. But then, as the city of Cartagena is still growing, and therefore the amount of waste and waste water accordingly, the situation will deteriorate again. This might negatively affect the beaches of Cartagena, which are very important for the tourist industry. The environmental problem will not be solved and may even get worse. In that case it might be wise not to construct the tidal inlet in order to restrict the contamination to the lagoon only.

Another alternative which has not been considered, is the possibility of land reclamation of the Ciénaga de la Virgen (complete or partial) in combination with e.g. an inlet structure. This alternative could also be considered as realistic, as existing land reclamation on the southside of the Ciénaga de la Virgen amounts to approximately 30 meters in a period of 5 years. People living at the borders of the lagoon, collect solid waste and start to live on top of it, thus contributing to a form of land reclamation. This process could be transformed into a combined solution of land reclamation where the population and infrastructural pressure is the highest in combination with an inlet structure. Supplemented with a sewage/-drainage system, the living conditions of the neighbourhoods bordering the lagoon will significantly improve. The opening at La Boquilla is still present. This natural flow offers a possible opportunity to obtain a modified natural inlet and may be sufficient to refresh the remaining northern part in case all loads are diverted/treated. If the treatment plant will be constructed, and if partial land reclamation would be a feasible option, then it could very well be possible that the natural opening at the northern site of the lagoon will be sufficient to guarantee the auto-generating capacity of the lagoon. In that case the construction of the tidal inlet would not be necessary anymore.

Importance of alternatives for decision making

During review of the EIS is was agreed by the Commission and CARDIQUE that the description of alternatives including their environmental impacts was not complete. The two lacking alternatives are essential for decision making because it could provide information on whether the tidal inlet would really be a sustainable solution. The Commission and CARDIQUE recommended to ask the project proponent to provide supplementary information on these two alternatives. A supplement to the EIS was then prepared by the proponent. On the basis of this additional information the competent authority decided that the tidal inlet could be constructed under the condition that the waste water treatment facility was constructed simultaneously. The additional information on the alternative with partial land reclamation proved that this alternative was environmentally less feasible then the preferred alternative.

The supplementary EIS showed that: (i) the problem had to be tackled at different levels, that is strategic (solution) alternatives as well as project (different sites for the tidal inlet structure) alternatives have to be considered in order to reach a sustainable solution and (ii) describing the zero-alternative (not constructing the tidal inlet) reveals that it could also be possible to achieve the objective, but in a longer time span (or faster by taking other additional measures).

Added value of joint scoping, review and monitoring

Joint scoping and review

As in both countries, Colombia and the Netherlands, an EIA procedure is required for decision making, it was a logical step to join forces and to perform a review of the EIS by two teams of experts: a Colombian working group and a Netherlands working group. The ToR for the EIS prepared by CARDIQUE offered a good opportunity for the Netherlands Commission for EIA to become familiar with the Colombian EIA system and requirements and formed the point of departure for the drafting of a joint review framework. For CARDIQUE at the same time, it gave insight into the Netherlands EIA system and the way review is done in the Netherlands. The outcome of the joint review could support decision making in both countries.

Therefore, it provided an excellent opportunity for mutual 'on-the-job-training' and making use of national EIA requirements. The Colombian EIA regulations can thus grow in strength as well as the EIA policy that is used by the Netherlands Ministry for Development Co-operation. Experience shows that advice on EIA for single projects is more sustainable if it is embedded in a nationally driven EIA process. Furthermore, as a result of globalisation, a growing number of projects in developing countries are privately funded and environmental guidelines used by donors and multilateral organisations are not applicable in these cases. An effective EIA system in the countries concerned is essential in obtaining a proper consideration of environmental and other interests in decision making. This is not only applicable for the EIA process in relation to the project but also for the environmental monitoring after project completion.

Joint monitoring

Joint monitoring took place during project construction. The question arose whether the monitoring programme would not be too ambitious and whether it would be tailored sufficiently to Colombian circumstances. Also standards and enforcement were subjects of discussion. During a joint exercise is was determined which parameters were most suitable, as well as the number and siting of sampling points and the frequency and time-span of sampling. At the same time, this offered the opportunity to thoroughly discuss the specific contents and requirements of the environmental licence. All relevant stake-holders were involved in these discussions, and agreed on the outcome and approach. Site visit of the Commission was in fact a trigger for all institutions, agencies and organisations involved in environmental monitoring to commonly decide on the steps to be taken and key issues to be addressed.

One of the most important issues is the timely implementation of the waste water treatment project (complementary to the tidal inlet project). This remains very urgent, in order to reach a sustainable solution also in the long term for the problem at hand. As no Netherlands funding will be involved in this waste water treatment project, it is up to CARDIQUE now, in its function as the competent environmental authority for both projects, to see to a sound EIA procedure for this project as well. A successful implementation of this project is essential for the well functioning of the tidal inlet (and making the investments being done in this project by both Colombia and the Netherlands not a waste of money!). Hopefully CARDIQUE will benefit from the joint exercise in aid of the tidal inlet project for the up-coming EIA review of the waste water treatment and also for other EIAs ahead.

Some facts on the Commission for EIA in The Netherlands

The Commission for EIA is a private foundation, with a budget of its own subsidised by government, acting as an independent expert committee in all EIA processes taking place in The Netherlands. The Commission advises competent authorities in two stages of the assessment process: during scoping on the required content of the environmental studies and during reviewing on the quality of the information compiled. In this, the Commission takes public comments into account. In addition the Commission also advises the Minister for Development Co-operation of the Ministry of Foreign Affairs on EIA matters concerning activities in developing countries with which The Netherlands has a formal co-operation relationship. Advisory reports are published by the Commission itself. So far the Commission has issued advices on more than 1000 projects and plans.

The functioning of the Commission is founded on two principles: expertise and independence. It is the combination of these two which allows the Commission to observe and review environmental information unbiasedly. In order to achieve these ends, the Commission has been granted formal status in the national legal framework; it has a presidium consisting of a chairman and several deputy-chairmen, and a secretariat which includes at the moment about 34 staff members of which 15 technical secretaries and 19 supporting staff.

The Commission has about 200 members and about 200 advisors who are experts in all environmental fields ranging from air, soil and water pollution to ecology, hydrology, geology, archaeology, radiation, noise nuisance and visual landscape impacts. The Commission also includes expertise on the technical and physical planning aspects of the activities which are the subject of EIA. In addition, the Commission can call upon experts with disciplines in the fields of environmental law, social psychology, environmental economics, land reclamation and consolidation, transportation, waste disposal, energy generation and consumption, environmental health et cetera. In short, the Commission is able to field any expertise required in any EIA. When specific expertise is not readily available among the members and the advisors, new advisors can be called upon. The experts are paid for their services professional fees which are calculated on the actual time spent on the consultation.

The Commission does not convene plenary sessions, but acts through small working groups for each individual EIA or SEA. The legal framework stipulates that the Commission has the privilege to compose its own working groups of experts, since it is recognized that this privilege is a prerequisite for her independence. Once a working group is formed, its composition is communicated to the competent authority who is allowed to question the composition in case of good reason to doubt the impartiality of one or more experts relative to the activity or the decision for which the EIA is executed. If there appears to be a solid case for objection, the Commission usually takes action and replaces the challenged expert. The same working group of the EIA advises on the guidelines for the EIA in the scoping phase as well as reviews the EIA.

Each working group is chaired by the chairman or by one of the deputy-chairmen. The chairman of a working group must see to it that the experts focus their attention on the essential environmental issues of the project concerned. A technical secretary is assigned to each working group. This person is responsible for the management aspects as well as the development and preparation of drafts of the advices. The chairman and the technical secretary observe the deadlines and see to it that the advice is submitted within the legal time-frame.

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