

views

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The shale gas debate and the role of the NCEA

SEA and EIA for climate-
robust development

Strengthening EIA
capacity in Burundi

Mission statement

The Netherlands Commission for Environmental Assessment (NCEA) is an independent advisory body of experts which advises the government in the Netherlands and governments abroad on the quality of environmental assessment and makes its extensive knowledge of environmental assessment available to all.

About the NCEA

The NCEA was established as an independent advisory body of experts by decree in 1987. The NCEA advises governments on the quality of environmental information in environmental assessment reports (EIA or SEA reports). These reports are not written by the NCEA: they are usually written by consultancy bureaus, for private initiators, local or provincial authorities and central government. The NCEA does not get involved in decision-making or political considerations. The NCEA's activities abroad are usually commissioned by the Ministry of Foreign Affairs. In line with their programme, attention is paid not only to environmental impacts but also to social and economic impacts, for example the living standards of local residents.

The three most important qualities of the NCEA are:

- independence
- expertise
- transparency

The NCEA's status as an independent foundation, ensures that its assessments are achieved independently from government accountability and political considerations.

As well as issuing advisory reviews, the NCEA works on capacity development of systems and institutions to improve the environmental assessment practice. It also focuses on sharing and disseminating knowledge on environmental assessment.



Foreword

This is the eighth compilation of the NCEA's practice experience in environmental impact assessment (EIA) and strategic environmental assessment (SEA) and my first one as the new chairman. I am proud to become part of this tradition since 1994 to regularly translate our lessons learnt to a wider audience. The nine papers in this volume cover both EIA and SEA, in the Netherlands and abroad, describe cases in multiple sectors and focus on both our advisory work and our capacity development activities.

Five cases illustrate the role EIA and SEA play in the Netherlands in achieving sustainable development. How they contribute to dealing with controversy over shale gas, the dilemmas in airport development or in finding ways to compensate negative impacts of new industrial development. SEA can be tailor made to match local contexts, as the wind energy case shows, or to contribute to the government's ambition to create a new, more market oriented spatial planning.

Outside the Netherlands our work consists of both independent advice and capacity development. Three papers in this compilation highlight some of the success factors we have encountered in building capacity for EIA. For example, the importance to base capacity development on adult learning theory and learning-by-doing. Other examples are the need to integrate solid finance mechanisms into EIA systems and to strengthen the capacity of NGOs to play their role in EIA, as we did in central Africa. Relevant in both our national and international work are the lessons we have learnt as to how best use impact assessment to deal with climate issues.

As chairman of the NCEA it is my vision that our key role is to contribute to the integrity, credibility and quality of democratic decision-making. I hope the practice examples gathered in this publication will give you some insight in how we try to play this role. Clearly a lot still has to be learnt in this respect, which is why I am already looking forward to the new Views and Experiences three years from now.

Kees Linse

Chairman
Netherlands Commission for
Environmental Assessment



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The shale gas debate in the Netherlands and the role of the independent Netherlands Commission for Environmental Assessment

Marijke Bremmer

In 2011 shale gas appeared to have got a foot in the door in the Netherlands. Without attracting much attention, companies acquired licences to start explorations. Two years later however, there was great controversy. Political parties, NGOs and local communities were totally opposed to shale gas exploration. This article gives an overview of the debate and describes the added value of the NCEA as an independent commission in this controversial topic.

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Climate-robust development and the use of EIA and SEA

Arend Kolhoff and Bart Barten

The Netherlands is very vulnerable to climate change, as about 25% of its surface and half the population are below sea level. Due to its history of living with water, the country developed a high adaptive capacity and gained experience in climate robust or adaptive management. This article presents lessons the NCEA has learnt by using EIA and SEA to support decision-making on adaptive management in the Netherlands and abroad.

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Adequate funding of EIA agencies: a precondition for effective environmental management

Reinoud Post

More than 20 years of experience with EIA capacity development has taught the NCEA that a prerequisite for effective EIA is adequate funding of EIA agencies. That is why the NCEA has produced a manual on the financing of EIA. It helps agencies and government authorities to map their current situation, build funding mechanisms and guarantee high-quality EIA services. This article provides an overview of the publication.

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SEA and EIA in airport planning and development

Johan Lembrechts

The Dutch air traffic and airport network is busy and growing steadily. This growth can compete with targets in other economic sectors and may be hampered by socio-environmental concerns. How do Dutch authorities manage these impacts while at the same time managing growth, and what is the role of environmental assessment? This article deals with addressing environmental effects of airports in decision-making at a strategic level.



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A collective nature compensation approach: the seaport “Eemshaven”

Roel Meeuwssen

In 2005 several large-scale developments were proposed for the harbour Eemshaven, including an LNG-terminal, power stations and widening and deepening of the harbour. The parties proposing these activities simultaneously carried out their EIAs. The NCEA requested special attention to cumulative impacts and synergy in research. The proponents then jointly developed a nature compensation plan, which turned out to be an effective approach.

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SEA is flexible: three examples of SEA for wind energy on Dutch land

Sjoerd Harkema

Can SEA adapt to the administrative and political context while at the same time presenting environmental concerns properly? This article shows it can, based on cases from three Dutch provinces. In each of these provinces, tailor-made SEA approaches fitting into provincial spatial planning strategies were effectively used for wind energy projects.

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Learning by doing: strengthening the capacity for EIA in Burundi

Gwen van Boven

Many training or capacity-building programmes are based on the provision of theory and technical information, followed by application in practice. Adult learning theory is based on the opposite: learning comes with experience and experimentation, which increases effectiveness of the programme. The NCEA applied this approach in its multi-year EIA programme with Burundi’s Ministry for the Environment. This article describes the approach and how it worked in practice.



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The PAANEEAC programme: bringing EIA professionals together

Sibout Nooteboom, Gwen van Boven and Reinoud Post

National EIA systems include many actors: EIA agencies, project proponents, sectoral authorities, NGOs and many others. Their views and actions determine to a large extent whether EIA systems can successfully be strengthened. The PAANEEAC programme assisted national associations of EIA professionals in Central Africa to bring these actors together, become platforms for exchange, and to jointly improve the system. This article describes some of the success factors of the programme.

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Flexibility in spatial plans requires modified environmental assessment

Marja van Eck and Corrie Smit

With a new Environment and Planning Act coming into force in the Netherlands in the coming years, spatial plans will be more flexible. They will give more leeway to accommodate an as yet unpredictable future. This new way of planning, involving flexible plans and more uncertainties, poses a challenge for environmental assessment. This article shows how environmental assessment can be applied to support decision-making in this new planning context.



The shale gas debate in the Netherlands and the role of the independent Netherlands Commission for Environmental Assessment

Marijke Bremmer

In 2011 shale gas appeared to have got a foot in the door in the Netherlands. Without attracting much attention, a few companies acquired licences to start exploring for shale oil and gas. Two years later, however, there was great controversy. Political parties, NGOs and local communities were totally opposed to shale gas exploration. At the moment, shale gas exploration is still being considered. Based on advice by the NCEA, an SEA is being carried out for the shale gas structure vision, in order to investigate the desirability of shale gas in the energy mix and the suitability and availability of locations. This article gives a short overview of the Dutch shale gas debate, events in the past years, and the added value of the NCEA, especially in its role of independent commission in this controversial topic.

“Shale gas was becoming a political problem due to negative press publications on adverse effects in America.”

Licences for exploration of shale gas

According to geological surveys, a shale layer extends under about half of the Netherlands at a depth of about 3 kilometres. It is thought that this layer might have the right characteristics for shale oil or gas. In 2009 concessions were granted for shale gas exploration at four different locations in the provinces of Brabant and Flevoland. One company wanted to start a test drilling in the city of Boxtel. Test drillings require a licence from the Ministry of Economic Affairs (which includes energy), but an EIA procedure is not required. Apart from the licence to drill, the municipal government has to issue a licence for the use of her land. These licences were granted, but shortly afterwards, opposition to shale gas began to be voiced.

Moratorium on shale gas

Shale gas was becoming a political problem due to negative press publications on adverse effects (safety and environmental) in America. Approximately half of the political parties in the Netherlands were opposed to it. Several provincial and municipal governments declared themselves “shale gas free”. Large and small NGOs adopted it as their main issue and entire branches of industry (for example the beer and soft drinks industry) were opposed. In mid-2011 the Minister of Economic Affairs decided to postpone all test drillings.

Investigation of “safety”

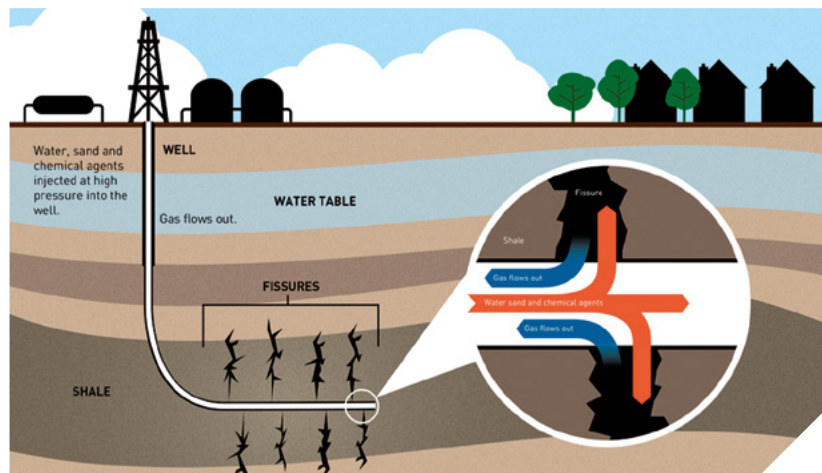
The Minister decided to start a large-scale investigation, with the main question: can shale gas exploration be carried out safely for nature, environment and people? The investigation was carried out by a consortium of engineering and consultancy companies in the form of a desk study and was based on experience abroad. A steering group composed of a mix of proponents and opponents would define the questions that had to be answered and would act as a guidance group.

Shale gas potential in the Netherlands



A diverse mix of opponents of shale gas

Rumours about soil and water pollution resulting from shale gas operations in the United States alarmed people. The film “Wasteland” articulated their fear. An important issue was hydraulic fracturing - “fracking” - the technique that fractures the shale layer and thus liberates the gas, by injecting a mix of water, silica and chemicals under high pressure. Civilians and drinking water companies in the Netherlands were afraid that underground reserves of drinking water might be contaminated. Furthermore, residents near future test drilling



locations were afraid that the operation would be unsafe in general. And last but not least, several NGOs and left-wing

political parties had concerns that the exploitation of shale gas would hamper the transition towards renewable energy.

Even before the first results were published, the consortium was compromised. Although the consortium consisted of established, well-known, large companies, the general public did not believe they could be objective, because the companies involved had done advisory work for oil and gas companies. Even the presence of the guidance group failed to reassure the general public about the objectivity of the study.

At this point the Minister decided to call in the Netherlands Commission for Environmental Assessment (the NCEA). Normally, the NCEA is formally involved later in the process of licensing specific oil and gas projects, and at this stage of decision-making its involvement is not mandatory. But the task at hand fitted like a glove: the NCEA was asked to judge if the study was sound and thus if its findings offered a good basis for decision-making. Most important for the Minister, however, was the fact that the NCEA is known to be an independent authority on environmental issues and as such acknowledged by NGOs and local, provincial and national authorities. Thus, if the NCEA considers the information to be correct, its assessment will probably be accepted by the general public. The debate can then shift to political issues instead of the validity of the information.

Findings of the NCEA on the scope of the study

It took a long time for the first results of the study to be made public. In the meantime, the debate in the

press and social media was continuing and not in favour of shale gas. The NCEA requested to see the draft results of the study, to better understand how the study was being approached. The documents detailing the scope of the study were made available to the NCEA. Unfortunately this did not reassure the NCEA that the study was contributing to the goal of facilitating the public debate. The study was very technical and only partly addressed the concerns felt by the general public. Important information needed for decision-making on shale gas, especially to strike a right balance between conflicting interests, appeared to be lacking. The NCEA decided to present its interim findings, in which it advised on two main points regarding the scope of the study in relation the public debate:

1. Do not forget the above-ground impact of shale gas exploration and exploitation;
2. Do not forget to discuss the need for shale gas: its position in the “energy mix” and the balance between environmental impacts and benefits.

The results of the study

The study was finally made public. A lot of basic information on the subsurface risks was made available. The NCEA endorsed the general conclusion that shale gas operations can be performed without exceptional risks, as long as the operators use state of the art techniques and operate within the legal constraints applying in the Netherlands.

However, as the NCEA had feared in its interim findings, the scope of the study was considered too narrow (see box) and the opponents were not placated.

In its final advice the NCEA stressed the following point: on the basis of this information it is not possible to declare shale gas exploration “safe” and merely continue permitting specific projects. The NCEA advised the Minister to take an intermediate step. It advised preparing a “structure vision” with a strategic environmental assessment (SEA) to investigate and discuss thoroughly whether shale gas is useful and desirable in the Netherlands and, if so, where exploration and exploitation can be done safely and under which conditions. The Minister was convinced and accepted the advice.

SEA for structure vision

In September 2014, the NCEA issued its advice on the Terms of Reference for the SEA*. It focused on the questions of desirability and siting. To decide on whether shale gas exploration is desirable, attention needs to be paid to issues such as the balance between economic and environmental aspects at regional, national and – where relevant – international level. To decide on the locations, the SEA report needs to provide, among other things, a well-argued set of criteria which will lead to the exclusion of areas (e.g. nature conservation areas and urban areas).

The research for the policy document and the SEA report is currently in progress. Preliminary results are expected in the summer of 2015. Thereafter the NCEA will review the SEA report and advise on the quality of its content.

“Most important for the Minister was the fact that the NCEA is known to be an independent authority on environmental issues and as such acknowledged by NGOs and local, provincial and national authorities.”

* www.commissiener.nl/english/advice/projectexamples

The NCEA’s findings on the scope of the safety investigation study

Quality of environment at the surface

The study concentrated on the impacts on the subsurface, such as earthquakes and pollution of groundwater. These are important issues, but to be able to balance the interests of economics, environment, heritage, and nature, other information is also essential. The NCEA advised that the quality of the environment and living conditions in towns and villages and other impacts on the surface should be part of the study.

Spatial planning

As the shale layer extends under about half of the Netherlands it is important to reflect on where exploitation can be permitted. Anywhere? Or should there be restrictions for residential areas and protected areas (nature reserves and drinking water catchment areas)?

Usefulness and necessity of shale gas

The study was very technical. The general public are not only solely concerned about technical issues, but also about the position that shale gas and fossil energy in general should have in the Netherlands. In order to assuage these concerns, and to secure the support of the general public, the NCEA advised that the usefulness and necessity of shale gas should be investigated.

Marijke Bremmer
Technical Secretary, NCEA
mbremmer@eia.nl



Climate-robust development and the use of EIA and SEA

Lessons learnt from the Netherlands and abroad

Arend Kolhoff and Bart Barten

The Netherlands is very vulnerable to climate change, as currently about 25% of its land surface lies below sea level and is home to half of its population. As a result of its long history of having to cope with various threats from water, the adaptive capacity of the Netherlands is considered to be very high. The country therefore has vast experience in what we define as climate-robust or adaptive management. In this article we present the lessons the NCEA has learnt from using EIA and SEA to support decision-making for climate-robust or climate-adaptive management for projects and plans at home and abroad. This article does not cover climate mitigation strategies.

Three steps for integrating climate change in environmental assessment

Environmental assessment (EA) offers good opportunities to map out the uncertain effects of climate change. It enables an integral comparison between climate change objectives and other sector-specific objectives. This integral comparison reveals on the one hand the impact of climate change strategies on sectors such as nature, biodiversity, landscape and cultural heritage. On the other hand, it shows how achieving sector- and area-specific objectives can contribute to climate change goals. To ensure that climate change adaptation is considered in environmental assessments, the NCEA recommends to use a stepwise approach. Each of the three steps is explained below and illustrated with examples from the Netherlands and elsewhere.

Step 1 - Assessing climate change risks

The first step is to assess the vulnerability of the project or plan area to the effects of climate change in the short and long term, and the related risks the area faces. Climate change scenarios in combination with other scenarios (for example, relating to socio-economic development) provide the information required for a vulnerability assessment. After this assessment, the probability of the proposed plan or project changing the vulnerability is analysed and the likely extent of any changes is estimated.

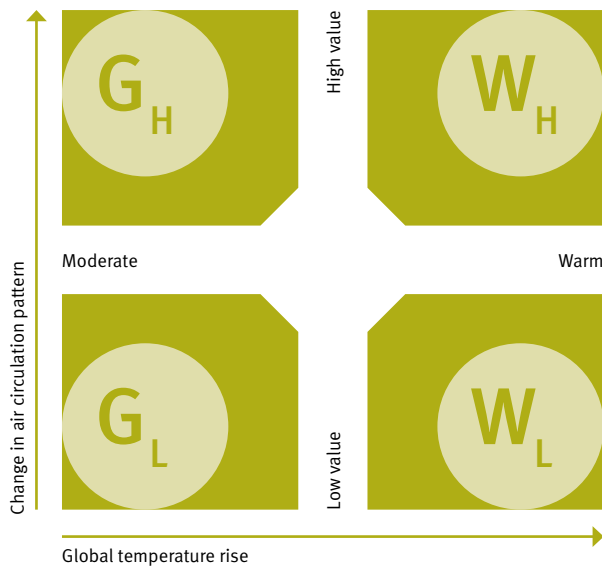
Using scenarios

In its advice, the NCEA generally recommends to describe the vulnerability of a project or plan by means of at least two climate change scenarios: the moderate scenario and the most extreme scenario. The first scenario will give insight into the climate effects that are most likely to occur in the near future. The latter will give insight into the need to reserve areas for future eventualities: for example, for extra-large dikes, for water storage, or for extra drainage capacity. These scenarios provide planners and decision-makers with more understanding of the flexibility needed to deal with the uncertain effects of climate change. In addition, the NCEA advocates a broad assessment including other environmental issues such as biodiversity, air quality etcetera. Researchers and planners should take into account that the effects of climate change can affect a large area, and that these effects will occur over a long time period (50-100 years) and might impact on a variety of sectors.

“Scenarios help planners and decision-makers to deal with the uncertain effects of climate change.”

Climate change effects: water versus drought

The focus in climate change assessment is generally on water-related risks and measures to prevent or mitigate them. Other effects (such as drought and heat stress) receive less attention, even though they are equally important. For example the Dutch water-related research institute Deltares has estimated that the cumulative damage from drought and heat stress in the Netherlands between 2013 and 2030 will exceed the damage from flooding resulting from heavy downpours and rising water levels: 42 billion euros versus 29 billion euros.



KNMI'14 climate scenarios

The Royal Netherlands Meteorological Institute (KNMI) has developed different scenarios for climate change in the Netherlands. They are based on the anticipated global temperature rise and a change from the current westerly air circulation pattern towards an easterly circulation pattern.

For some countries, climate change scenarios are not yet available, or the scenarios produced by different climate models do not point in the same direction and therefore the expected climate change is very uncertain. Moreover, socio-economic development scenarios are often not available, yet socio-economic development such as urban development in areas that are more vulnerable to flooding can increase vulnerability to climate change. The upshot is that decision-makers are confronted with great uncertainty. In such situations, the NCEA recommends following an adaptive approach, starting with no-regret measures. Environmental assessment can support decision-makers in coping with the uncertainties through the development of alternatives that vary from small steps to achieve minimal climate robustness to measures required for maximum climate robustness.

Example of step 1: Adjarala dam in Benin and Togo

In a review of the EIA report for the Adjarala multipurpose dam to be built on the border between Benin and Togo, the NCEA noted that the effects of climate change had not been considered. The NCEA pointed out that if decreased water availability due to climate change had been taken into consideration, the estimated economic feasibility of the dam might have been different. As a result, the decision on whether to approve the dam has been postponed and the effects of climate change are being studied.

Example of step 1: City harbours in Rotterdam

The climate risks for the City harbours area in Rotterdam were assessed by separate groups including experts in climate change, water, landscape architecture and spatial planning. This resulted in a shortlist of most relevant effects and adaptation strategies:

- to adapt to rising sealevels: raising the ground level;
- to maintain air quality during heat waves: green roofs;
- to deal with extreme rain: watersquares that combine public spaces with temporary water storage;
- to adapt to extreme heat: smart facades (envelopes that collect heat during summer and use stored heat for warming the building during winter).



Example of step 1: Land use planning in Kenya

An SEA supporting the development of a land use plan in the Tana Delta in Kenya proposed distinguishing different zones for nature conservation, livestock grazing, fishing, irrigated agriculture and subsistence arable agriculture. The SEA showed that the coastal zone is most vulnerable to salt water intrusion for two reasons: sea level rise due to climate change and a reduction in the discharge of the Tana River in response to more water being extracted further upstream. In the SEA it was therefore concluded that the coastal zone could best be reserved for nature conservation and the development of tourism, as these functions are most suitable for an area that is likely to become more saline in the future.



“The core of environmental assessment is to develop alternatives, including measures that reduce the effects of climate change or improve the adaptive capacity of stakeholders.”

Step 2 - Policy compliance

The second step is to assess the compliance of the proposed project or plan with the objectives of the existing government policy plans for climate change. This step, combined with a vulnerability assessment (step 1), provides policy- or decision-makers with insight into the urgency of acting to make plans or projects more climate-robust. Ideally, the national climate change policy plan has been translated into sector plans with measurable objectives for climate change adaptation. If there are no national or sector policy plans for climate change, or these are at an early stage of development or lack measurable objectives, the compliance assessment has to rely on expert judgment or consultations with local experts representing the different sectors involved.

The box on ‘Living with water’ illustrates that in the absence of a climate change policy, an SEA can be used to support the development of a climate change adaptation strategy. All relevant sectors were involved in the preparation of the SEA for the “living with water” strategy in Bolivia, and expert judgment was used to achieve agreement on objectives.

Example of step 2: Living with Water in Bolivia

The Beni lowlands in Bolivia are characterised by seasonal floods. It is expected that as a result of climate change, these floods may intensify and last longer in the wet season and that during the dry season droughts will be more severe. This, coupled with increased human activities, makes it likely that crop yields, livestock production and domestic water supply will be affected. An adaptation strategy has been developed through the programme Vivir con el Agua (Living with water), which is based on the point of view that the changes involving water cannot be stopped and that the only realistic option is to learn to live with them. In its advice on Terms of Reference for an SEA, the NCEA advised:

- to develop and implement a state-of-the-art early warning system for the Río Mamoré catchment, based on hydrological modelling;
- to update and improve the Regional Spatial Plan for the central part of the Mamoré river basin, based on hydrological conditions, flooding and other environmental risks, hazards and vulnerabilities;
- to draft municipal flooding risk reduction plans in three municipalities: Santa Ana de Yacuma, San Ignacio de Moxos and Loreto;
- to validate the ancient hydro-agricultural structures of the Moxos culture under various hydrological conditions;
- to inventory and study the functional aquatic ecosystems and identify potential Ramsar sites.

Example of step 2: The Dutch Water Act and Delta Programme

The Netherlands developed the Delta Programme* to protect areas that are vulnerable to flooding from the sea and rivers. An SEA report for the programme was completed in 2014. The Dutch Water Act coming into force in 2009 identified the maximum probability of dikes and sand dunes failing in the areas near the major rivers and along the Dutch coast. A survey of the quality of coastal defences revealed eight weak spots in these defences, in locations where a combination of extremely high tide and extremely severe storm could cause the hinterland to be inundated. It was found that the sand dunes and dikes did not meet the standards stipulated in the Water Act.

Several protection projects have been started to make the weak spots more climate-robust and compliant with the abovementioned standards. For details, see the box on Callantsoog, Pettemer and Hondsbossche Zeewering.

* A description of the Delta Programme in English can be found here: www.deltacommissaris.nl/english/delta-programme

Another example of a measure to make weak spots on the Dutch coast more climate-robust is the Sand Motor, an innovative method for coastal protection. Read more about it in the NCEA's article on the Sand Motor, available via www.eia.nl.





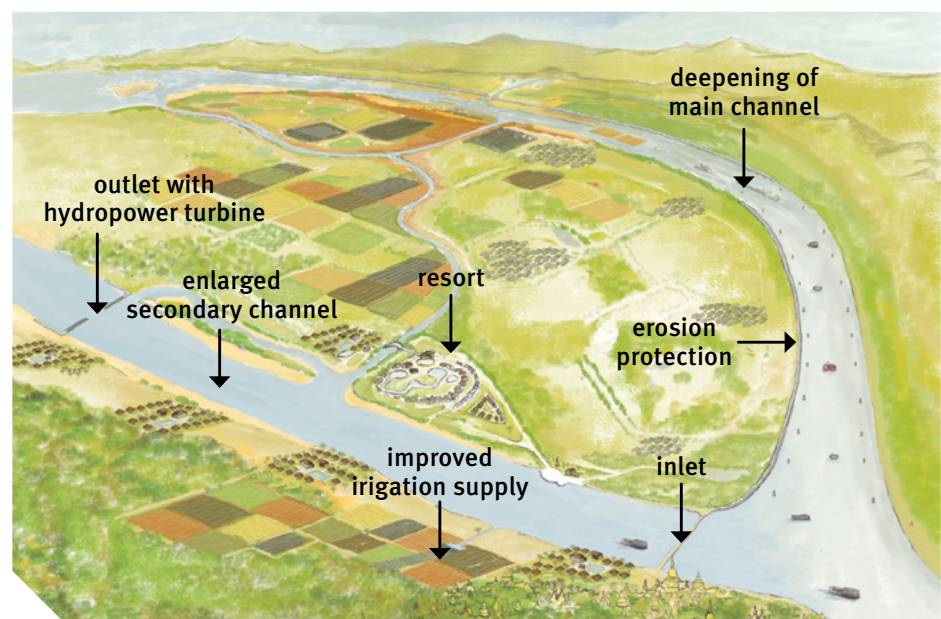
Step 3 - Climate-robust alternative measures

The third step is what we would consider the core of the environmental assessment process: it is to develop alternatives, including measures that reduce the effects of climate change or improve the adaptive capacity of stakeholders in the project area. To this end, the Netherlands has explored the “building with nature” concept. This concept focuses on innovative measures to improve the resilience of a flood-prone area - such as controlled flooding or growing salt-tolerant crops - where it is too costly to limit the actual risk of flooding. Of course, the Netherlands is not the only country that has learned to live with water. In many other delta areas, such as those in Vietnam and Bangladesh, people are used to living with water and often have adjusted their way of life: for example, by living in stilt houses or growing floating rice varieties.

Example of step 3: Bagan river in Myanmar

In a multipurpose river development project in Bagan, Myanmar, the development of a tourist resort was planned on a site that is expected to be flooded annually (a natural island in the middle of the Irrawaddy river that is presently solely inhabited by farmers). The project proponent therefore proposed designing a facility with robust concrete foundations to ensure that the resort will not be inundated or washed away. This design is unlikely to fit in the landscape opposite the old city of Bagan that has been nominated for UNESCO world heritage status. In its advice on Terms of Reference for an EIA the NCEA suggested that the possibility of developing a tourist facility that anticipates the annual flooding be assessed by developing different alternatives that also fit better in the landscape. Examples of such alternatives are a floating tourist facility that could be removed during the flooding season (which is also the tourist low season), or a facility on stilts above the water. Another possibility might be developing community-based tourism that offers tourists accommodation in the local stilt houses that can cope with flooding. All these alternatives are examples of the building with nature concept.

Basic functions of Bagan River Development Project



Example of step 3: Callantsoog, Pettemer and Hondsbossche Zeewering

The EIA reports investigated alternatives for all the weak spots on the coast of the province of North Holland.

The most important were:

1. a higher target height for the dikes and sand dunes;
2. seaward sand replenishment;
3. wave-resistant dikes;
4. taller dikes and sand dunes, with a reinforced base.

The impact of the alternatives was evaluated, using the following criteria:

Environmental impact	Impact on security	Chances for development
Spatial impact (especially on buildings)	Reduced risk of flooding	Additional biodiversity
Nuisance during construction	Flexibility	Recreation and tourism
Carbon footprint	Spatial impact after 100 years	New opportunities for economic development
Landscape	Spatial impact after 200 years	
Archaeology and cultural heritage		
Biodiversity		

The EIA reports revealed that the most flexible alternative was seaward sand replenishment, which offered a no-regret measure to improve security against rising sea level. This alternative had a minimal impact on the existing environmental values. Moreover, it also created opportunities for the development of additional biodiversity and recreation, which were considered to be important contributions to local communities.

In conclusion

The NCEA considers environmental assessment to be an important tool for climate-robust development in the Netherlands and abroad. Based on our experiences, we are exploring the options to incorporate the described three-step approach in environmental assessment, to help ensure the integration of climate change issues in decision-making. We would recommend the following:

- Start with a vulnerability assessment of the project or plan area of possible climate change effects in the short and long term. Include social and economic aspects as well.
- Assess the compliance of the proposed project or plan with available climate change policies. This provides insight in the consistency of the proposed plan or project with the objectives for climate change for a respective sector or area. In the absence of measurable climate change objectives, make use of expert judgment.
- Develop a continuum of alternatives that are climate-robust to a greater or lesser degree and include alternatives that can be considered to be no-regret measures.

By following the above steps, environmental assessment can support decision-makers in coping with the uncertainties related to climate change effects. Uncertainties which include effects in the short and long term, effects on the project/plan area but also on other (nearby) areas, effects on the sector involved but also unintended effects on other sectors.

Arend Kolhoff
Technical Secretary, NCEA
akolhoff@eia.nl

Bart Barten
Technical Secretary, NCEA
bbarten@eia.nl



SEA and EIA in airport planning and development

Johan Lembrechts



The Dutch air traffic and airport network is busy and growing steadily, mainly at the country's main airport Schiphol and, to a lesser extent, the airports of Rotterdam-The Hague and Eindhoven. The growth potential of air traffic in the Netherlands depends, among other things, on the layout of the airport infrastructure and on its connectedness to economic centres. Air traffic growth may compete with targets in other economic sectors, such as housing programmes or the construction of wind farms. It may also be hampered by socio-environmental concerns, such as aircraft noise nuisance or depreciation of property. Enlarging airport capacity will depend on the management of these impacts. How do the Dutch authorities manage these impacts while at the same time managing growth, and what role does environmental assessment play in the national debate on the development of air traffic and airports? This paper argues that addressing environmental effects of airports in strategic level decision-making has advantages over addressing them on a case-by-case basis.

Management of growth: national versus regional level

In the Netherlands, the national government is responsible for assessing the country's accessibility via air traffic (national and international) and for setting limits for environmental, spatial and social impacts. It is also responsible for the zoning and licensing of military airports and large civil airports. The provinces are responsible for the heliports and small airfields for light aircraft.¹ As the environmental burdens, such as noise and air pollution, mainly affect people living in the vicinity of larger airports, this article focuses on the national government's approach and duties in general and specifically its approach concerning two of these larger airports: Eindhoven and Lelystad.

At the national level the government aims at a better separation of civil from military aviation, of Schiphol-bound traffic from traffic to other national airports, and of commercial from general aviation. The aim is to achieve safer and shorter air routes, an increased capacity and lower CO₂ emissions. Keywords in the government's outlook on airport development are optimisation of the network quality, the development of a competitive system and safe operations.²

¹ The Netherlands has 11 military and 6 large national commercial airports, 100 offshore and 70 onshore heliports, 7 small commercial airports and 75 airfields for light aircraft.

² The outlook has been presented in two policy documents, one focusing on airport development (*Luchtvaartnota: concurrerende en duurzame luchtvaart voor een sterke economie*. The Ministry of Transport, Public Works and Water Management and the Ministry of Housing, Spatial Planning and the Environment. April 2009) and one on the national and European airspace or air route structure (*National airspace vision*. The Ministry of Infrastructure and the Environment and the Ministry of Defence. December 2012).



“Though overall of good quality, the EIA did not fully address the concerns of the people living near the airport.”

At the regional level the government aims to achieve a balance between the advantages and disadvantages. To do so, it uses a case-by-case approach to adjust airport and regional developments to the magnitude of environmental impacts and to develop measures to reduce these impacts.

Between 2012 and 2014 the NCEA advised on the Terms of Reference and reviews of the environmental impact assessment (EIA) reports for expansion of Eindhoven and Lelystad airports.

The case-by-case approach: Eindhoven and Lelystad

The government has decided that there should be no further increase in the number of people experiencing aircraft noise nuisance from Schiphol. This is to be achieved by redistributing take-offs and landings over runways, modifying flight procedures and accommodating part of the growth of Schiphol in the airports of Lelystad and Eindhoven. These airports are surrounded by fewer and smaller residential areas than is the case for Schiphol. The consequences of the additional flights to both airports, a total of 70,000, were studied in the EIAs .

Eindhoven airport

Eindhoven airport is a military airport which accommodates some commercial flights: in 2013 the number of civil aircraft taking off and landing was about 25,000. A major source of contention was the estimated number of people subjected to annoyance from aircraft noise, so in its advisory reports for the EIA the NCEA emphasised the need for reliable prognoses. It also recommended using the same data as a guide when deciding on new developments in the vicinity of the airport.

Lelystad airport

Lelystad airport has a runway of 1250 metres and is mainly used by light aircraft and helicopters. In 2013 there were about 90,000 take-offs and landings of light aircraft and 20,000 take-offs and landings of helicopters. Handling commercial flights would require extension of the runway and construction of a terminal and car park. The EIA for Lelystad airport identified potential conflicts with a variety of regional interests, such as housing programmes, nature conservation and sites for wind farms. In addition, it discussed potential safety problems arising from interference with flight paths of Schiphol airport. Though overall of good quality, the EIA did not fully address the concerns of the people living near the airport. In general they could agree with the description of the negative impacts (the local distribution of environmental burdens) but they seriously contested the basis for the advantages. They questioned aspects such as the estimates of growth, the commercial feasibility and the readiness of carriers to leave Schiphol for Lelystad (and thus the demand for a new commercial airport).

Similarities

Both projects had in common the fact that much preparatory work such as the above-mentioned redistribution of flights and selection of flight paths had been finished and decided upon before the formal EIA procedure started. As a result, these aspects were not publicly assessed and discussed. In both cases the public also complained about gaps in the evaluation programme and in its planning. In its advisory reports, the NCEA therefore stressed the importance of transparency in the overall process and recommended checking whether environmental impacts played a part in the prior decisions and, if so, how.

Public opposition

The prolonged opposition of the general public (see text box) to expansion of these airports and others is primarily driven by marked changes in airport use. For Lelystad, for example, the change is the introduction of commercial carriers; for Eindhoven, one of the contentious changes is the introduction of night flights. Another important driving force is distrust of government interventions, fostered by:

- the perception that when there is a conflict of interest, priority seems to be given to air traffic growth;
- the perception that only part of the decision-making procedure is open to public debate and is covered by the EIA procedure;
- the uncertainty about the characteristics and limits of growth;
- the absence of a strategic assessment at national level of the pros and cons of growth, which would lead to clear-cut preconditions for growth.

The question arising from the last bullet point is whether a strategic environmental assessment (SEA) could have made a difference. An SEA would at least have provided evidence to support the choices made earlier by the government and would have exposed them for public debate and influence.

Prolonged decision-making procedures

The decision-making on airport developments entails prolonged judicial procedures whose complexity is proportionate to the airport's size and growth rate and its range of influence.

Some examples:

- In June 1987 the first EIA on the extension of the runway of Groningen-Eelde Airport was published. It took until 2013 and several new or updated EIAs before the project was completed.
- For Lelystad Airport the discussion on extension of the runway started in 2002. Currently, decision-making is in the final stage and the operator envisages the first commercial flights with large aircraft will be in 2018.
- Eindhoven Airport is used for both military and civil air traffic. In 2003 it was decided to determine separate limits to both activities in terms of use and impacts. In 2014 the decision-making process on Eindhoven Airport was completed.
- In 2003 the Ministry of Defence decided to close down Twente Airport. National and local authorities then tried to transform it into a civil airport, but in 2014 they eventually abandoned their efforts.

In all cases the skilful actions of NGOs or people living nearby put a spoke in the wheel of these projects, causing them to be delayed or abandoned. Often, the delays were related to flaws in the decision-making process.



Scheduled air traffic above the Netherlands at 4:00 PM on December 17th 2014

“Without an overall picture it is impossible to properly balance growth and impacts or to underpin the efficacy of countermeasures.”

SEA for air traffic growth: a lost opportunity?

What are the overall environmental consequences of various growth scenarios? Can impacts be mitigated and, if so, at what cost? Which conflicts of interest can be expected? Where and why? And how should these conflicts affect air traffic distribution and the volume of growth? Preparing an SEA for air traffic growth in the Netherlands would have provided an opportunity to methodically present the alternatives and impacts of envisaged developments, as well as possible countermeasures and their effectiveness and feasibility. Does the fact that there was no SEA mean that none of these aspects have been addressed or taken into account in the build-up to the EIAs for the individual airports? The answer is no. In its outlook on airport development the government touches upon several aspects, but there has never been either a systematic analysis or a review of these. A few examples illustrate the potential contribution of an SEA on this strategic level.

Overall picture of growth and its impacts

An important starting point for the management of the national demand for aviation is an overall picture of 1) the actual demand and impacts, 2) possible growth patterns, 3) the expansion of the environmental impacts of airports brought about by these patterns and 4) key factors and uncertainties in these estimates. Currently, this picture is flawed. Without such an overall picture it is impossible to properly balance growth and impacts or to underpin the efficacy of countermeasures.

Realistic gains resulting from innovation and technology

The government relies heavily on innovative technology (economical, clean and quiet planes) and optimisation of flight procedures (flight paths and approach procedures) to limit the environmental burdens caused by airports. Its outlook on airport development⁵ presents trends in the noise production or fuel consumption of planes as “opportunities”, but does not work out scenarios (and conditions) for their introduction. One important factor here is the rate at which airlines replace old aircraft by new. Another is the measures taken by airports to exclude noisy aircraft, such as a land tax based on noise production. An analysis of various scenarios would provide insight into the realistic and maximal gains that can be expected from new technologies. It should also reveal whether or not the progressive implementation of these developments might outstrip aviation growth.

Overall consequences of optimising flight procedures

It is known that the strict prescription of flight paths for departure and landing and instructions on the use of the engines and flaps during landing affect the spread and level of annoyance. The outlook on airport development again draws attention to these opportunities, without estimating their likely potential benefits or describing the conditions for their introduction. One such condition is the absence of possible interference between planes taking off and landing from neighbouring airports. In fact, the further growth of the airports of Schiphol, Lelystad and Rotterdam-The Hague will increase the risk of such interference. For Rotterdam-The Hague it will increase the need to deviate from prescribed flight paths and for Lelystad it will mean prescribing suboptimal flight

paths. Again, the absence of any realistic estimate of the efficacy of these measures implies that the optimism in the government's outlook should be questioned.

Environmental impacts of redistribution of flights

The environmental impacts of transferring 70,000 take-offs and landings from Schiphol to other airports were studied by Decisio.³ One of their findings was that transferring to Eindhoven and especially to Lelystad would reduce the number of people annoyed by aircraft noise. The government's outlook on airport development refers to this study, to underpin its aims for Schiphol, Lelystad and Eindhoven. Reference is made to this study when presenting the decision to transfer flights from Schiphol to Lelystad and Eindhoven. However, neither the outlook nor the study by Decisio discuss the important consequences (environmental and otherwise) of such a transfer. An example: the growth of scheduled commercial aviation at Eindhoven and Lelystad airports will replace the currently unscheduled traffic of small aircraft, the so-called "general" aviation. An important part of this traffic will disappear or move to other airports.

In conclusion

It is worth repeating that this overview does not imply that national impacts of air traffic growth have not been addressed at all. But most studies have had a limited scope, such as the characteristics of general aviation or the process of innovation. In some cases, the studies are known only to insiders. The outlook on airport development presents major choices and general conditions for the growth of air traffic. An integrated review of the impacts of all developments presented in the outlook would have made it possible to evaluate the feasibility of the government's ambition to create a lasting system, might support the justification of the government's choices and could have simplified the discussions on the relationship between individual airports and the people who are their neighbours. Finally, the outlook on airport development sets the framework for projects listed in the Annexes of Directive 92/43/EEC, as it establishes the goals and ambitions for the construction of extensions to airports or airfields. Consequently it may be considered a plan or programme as defined in SEA Directive 2001/42/EC, which implies that an SEA was actually mandatory.

“An integrated review of the impacts of all developments presented in the outlook would have made it possible to evaluate the feasibility of the government's ambition.”

³ Decisio BV. Follow up on Aldersadvies: Onderzoek naar de kosteneffectiviteit van verschillende spreidingsalternatieven. Amsterdam, January 2009.

Johan Lembrechts
Technical Secretary, NCEA
jlembrechts@eia.nl



Adequate funding of EIA agencies: a precondition for effective environmental management

Reinoud Post

Over 20 years of experience with environmental impact assessment (EIA) capacity development have taught us at the NCEA that one of the prerequisites for effective EIA is adequate funding of EIA agencies. In practice, budgetary limitations seriously hamper the quality of review and licensing. The NCEA investigated how it could help countries to build adequate funding mechanisms into their EIA systems, to enable governments to guarantee the delivery of high-quality EIA services. Based on experience supplemented with research done in the last two years, the NCEA has produced a manual on the financing of EIA, to help EIA agencies and government authorities map their current situation. It also outlines a process they can take to make any necessary improvements. This article provides a short overview of the publication.

The problem: no funding – no effective EIA

As part of our capacity development programmes we have carried out systematic analyses of EIA systems in about 25 countries. This analysis, known as ‘EIA mapping’ (see pages 50 and 51), focuses on all aspects of an EIA system, both what is stipulated in its regulatory framework and how it is applied in practice. The EIA mapping results for the 25 countries showed that in terms of funding of the EIA system, only around 30 % of them mobilized sufficient funds for EIA-related government tasks, such as quality assurance of EIAs and licence enforcement.

As a result of these budgetary limitations, government agencies entrusted with quality review of EIA reports are proving to be incapable of mobilising the expertise and institutional capacity needed to distinguish between good and less good EIAs and to formulate and enforce good licence conditions. In particular, the EIA mapping results revealed that licence enforcement often receives the least attention in the EIA process.

The lack of stringent review and enforcement results in project proponents investing less in EIA and in implementation of licence conditions. They see EIA and licensing as mere administrative hurdles on the way to project approval. But in many countries, at least in most of the 25 that were analysed, EIA and environmental licensing are the only instruments available for managing the negative impacts of investment projects. So, ultimately, the underfunding of government EIA agencies undermines the effectiveness of these instruments, with the result that the environmental and social interests they are intended to safeguard lack such protection in real life.

The manual: improve funding – improve effectiveness of EIA

Having identified this problem, the NCEA started to work on the funding of government tasks. This was made one of the focal points in its 6-year (2007-2013) capacity development programme in Central Africa supporting the strengthening of EIA systems in 5 Central African Countries: Burundi, Cameroon, Central African Republic, Congo Brazzaville and Rwanda (see also the article on PAANEEAC, page 48). The programme provided input for developing knowledge on funding government tasks in environmental management based on EIA. The NCEA analysed the funding situation of EIA agencies in each of the 5 countries in detail. The resulting information in combination with more research and examples from other countries forms the basis for the manual *Financing EIA*. The manual provides a detailed inventory of tasks to

“Only around 30 % of the countries investigated, mobilized sufficient funds for EIA-related government tasks, such as quality assurance of EIAs and licence enforcement.”

“Underfunding of EIA agencies undermines the effectiveness of EIA and environmental licensing.”

be performed as part of the EIA and licensing procedures, presents analyses of the options for delegating tasks to other actors in the procedure (preferably the project proponent), and gives guidelines on how to manage a process to structurally improve the funding base of government agencies responsible for EIA and licence enforcement.

In addition, the analysis of the current funding situation of the 5 Central African countries and detailed advice on how to improve the funding base of these agencies have been compiled into a second publication, an interactive pdf in French: *Les mécanismes de financement de l'action publique en matière d'études d'impact environmental*.

Get started – is change needed?

Interested governments can check whether the funding status of their agencies responsible for EIA, licensing and licence enforcement allows them to function properly. This is easily done by asking the agencies about the funds made available to them (for relevant questions, see the box below). If the agencies' answers indicate that their funding base is insufficient for the tasks to be carried out well and needs to be improved, the *Financing EIA* manual provides guidance on how to do so, using the following 7-step approach.

Questions to be asked on EIA system funding

Soundness of EIA system funding (in the legal framework):

- does the legal framework provide for structural funding?
- are the provisions adequate for funding of staff and for the functioning of the agency?
- are provisions adequate for hiring external experts?

Availability of means:

- is structural funding readily available?
- are sufficient funds available for staff and for the functioning of the agency?
- are sufficient funds available for hiring external experts?

Example: Citizen involvement in inspections in Estonia

In certain countries, government agencies may enter into agreements with local citizen groups or individuals to procure their assistance in carrying out inspection efforts.* Under Estonia's Nature Protection Act (1990), the Minister of the Environment and the 17 local district environmental protection departments, which serve as the local administrative units, have responsibility for protecting the environment. According to the Act, environmental monitoring data must be made available for any interested party. Private citizens may not ordinarily take actions individually, but may make complaints to the competent authority. However, citizens can be deputised as “public inspectors” to monitor compliance with certain environmental laws, regulations, and permits. These citizens, however, are barred from receiving payments for their services.

Source: *Financing EIA*, page 46

* INECE, Supra note 27, at 62; Status of Public Participation Practices in Environmental Decision-making in Central and Eastern Europe, Estonia, Maret Merisaar, 138 (September 1995).

A 7-step approach for improving funding mechanisms

1. The first step in this approach is to make a detailed list of all the tasks that need to be executed in the EIA procedure and during licensing, monitoring and enforcement.
2. The second step is to assign each of the tasks to one of the actors in the EIA and licensing procedure and to set minimum requirements for quality of task performance.
3. The next step is to gather statistical data on the average annual number of EIAs and licensing procedures undertaken in the country and the probable future trend in these figures.
4. The fourth step is to collect data on the average cost of executing each of the tasks identified in step 1 and assigned to government agencies in step 2. It will probably take a long time to collect reliable data on average costs. To get round this, it could be decided to use estimates and to refine these over time, on the basis of bookkeeping data from the agencies concerned.
5. Step five consists of calculating necessary budgets for each task and a total budget for each of the government agencies concerned (see the table below for an example). This can be done on the basis of the assignment of the tasks (step 2) and assessment of the costs (step 4), after applying the options to reduce costs. In this regard, the manual addresses elimination of inefficiency, priority setting, delegation of certain tasks - or parts thereof - to the proponent and applying methods to achieve self-enforcement of environmental licences.

All components of costs for review, including administrative overhead

The following chart illustrates one approach to estimating costs of review and administrative overhead. A proportion of the running costs will have to be allocated to reviewing, to be able to complete a review cost estimate.

Running costs administration of EIA	
Task or function	Basis for estimation of costs
Professional staff- EIA unit	Number of professional staff, the average cost of wages and benefits
Information technology costs	Computers, website, EIA database, and phone

EIA review	
Task or function	Basis for estimation of costs
Initial site visits	Daily allowance, cost per kilometre of vehicle travel (fuel, depreciation, driver)
External experts	Number of consultants per day (and for major projects, certified financial analysts per day) and daily fee
Personnel	Various governmental staff - per hour costs
Costs of technical meetings	Per diem transportation costs, use of meeting facilities, coffee and refreshments, pre-meeting mailings, photocopies, use of video projection equipment, and other miscellaneous expenses

Source: *Financing EIA*, page 52

Factors and criteria influencing policy decisions on funding

Factors that condition policy decisions on funding may be:

- the existing legal and policy framework;
- the nature of the EIA system;
- the prevailing governmental coordination mechanisms;
- the community profile regulated by the EIA legislation.

Applicable principles for cost recovery may be:

- the polluter pays principle (PPP) ;
- the user pays principle (UPP);
- the beneficiary pays principle (BPP);
- the precautionary principle (PP);
- the principle of prevention of conflict of interest.

Mechanisms for raising funds include:

- general taxation;
- special taxation;
- user taxes and special levies;
- penalties and sanctions.

Criteria for the choices to be made include:

- the adequacy, stability and flexibility of the funding source;
- the administrative costs of keeping the source flowing;
- the transparency and accountability of the mechanism;
- the political and social acceptability of the mechanism.

Example: Polluter pays principle in the environmental law of South Africa

South Africa's National Environment Management Act (NEMA - 1998) calls for implementation of the polluter pays principle in two sections. Chapter 1, Section 2 (4)(p) incorporates the polluter pays principle into national environmental law, providing that "the costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment."

Chapter 7, Section 28 (8)(a) further provides for authorities to recover costs incurred from "any person who is or was responsible for, or who directly or indirectly contributed to the pollution or degradation or the potential pollution or degradation."

Source: Financing EIA, page 9





6. The necessary level of funding now being known, the next step is to take policy decisions. The decisions need to be taken firstly on the applicable principles for cost recovery, such as the polluter pays principle (PPP) or the user pays principle (UPP), etc. Secondly, decisions need to be taken on the mechanisms for raising the necessary funds (such as general taxation or penalties and sanctions) and on making them available. When making the decisions, the authorities need to pay attention to the criteria that might influence the choices: for example the political and social acceptability of the mechanism or the financial autonomy that the mechanism allows to the agencies executing the EIA-related tasks. See also the box on 'Factors and criteria influencing policy decisions on funding'.
7. The last and seventh step is to formalise the decisions taken in a legal and regulatory framework.

It is important to note that the steps need not be made consecutively: e.g. the collection of data on the costs of government services in EIA can start at any point in the process of revising the funding base.

For more information on the above steps, please refer to the manual. In about 70 pages it provides detailed guidance, background material and examples on each of the above steps. The NCEA hopes that this manual, which makes available the knowledge necessary to improve the funding base for EIA, will help improve the effectiveness of EIA.

The manual 'Financing EIA' is available via www.eia.nl.

Reinoud Post
Technical Secretary, NCEA
rpost@eia.nl



A collective nature compensation approach: the seaport ‘Eemshaven’

Roel Meeuwsen



In 2005 several large-scale developments were proposed for the seaport Eemshaven in the north of the Netherlands: an LNG terminal, power stations and economic activities related to offshore industry. The harbour and its navigable channel had to be widened and deepened in order to make this further growth possible. The parties proposing these activities carried out their environmental assessments separately and simultaneously. The NCEA advised on the scope of the environmental impact assessment reports. As a result of this involvement, the NCEA was able to request that special attention be paid to the cumulative impacts and to synergy in research and compensation. The proponents of the schemes then jointly drew up a nature compensation plan in order to compensate for the negative cumulative impacts in the area. This approach was highly effective and was implemented to the satisfaction of the government, the project proponents and the NCEA. This article describes the approach on cumulative effects and other issues dealt with in the environmental impact assessment reports.

Eemshaven and the Wadden Sea national marine park

Eemshaven is located in the north of the Netherlands, in the province of Groningen. It is the largest harbour in the north of the country. The province decided to create this North Sea port in the Eems estuary in 1968. In the first instance, the harbour was used for the transshipment of goods. Since 2000 there has been a big increase in the transshipment, and Eemshaven's role in the energy supply of the Netherlands has also become more important. The harbour and its grounds are administered by Groningen Seaports. Eemshaven lies on the Wadden Sea, an area that is part of the mudflat coast and the North Sea. The Eemshaven harbour area consists of a central channel, the Doekegatkanaal, and four basins: the Beatrixhaven, Julianahaven, Emmahaven and Wilhelminahaven. The Wadden Sea is an important habitat for birds, common seals and grey seals. Its shallow, relatively warm waters and rich bottom fauna provide ideal conditions for large numbers of plants and animals. About 250 plant species are endemic to the Wadden Sea. Here, seals come to breed, fish to spawn and birds come to forage on worms and shellfish in preparation for their annual migration. Its role as a nursery and staging post means that the Wadden Sea is more than of local ecological value. Most of the Dutch Wadden Sea is protected nature reserve and has UNESCO biosphere reserve status.

“In its recommendations, the NCEA explicitly took account of the interrelationships of the various activities.”

Developments in Eemshaven

For a long time, developments in Eemshaven were below expectations and the number of companies operating there remained limited. But in 2005, energy companies showed interest and this resulted in a large number of initiatives, the most important being plans for a multi-fuel power station by energy company NUON, an LNG terminal and a coal-fired power plant by energy company RWE. To enable these to be achieved, the harbour would have to be modified and the navigable channel to the North Sea widened and deepened, to provide access to the harbour for LNG tankers and coal carriers.

The development of these plans and the widening and deepening of the harbour meant that various decision-making procedures had to be followed, including an environmental impact assessment. Thus the energy companies and Groningen Seaports supported their requests for permits with an environmental impact assessment (EIA), including the associated mandatory studies on the impacts on nature according to the EU Habitat Directive. Groningen province (the competent authority) requested the NCEA to advise within the framework of these procedures.

The NCEA's recommendations

The NCEA gave recommendations on the Terms of Reference (ToRs) and it also reviewed the EIA reports on the quality of the information. The ToRs and draft EIA reports of the parties mentioned above, were each reviewed separately by the NCEA. However, in its recommendations, the NCEA explicitly took account of the interrelationships of the various activities: for example, in relation to the composition of the various committees and working groups, whenever possible the NCEA drew on the same advisers and chairpersons and the same body of knowledge (see box below).

The role of the NCEA in the Eemshaven projects

This article is based on knowledge and insights acquired while advising on four projects in Eemshaven between 2006 and 2009. The references to content relate to the findings and conclusions included by the NCEA in its advisory reports. At the start of the projects the NCEA advised on the design and content of the EIA reports. When the reports were completed, the NCEA reviewed them. The NCEA played no further formal role in the completion, finalisation and implementation of the Eemshaven compensation plan.

Terms of Reference for the environmental assessment

The main points in the NCEA's advisory report were that the environmental assessments should do the following:

- visualise the nature values in the plan area and the study area in both the construction phase and in the implementation phase;
- include the impacts on German nature reserves;
- describe the interrelatedness of the impacts of the various activities occurring in Eemshaven and the study area.

The NCEA also recommended discussing developments that could have negative impacts on the environment and investigating measures to prevent them.

These included measures concerning:

- nuisance during construction work;
- the location of the cooling water intake and discharge;
- measures to limit emissions or purify air;
- the delivery and processing of raw materials;
- limiting light and noise nuisance;
- the processing of dredging sludge.

EIA reports

After carrying out the research on above mentioned subjects, the project proponents compiled them in their individual draft EIA reports and sent them to the NCEA for review. The main negative impacts described in all EIA reports during the construction phase were associated with pile-driving and dredging. The main negative impacts during the implementation phase related in particular to cooling water, disturbance from noise, light and movements in the area, turbidity of water, and water and air pollution.

Cumulative impacts

The studies did indeed show that during construction and operationalisation all the projects together (cumulation) could also cause negative impacts on nature. *Similar* impacts, such as air pollution, can be mutually reinforcing, but *different* environmental impacts also appear to have a cumulative impact on certain animal species and nature reserves. The combined impacts of turbidity, underwater noise *and* disturbance from light and shipping can have a negative impact on marine fauna, particularly mammals.

Impact of cooling water

The intake and discharge of cooling water results in negative impacts in the Wadden area. Fish are sucked in during cooling water intake and 70-90% do not survive. This impacts considerably on the fish fauna and hence indirectly on the food chain as well. In addition, discharges of cooling water warm up the water, which impacts negatively on the seaweed beds and would result in some migratory fish avoiding the area.

Impacts of air pollution

The power stations and also the dredging vessels used for enlarging and maintaining the navigable channel cause air pollution, which has negative impacts – for example, on the Wadden islands, dune areas and saltmarshes. These areas are already overburdened, with the result that the quality of their habitats is declining. The extra air pollution would result in further deterioration, which is undesirable.

“Groningen Seaports took the initiative to draw up a collective nature compensation plan for the various developments.”

Initiative for a collective compensation plan

Groningen Seaports took the initiative to draw up a collective compensation plan for the various developments. The plan comprised measures to compensate for the negative impacts caused collectively. Beforehand, the NCEA had advised that the compensation should be sought not only in the area around Eemshaven but also to investigate whether the key ecological factors elsewhere within the Wadden Sea area could be improved. The plan was intended to sustainably improve the quality of damaged habitat types and species, such as birds, fish and marine mammals.

Review of the draft compensation plan

In the environmental impact assessment of the “deepening and extending of Eemshaven” by Groningen Seaports, the draft compensation plan was submitted to the NCEA for review. The plan included a temporary nature reserve of 28 hectares and a permanent nature reserve of 50 hectares in the Emmapolder, an agricultural area west of Eemshaven abutting onto the Wadden Sea, earmarked to be transformed into a nature reserve.

Compensation measures for (breeding) birds, marine mammals and fish

The NCEA observed that the conversion into a nature reserve offered prospects for compensating for the negative impacts on breeding birds. It recommended that the layout and management of the area be focused on the marine habitat types and species particularly experiencing the negative impacts.

The NCEA noted that the plan also contained effective measures to tackle the negative impacts on the food chain for marine mammals, fish and birds, particularly the optimisation of saltmarsh management and the restrictions to shrimp fishing in the Wadden Sea. This form of fishing is unfavourable for marine mammals, fish and birds because it disturbs the peace and stirs up the sea bed, as a result of which less food becomes available in the food chain. Restricting shrimp fishing could compensate for some of the negative impacts of the developments in the Eemshaven Seaport. Furthermore, research suggested that these measures would bring the greatest gains to wildlife.

Timeline for the most important developments in Eemshaven mentioned in this article

- 2006: start of the environmental assessment and ToR for advisory reports for the LNG terminal, power stations (NUON and RWE) and deepening of the harbour;
- 2007: review of the EIA + additional information from LNG, NUON and RWE;
- 2008: review of the EIA report + additional information on the harbour (including draft compensation plan);
- 2009: compensation plan submitted to the NCEA;
- 2010: compensation plan completed and set down in plans;
- 2010: decision not to build the LNG terminal;
- 2011: start of implementation of the compensation plan.



Elaboration of the compensation plan

The compensation plan has been implemented successfully. It regulates the compensation for the damage to the Wadden Sea, thereby making possible the planned activities such as the deepening of the harbour. A new nature reserve of 50 hectares has been created, where birds can rest and forage undisturbed. To compensate for the negative impacts on fish and marine mammals, the shrimp fishers have been bought out, thus allowing fish and marine mammals to develop better in this area. The compensation plan has also been incorporated in the Emmapolder land use plan of Eemsmond local authority. The energy companies initiating the power stations, together with Groningen Seaports, are part of a foundation which owns the new nature reserve and has been set up to manage Eemshaven nature compensation.

Monitoring the impacts of the compensation plan

Finally, the parties concerned drew up a plan for monitoring the development of the compensation area. Cameras and observers keep an eye on the development of the fauna and flora. In addition, a feedback group has been set up, comprising representatives from the local authority, water board and the agricultural sector in the area. It also monitors the nature development and advises the foundation which, as already mentioned, manages the nature reserve in the Emmapolder.

In conclusion

Construction of the Eemshaven developments started in 2011 and the agreements relating to nature development have now been fully implemented. The approach followed is a good example for projects in which compensation for nature is necessary in order to compensate for the negative impacts of large-scale developments. The umbrella approach in which individual and cumulative impacts of different initiating parties are addressed appears to be particularly valuable.

“A new nature reserve of 50 hectares has been created, where birds can rest and forage undisturbed.”

See www.becausenatureisdeartous.nl for more information and results of the monitoring studies.

Roel Meeuwsen
Technical Secretary, NCEA
rmeeuwsen@eia.nl





Learning by doing: strengthening the capacity for EIA in Burundi

Gwen van Boven

Many training or capacity building programmes are based on the provision of theory and technical information, with application in practice coming afterwards. Adult learning theory is based on the opposite: learning starts from experience and with experimentation. Adults bring with them the experience amassed during their lifetime that is related or unrelated to the programme's theme, and this influences the way they filter, analyse and apply new information. Ignoring their experience may have an impact on the effectiveness of the activity or programme: the participants may not appreciate the information in the way intended by the person providing it. With this in mind, when Burundi's Ministry for the Environment asked for help in preparing it for its new EIA duties, the NCEA proposed a multi-year, adjustable *learning-by-doing* approach. This article describes this approach and how it worked in practice.

* In November 2014, this directorate was renamed Directorate for the Environment and Climate Change (with the French acronym DECC).

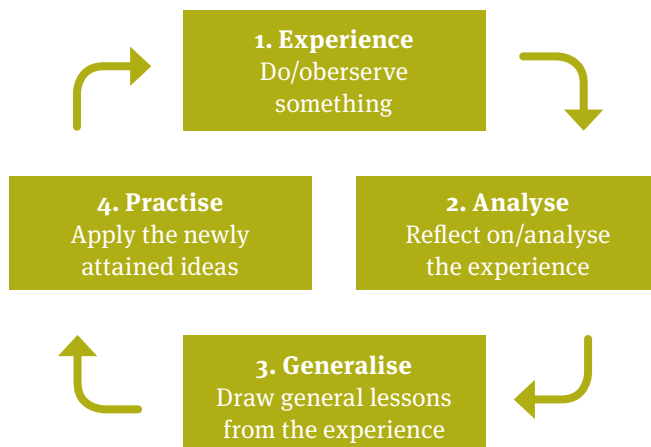
“Under the new regulation, the number of EIA reports to be reviewed would increase every year, adding to the team’s numerous existing duties.”

A young system

Burundi adopted an environmental impact assessment (EIA) regulation relatively recently, in October 2010. While waiting for it to come into force, Burundi’s Ministry for Environment realised that they – specifically the Directorate for the Environment (DECC*) – did not have the capacity to fulfil their mandate to administer the new regulation. The regulation laid responsibility for the technical review of the quality of EIA reports for all public and private projects and for monitoring on a small and young team, none of whom had been specifically trained in EIA. Some staff had been reviewing EIA reports on an ad-hoc basis, but without any coherence or consistency in approach or output. No working tools or methods had yet been developed. Under the new regulation, the number of EIA reports to be reviewed would increase every year, adding to the team’s numerous existing duties. Where - and how - to start?

Agreement for cooperation

The NCEA not only saw a need to build capacity at the DECC and with other actors in the EIA system but also believed that the draft EIA regulation was flawed at several levels. However, after many years, having finally reached the point of having the draft legislation ready to be signed by the president of the republic, the Ministry saw no scope for changes. The NCEA nevertheless agreed to assist, on the assumption that with increasing experience of using the regulation, its flaws would become more apparent, so that the discussion on its improvement would remain on the agenda. From the outset, both partners recognised that the capacity to absorb new knowledge and practices at the DECC was limited: a small team with high workload, and with a small financial basis for EIA. The NCEA does not provide funds for activities, it only makes available in-kind technical expertise and guidance. The partner organisation is responsible for financing the activities to be carried out. The Ministry, however, did not have a budget earmarked for EIA, which means that their budget for joint activities with the NCEA (such as training sessions) was also limited. Despite those limitations, the Ministry showed commitment, and a three-year Memorandum of Cooperation was signed early 2011.



Adult learning cycle

The adult learning cycle consists of four steps, always starting with experience: observing existing experience or adding new. It can be repeated in smaller or larger cycles: during a single training session of one hour or in the entire capacity development programme.

How did the NCEA get to work in Burundi?

The NCEA got to know representatives of Burundi's Ministry for the Environment through the Central African EIA capacity development PAANEEAC programme (see page 58 in this publication). Together with them and the national association for EIA in Burundi, in 2006 a diagnostic analysis of the national EIA system had been carried out ('EIA Mapping') in preparation for that programme. A shared understanding of the basic capacity problems and the system itself therefore already existed, which is why the Ministry decided to ask the NCEA for long-term technical assistance in 2009. As soon as the EIA regulation had been formally adopted, the first three-year Memorandum of Cooperation was signed.

“An important effect is that ownership of working methods and approaches becomes strongly felt by the individual team members.”

How to build capacity?

Step by step and flexibly

With the above in mind, the approach to strengthening capacity has been stepwise, linked as much as possible to the day-to-day practice of DECC. The number of activities is kept at a maximum of three to four per year. Although objectives have been set for the programme and activities have been identified for its duration, detailed planning is done on a yearly basis, with flexibility to adjust the programme based on the evaluation of progress made and lessons learnt in the previous year. This works really well: each partner has requested changes in schedule during busy spells, and the other partner has accommodated this flexibly. But changes in focus have also been accommodated when other needs were found to be more urgent than anticipated.

Through learning-by-doing

Rather than organising more traditional training sessions from which the lessons learnt might be hard to integrate in everyday working practice, it was decided to organise joint exchange and learning sessions. Sometimes this simply means that an NCEA representative is seconded to the Ministry and is available to answer questions. At other points, more formal working sessions are organised, with a few DECC staff or the entire team. During these sessions, the NCEA provides content on an issue, facilitates exchange, analysis and experimentation, and ultimately guides the Ministry in deciding how to integrate that issue into the system. The actual learning approach differs per topic but is always based on adult learning theory, which starts from the theoretical baggage and practical experience brought along by each adult when starting a new learning process, as demonstrated in the figure on the opposing page. This way, step by step, skills are developed, approaches are synchronised among DECC team members, and quality in work becomes more consistent across the directorate. An important effect is that ownership of working methods and approaches becomes strongly felt by the individual team members, as they themselves decide what they consider the best option for them, for the EIA system and for environmental management in Burundi.

Examples of how these principles are being applied in this programme are provided in the following paragraphs.





“One great advantage of a demand-driven way of working is that it allows for flexibility in planning.”

A demand-driven approach requires flexibility

One great advantage of the NCEA's demand-driven way of working is that it allows for the flexibility in planning that was mentioned above. An example is work on EIA screening. The Ministry initially considered screening to be a priority for the start of the programme: many projects in Burundi are not submitted to the EIA procedure, even though this is required under the EIA regulation. Once the EIA regulation came into force however, more pressing needs became apparent almost immediately: for example, for review. A lack of experience in review is one thing, but how can a review be conducted if there are no evaluation frameworks to guide review work? Scoping did not exist as a step in the EIA procedure, and therefore no Terms of Reference were produced that could serve as such an evaluation framework. These problems were predictable but were truly felt only after the EIA regulation was enforced and the Ministry was confronted with them. As soon as work on reviewing started, the absolute priority for DECC became improving review capacity and introducing scoping. The focus of the NCEA's support therefore shifted. How this was done is described in the next examples, while products that were jointly developed for scoping and review are listed in the box on the opposite page. Meanwhile,

Products of cooperation

During the first three-year programme (2011-2013), a range of products was developed jointly by the Ministry and the NCEA:

- A scoping procedure, which led to the publication of a Ministerial decision on Scoping;
- Standard Terms of Reference for ESIA;
- A format for the review report, including formulation of the review's conclusions;
- Internal Review protocol, stipulating the steps to be followed by DECC staff when carrying out a review;
- A draft EIA manual including all of the above, produced together with the ABEIE, the National association of EIA professionals in Burundi.

In addition, the NCEA produced several advisory reports, among others on:

- analysis of the legal framework for EIA;
- environmental norms and standards;
- manuals for EIA.

These can all be found (in French) on the NCEA's website, including an evaluation report of the first three-year programme.

however, work on screening has not been forgotten: currently, with the help of the NCEA, the screening procedure is being revised and the lists of categories of projects that need to undergo EIA are being updated.

Example: learning-by-doing approach for scoping

In the 2010 EIA regulation, scoping does not exist as a step in the EIA procedure in Burundi. Furthermore, the function of scoping was not well understood by the Ministry. A learning-by-doing approach was proposed by the NCEA, based on adult learning theory (see figure 1):

- Rather than just advising on how to introduce scoping, the NCEA first facilitated a training session on the concept and its function in relation to the rest of the EIA procedure. This was done starting from lessons learnt from a variety of scoping systems elsewhere, and by discussions on whether participants recognised these experiences (*Step 1: experience*).
- After this exchange of knowledge and experience, DECC staff themselves analysed what would work in Burundi and what would be desirable and feasible, based on experience with the national system (*Step 2: analyse*).
- With guidance from the NCEA, they then drew up an approach for scoping in Burundi (*Step 3: generalise*). The selected approach includes the Ministry providing standard Terms of Reference for an EIA report, which will then need to be adjusted by the project proponent on the basis of public participation, in order to make them project- and location-specific. DECC will then formally approve the ToR before the proponent can start to carry out the EIA. This approach was accepted by the Minister, who, instead of waiting for a revision of the regulation, signed and issued an interim Ministerial Decision on Scoping in January 2013.
- To assist implementation (*Step 4: practise*), the NCEA facilitated a series of technical sessions on the elaboration of these standard ToR, again on the basis of a joint analysis of pros and cons of ToR applied elsewhere.

“Today, DECC staff say they have become much more consistent in review practice and reporting.”

The legal framework: should it be revised?

Gradually, after a couple of years of experience with the EIA regulation, the Ministry's staff are beginning to appreciate its strengths and shortcomings. The step-by-step coaching and learning by doing helped with this: it led to more insight into the appropriateness of the current legal framework for EIA, and a better understanding of its flaws and how to deal with them. A manual was drafted in which the newly developed elements were included. A new EIA mapping workshop was held in 2013. All in all, the Ministry became convinced of the need to revise the legal framework in order to formalise all newly developed instruments and lessons learnt into a more efficient, lean and effective E-S-IA (including social!) system.

A new three-year Memorandum of Cooperation was signed in 2014, in order, among other things, to work on this revision. Considerations for the revision include:

- The revision of the legal framework for ESIA will be part of a larger revision of the entire environmental management system in Burundi, for which the Ministry hopes to secure sufficient financing to be able to engage a consultant.
- While waiting for this financing, the NCEA proposed guiding the Ministry staff during their reformulation of the new ESIA system. Technical and legal support will be made available.
- In part, this means working with the results produced under the first three-year programme. In addition, weak or missing elements, such as screening, public participation and transparency of the procedure are being developed through learning-by-doing approaches similar to those used for scoping and review (see main text).
- In addition, input from other ESIA professionals in Burundi has been invited through the participation of the ABEIE, Burundi's national association for EIA.

“Flexibility in planning does not mean being less result-oriented.”

By the end of the three-year programme, DECC staff were already starting to see an improvement in EIA reports, as these were now increasingly being based on the standard ToR. All DECC staff have indicated they use the new standard ToR as a verification tool for reviewing the quality of EIA reports, which makes their review work faster and easier. What is not yet being applied correctly is the step in which the project proponent adjusts the ToR to the project and submits them to DECC for approval. The project proponents need to be made aware of how to do this. This will be addressed in the near future.

Example: learning-by-doing approach for EIA review

To build capacity for review of EIA reports, DECC requested training for its staff. Instead, the NCEA proposed a learning-by-doing approach, again based on adult learning:

- First, carry out a joint assessment of existing EIA reports that have already been reviewed and approved, by re-examining them together (*Step 1: experience*). This improves understanding of the quality of review practice so far, including among DECC staff, and hence improves understanding of specific training needs.
- The sessions showed that much needed to be done at the level of an individual's skills, but first and foremost on working method and consistency (*Step 2: analyse*). Each member of staff reviewed in a different way, producing a different kind of report and using different sources as reference. Review was always done, even if the EIA report was of such bad quality that it did not merit reviewing.

- Lack of a proper archive or database led to the situation in which EIA reports of similar projects were hardly ever consulted. As a result, review conclusions differed, depending on who had done the review.
- Using these findings and facilitated by the NCEA, the participants then elaborated (*Step 3: generalise*) and tested (*Step 4: practise*) a standard review protocol, and a standard format for the review report, including a formulation for the review conclusion.

Today, DECC staff say they have become much more consistent in review practice and reporting. They abandon the review if basic requirements have not been met in the EIA report. They all say they use the standard reporting format. And increasingly, review is done by two staff members and by staff who have previously reviewed projects in that sector. This approach has had an important side-effect: team building, because in order to know what should be improved, everyone has to share weaknesses in review skills.



Lessons learnt: does learning-by-doing work?

The approach to capacity building based on flexibility and learning-by-doing seems to have worked very well so far in Burundi.

Flexibility in planning does not mean being less result-oriented. On the contrary, and interestingly, although the programme in Burundi changes almost every year, most of the activities identified are eventually carried out. Being able to adjust to the sometimes unpredictable ups and downs in DECC's day-to-day practice has ultimately allowed most activities to be carried out, albeit often at another stage in the programme.

Making use of existing experience within the team and elsewhere, jointly analysing this experience, and together working on new instruments, has enabled the sessions and solutions to be tailor-made and the results to be immediately implementable in DECC's day-to-day work. In the past, DECC usually engaged consultants to develop policy instruments or legal texts. Doing this work themselves, step by step, has been faster, cheaper and - most importantly - has fitted much better with Burundi's specific needs. Also, all staff fully understand the logic and reasoning behind the instruments, know how to apply them, and are strongly committed to their application.

A reorganisation of the executive capacity is underway, with the creation of an agency for environmental protection (Office Burundais pour la Protection de l'Environnement: OBPE). These changes represent opportunities but also risks in the sometimes unpredictable political context of a fragile country like Burundi. Yet the signals are positive. It seems that investing in gradual changes at the technical level is sustained and may eventually lead to more structural improvements. The reorganisation will undoubtedly bring new priorities for DECC – the flexibility in the collaboration will allow such adjusted demands to be incorporated into the programme.

“Doing this work step by step has been faster, cheaper and - most importantly - has fitted much better with Burundi's specific needs.”

Gwen van Boven
 Technical Secretary, NCEA
 gboven@eia.nl

SEA is flexible: three examples of SEA for wind energy on Dutch land

Sjoerd Harkema

Can SEA adapt to the administrative and political context while at the same time presenting environmental concerns properly? This article shows it can. Three tailor-made examples of provincial SEA for wind energy on land provide the proof.





Flexible SEA

Politicians, administrators and the strategic environmental assessment (SEA) community share a wish to apply SEA flexibly. An accepted principle in the SEA community is that an SEA is effective only when it is tailor-made. But also, whatever form the SEA takes, the assignment is the same for everyone: to provide sufficient environmental information to enable environmental interests to be properly considered in decision-making. Is SEA sufficiently flexible for this? The answer is yes. This article describes three provincial SEAs for wind energy, all prepared for the same purpose but each with a very different political and administrative context and hence with a different content. The quality of all three was evaluated by the NCEA, at the request of the provinces concerned.

SEA for wind on land in the provinces

The increase in generation of wind energy is below target in the Netherlands, due to a lack of support from local authorities and the general public as well as competition for the use of space. A national debate in 2013 resulted in the decision to agree on the number of wind turbines each province must allow for. The provinces have to prepare spatial plans for this.

It is interesting to see that the provinces differ in the approach they opt for in these plans and in the accompanying SEAs. In some provinces, the areas are designated in a top-down manner, whereas in others the provincial authorities work together with municipalities and market players. The different strategies are also expressed in the elaboration of the SEAs. In the following paragraphs, an overview is given of the tailor-made approach chosen by politicians in the provinces of North Holland, South Holland and Gelderland and the environmental information the SEAs provided in order for environmental interests to be fully taken into account in decision-making.

North Holland

After the provincial elections in 2012, the North Holland province decided not to allow new wind turbines to be sited in the region. It was permitted to replace old wind turbines by new ones, but only under stringent conditions. The ban was imposed because in the region it was felt that large new turbines do not fit into the landscape and because of the provincial decision to go for other forms of sustainable energy, even though the open landscape and wind supply make this a very suitable region for wind energy.

“It is interesting to see that the provinces differ in the approach they opt for in preparing plans and in the accompanying SEAs.”



Following the national debate in 2013 mentioned above, the province nonetheless decided to allow new wind farms in order to fill in national ambitions. The province has opted for very tight central control so that the landscape is protected, the restructuring of existing turbines (replacing old by new) takes off, and to prevent more wind turbines being erected than agreed with the national government. The political wish is to site the turbines as far away as possible from dwellings. These were the starting points that guided the SEA.

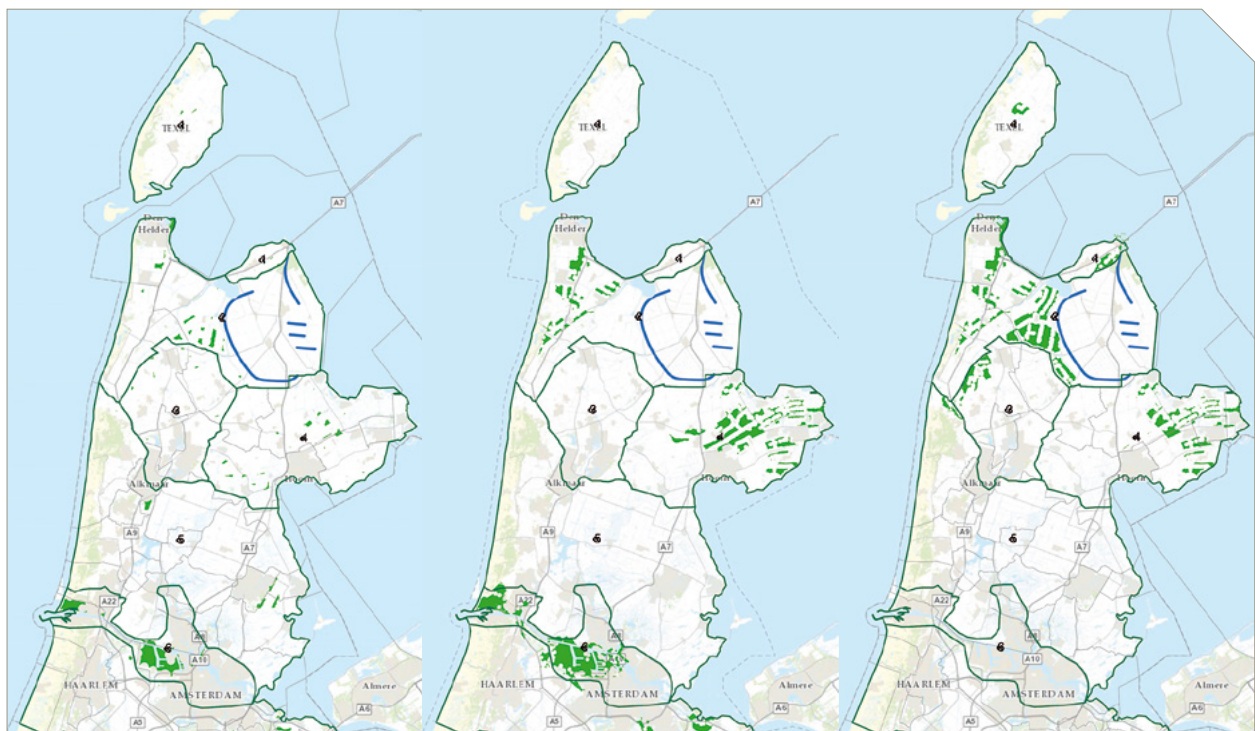
As a result, North Holland province opted for the following fixed stepwise plan in the SEA:

- Step 1: Areas that are valuable in terms of landscape and nature were discarded and account was taken of impediments (such as Schiphol international airport).

The North Holland case: Alternatives from step 2 of the SEA

The three options from left to right: living environment, landscape and maximal energy yield. Areas shaded green are the candidate areas for wind energy. The dark blue lines indicate the turbine arrays of Wieringermeer wind farm (a project started earlier under a national plan). In the living environment option it is striking that the candidate areas tend to be smaller areas scattered throughout the region. The landscape option leaves a large area in the centre of the region free: here there are old polders and the Stelling van Amsterdam (a historic 19th century defensive line around Amsterdam). As a result of reducing the permitted distance from dwellings, this option has many candidate areas in the harbour area of Amsterdam. Most of the candidate areas in the maximal energy yield option are in the north of the region, where wind supply is greater.

Source: AnteaGroep SEA report





- Step 2: Three alternatives were designed in the remaining areas (see maps on opposing page):
 - ‘Living environment’ option: the minimum distance from residential buildings is 600 metres (more than in the other alternatives).
 - ‘Landscape’ option: a design based on a preliminary landscape study. This option consists of a number of clusters of candidate areas. In this option, no wind farms are allowed in large parts of the region.
 - ‘Maximal energy yield’ option: this option comprises candidate areas in the windiest parts of the region and was designed with an eye to maximising the sustainable energy produced per wind farm.
- Step 3: The environmental impacts of the three alternatives were compared (e.g. number of dwellings affected by noise nuisance, number of bird casualties).
- Step 4: A preferred option was chosen, based on a combination of the areas from alternatives in step 2.

In the preferred option, North Holland allows plans from private bodies, but under conditions (e.g. the plan must contribute sufficiently to the desired restructuring of wind turbines) and, in order to remain in control, takes over the decision-making from the municipalities.

South Holland, Goeree-Overflakkee

In South Holland province there are various strategies for spatial planning. Therefore South Holland did not make a single plan for the entire province but instead made sub plans for some regions but not for others. Sometimes, policy is left to the municipalities, sometimes the province works together with municipalities and in other situation it overrules the municipalities so as to create space for wind energy from the top down.

One important location for wind energy in the province is the island of Goeree-Overflakkee. National government and the large energy companies had set their sights on this island as a location for wind farms. This caused disquiet among the islanders. After the national debate mentioned earlier, the province acquired the leeway to oversee the wind energy on the island. The open landscape and wind supply make this island very suitable for wind energy.

The province opted for a collaborative strategy on the island. The process began by the province, municipality and stakeholders uniting in the public-private Goeree-Overflakkee Wind Group Cooperative.

“Sometimes, policy is left to the municipalities, sometimes the province works together with municipalities and in other situation it overrules the municipalities so as to create space for wind energy from the top down.”

The collaborative strategy returns in the SEA. To fulfil the assignment to supply a large amount of energy responsibly, the cooperative found it important to have a single vision on siting. Thus the SEA is based on this. As in the case of the North Holland SEA, the plan is stepwise:

- Step 1: A vision on siting was developed. For this, six different landscape visions on siting were designed, which take into account the location of villages and nature reserves.
- Step 2: The visions on siting were assessed. Their main thrusts were assessed in terms of living environment, ecology, landscape and energy yield. The vision chosen was one in which the wind turbines are sited around the edges of the island.
- Step 3: The rules of play for the siting were established. The starting points included minimum distance from dwellings (this distance is larger than minimum statutory boundary values).
- Step 4: Areas the areas were delineated in accordance with the first two steps.
- Step 5: Alternatives were devised in accordance with the vision on siting and the rules of play.
- Step 6: Environmental impacts of the alternatives were compared (e.g. number of dwellings affected by noise nuisance, number of bird casualties).

No preferred option was determined in the SEA. Instead, it was determined later by the provincial and local administrations, on the basis of the information in the SEA. The market players had no say in this: the choice was made by the people's elected representatives.

Gelderland

In Gelderland, politicians follow a strategy of collaboration known as co-creation, which entails inviting citizens and businesses to participate. In addition to the agreements made with central government that were mentioned above, the province has its own longer-term objective to become not dependent on fossil fuels (energy neutral). This goes further than the national government's aim. Large areas in Gelderland, such as national park the Veluwe and the Rhine and Meuse are unsuitable for wind energy because of their strict designation for nature conservation. This explains why the map on the opposing page shows no locations for wind farms in these areas (the centre of the region and along the rivers).

To start the SEA process, Gelderland organised meetings throughout the province at which experts, businesses and citizens could suggest locations for wind energy and could enter into debate with experts on this topic. Municipalities were asked to choose candidate areas on the basis of this, for a feasibility study. This resulted in 30 areas being proposed, which formed the basis for the SEA and from which two alternatives were formed and presented in the SEA:

- Option 1 - scattered: 25 small locations (shown in red on the map);
- Option 2 - concentrated: 5 large locations (shown in purple on the map).

After comparing the environmental impacts of these alternatives in the SEA and consulting with the municipalities, a preferred option was determined, with many of the small locations from option 1. An important selection criterion was local support. Finally, an extra option was described in the SEA, in which the the region elaborated a number of large locations for wind energy, on the basis of option 2. These locations could be used in the event of the locations in the preferred option falling short. In addition, these large locations are intended to be a reserve for the longer-term objective of achieving energy neutrality for the entire province.

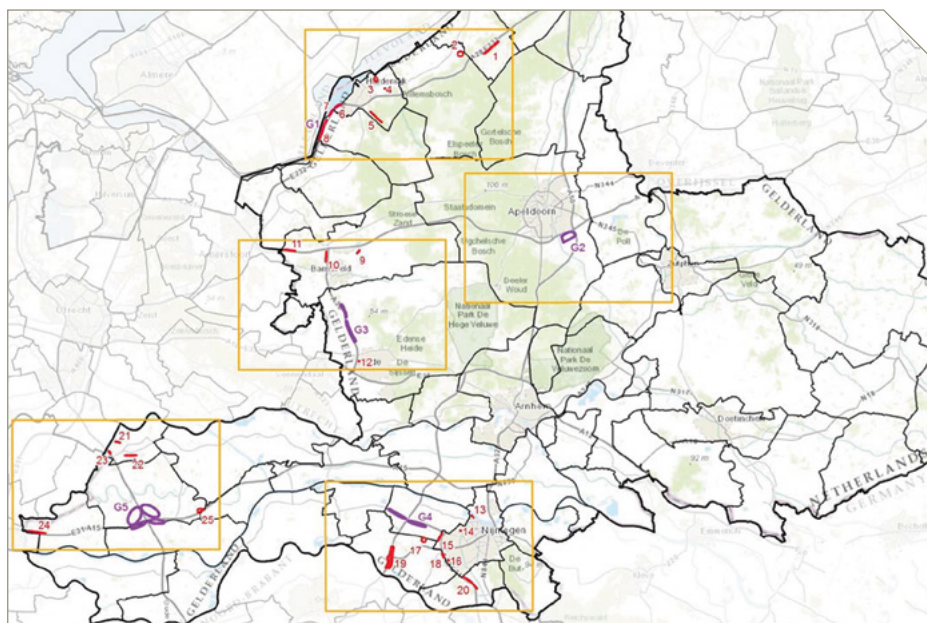
“To start the SEA process, Gelderland organised meetings throughout the province at which experts, businesses and citizens could suggest locations.”

Wind vision alternatives for Gelderland

Yellow boxes indicate the areas within which main wind energy alternatives are located.

Red markers indicate alternative 1: scattered, small locations.

Purple markers indicate alternative 2: concentrated, large locations.



Source: Gelderland SEA report

In conclusion

The examples show that although the provinces have totally different contexts, with the help of the SEA they have successfully delivered tailor-made information in order to be able to properly weigh up environmental interests for spatial planning and to come closer to achieving sustainable energy objectives.

This article has shown that administrative decisions to guide from above, to collaborate or to opt for local support strongly influence the content of an SEA. By taking this context into account, an SEA can be very effective. The proof of this is the fact that in all three cases the SEA process played an important role in the creation of the final spatial plan.

This article does not answer the question of whether this has resulted in the most environmentally-friendly decisions. That depends greatly on what is desired. The SEAs show that optimal interpretations for living environment, landscape *and* nature are not always compatible and that choices must be made. So, each of the three SEAs had a different funnelling process, in which the same environmental themes (such as living environment, nature, landscape and energy yield) played a role in one or more steps. What is clear is that an SEA can help in various ways to make the choices and their repercussions very obvious, as a result of which, if desired, these can be taken into consideration to a greater or lesser degree.

At the request of the provinces, the NCEA assessed whether the process was soundly based and whether the SEAs paid adequate attention to alternatives that were more environmentally friendly. The NCEA found that this was the case and also that the tailor-made SEAs offered sufficient environmental information to enable the environmental interests to be properly weighed up during decision-making.

Can SEA adapt to very different contexts while at the same time properly set out the environmental interests prior to decision-making? Yes! SEA is flexible. Use this flexibility.

“Administrative decisions to guide from above, to collaborate or to opt for local support strongly influence the content of an SEA.”

Sjoerd Harkema
Technical Secretary, NCEA
sharkema@eia.nl

The PAANEEAC programme: bringing EIA professionals together

Sibout Nootboom, Gwen van Boven, Reinoud Post

National EIA systems include many actors: EIA agencies, project proponents, sectoral authorities, environmental and social NGOs, consultants, academics, lawyers, politicians and even journalists. Their views and actions largely determine whether EIA systems are successfully strengthened. The PAANEEAC programme assisted national associations of EIA professionals in Central Africa to bring all these actors together, to become platforms for exchange, and to undertake joint action to improve the system. The programme was considered successful by the participants. They experience these platforms as beneficial and have continued to keep them in operation after the programme came to an end. This article describes some of the success factors and the importance of the EIA associations within an EIA system.

Why the PAANEEAC programme? The role of EIA in Central Africa

About ten years ago, environmental impact assessment (EIA) professionals from Cameroun, Congo, Burundi, Rwanda and the Central African Republic were of the opinion that their national EIA systems were performing insufficiently*. Their EIA systems originated from the requirements of international donors and investors to determine whether projects are environmentally and socially sound. However, the EIA professionals observed that EIA reports were not always produced and often did not offer sufficient analysis to verify compliance, and that there was often a lack of enforcement throughout the EIA process. The consequences of this weak governance became obvious to the general public after the project had been implemented, at which point it was often too late to prevent adverse impacts. The professionals also observed that investors in the region had to comply with different or “negotiable” national systems. Although some EIA systems had been in place for years, governments had not made sufficient effort to improve their functioning.

* Evolution of environmental impact assessment systems in Central Africa: The role of national professional organisations. Bitondo, D. R. Post and G.J. van Boven. Yaounde, Cameroon: SEEAC, 2014
Evolution des systèmes d'étude d'impact sur l'environnement en Afrique centrale : Rôle des associations nationales de professionnels. Bitondo, D. R. Post et G.J. van Boven. Yaounde, Cameroun: SEEAC, 2013



Many professionals saw EIA not only as instrumental to sound environmental project design but also as important for more general transparent and accountable public decision-making about economic developments. This emphasis on EIA may seem exaggerated to governance experts in developed countries, but it must be remembered that EIA may be the only public decision-making procedure in place in developing countries, that warrants the transparency and public accountability of the government and – indirectly – of the project proponents. EIA provides for formal public consultation, and it is international practice to publish EIAs and any project approval decisions based on them. Without a well-functioning EIA system, decisions about projects may not be publicly justified and often may not even be published. In such cases, the government cannot be held accountable for its decisions when issuing licences or when an inspectorate supervises compliance with conditions of the licence, because these conditions are unknown to the public. Against this background, EIA professionals saw a need for a major strengthening of EIA systems and for harmonising them across Central Africa.

“Without a well-functioning EIA system, decisions about projects may not be publicly justified and the government cannot be held accountable for its decisions.”

“EIA professionals observed that investors in the region were having to comply with different or “negotiable” national systems.”

Getting started: the formation of associations

Strengthening and harmonising EIA systems is easier said than done: a dialogue was needed to create momentum for concrete EIA system improvements. With this ambition in mind, around the year 2005, national associations of EIA professionals were formed or revitalised. The process was coordinated by a regional umbrella organisation known by the acronym SEEAC. The associations united professionals from different sectors and tiers of government with NGOs, consultants and universities. SEEAC and its member associations requested assistance from the NCEA in formulating a capacity development programme to help them achieve their ambitions. They needed international technical expertise about EIA systems, and they needed seed money to develop a momentum as member-based organisations. This programme, known by the acronym PAANEEAC, received 1.2 million euros funding from the Netherlands Ministry of Foreign Affairs from 2007 to 2013. The NCEA was requested to manage the small grants component and to provide technical assistance.

Platform for debate

PAANEEAC’s goal was that “associations of professionals contribute to EIA as a tool for good governance, poverty reduction and sustainable development”. Its approach had four main elements: 1) creating a platform for debate between professionals; 2) improving the legal and institutional framework; 3) improving the capacity of all actors in the EIA system; and 4) promoting the role of EIA in governance. The “platform for debate” element became key in achieving the other elements, and the NCEA’s role in coaching the associations to help them function as such was greatly appreciated. For example, the NCEA helped the associations and SEEAC to function as member-based organisations, to be attractive as a non-partisan (i.e. neutral) platform for exchange instead of a consultancy for whom improving the EIA system is

EIA mapping tool to analyse the strengths and weaknesses of an EIA system

The NCEA has developed a special interactive diagnostic tool to evaluate the performance of the EIA system in a country: EIA mapping. EIA mapping brings together EIA professionals for an interactive session, during which they are questioned about EIA legislation, the ability of organisations to put it into practice and the quality of implementation at project level. In this way, the strengths and weaknesses of the national EIA system become apparent. This interactive approach engenders a shared understanding of these strengths and weaknesses, as well as a shared sense of opportunity for specific EIA system improvements. In the PAANEEAC programme, the outcomes of the mappings have been used to differentiate the approach according to the local circumstances and needs in each country. This has been the basis for country-specific five-year strategies and action plans of each association. In each country a second EIA mapping was done at the end of the programme. The comparison of these two snapshots revealed clear progress over six years.

generally not the first priority. The NCEA coached the associations to implement their approach in a systemic and participative way – helping the EIA system, whose actors were now figuratively all in the same room, to reflect on itself and define joint action.

Seed funding

For each association, a budget was available for basic office facilities and an office assistant. Systematic annual planning and financial accounting were required for an association to be eligible for grants to support its functioning and activities. As PAANEEAC was temporary, a deliberate decision was made for the funding for activities in the programme to be seed funding only: just enough to allow the organisation of activities and as such promote the work of the associations, while stimulating the associations to seek more sustainable ways of financing themselves.

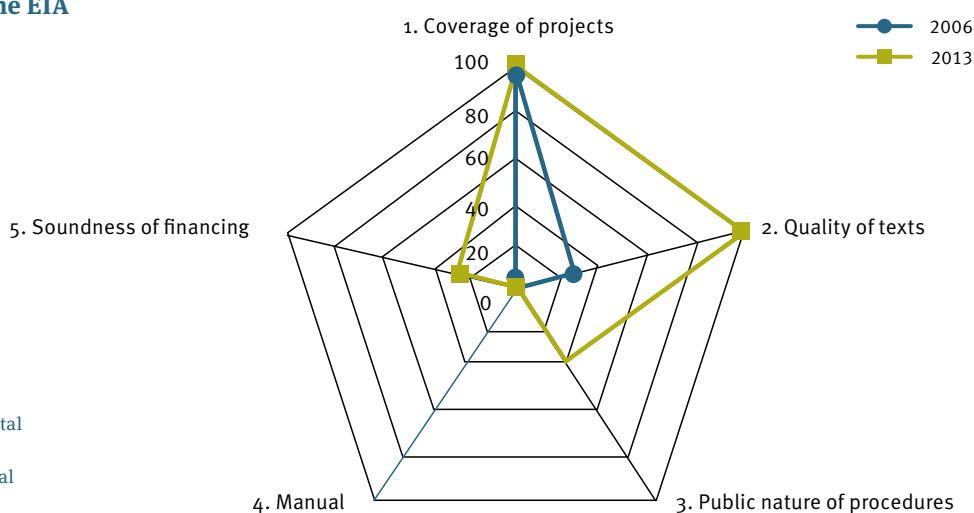
National and regional activities

Other than strategic coaching, the NCEA also assisted in the implementation of specific activities undertaken by the EIA professionals. Many of these activities were intended to improve the relationships, mutual understanding and joint action between the different actors in the national EIA system. Some are highlighted in the boxes in this article. Aside from these national approaches, PAANEEAC stimulated a regional platform function. At the Central Africa level, SEEAC has organised annual meetings of members and scientific seminars attended by national EIA agencies and other official actors. At the seminars, different topics of sustainable development and EIA have been addressed. Lessons from PAANEEAC have been shared, including, for example, the ways in which the financing of national EIA systems can be improved (inadequate funding is a general weakness that results in the quality of EIAs being highly dependent on consultants operating for project developers). See the article starting on page 22 for more information on this subject.

“Increasingly, more types of EIA professionals became active on the platforms: environmental NGOs, academics, lawyers, journalists and occasionally also politicians”

Results of one aspect of an EIA mapping, monitored with a 7 year interval

Evolution of texts for the EIA procedure in Burundi



Source: Evolution of Environmental Impact Assessment Systems in Central Africa: The role of national professional associations

* Key references and a video are available via our website (www.eia.nl)

Improvement of EIA

In 2013, the NCEA evaluated the programme by means of a series of interviews*. This revealed that EIA professionals unanimously think the programme has boosted professional exchange and concrete action. Increasingly, more types of EIA professionals became active on the platform offered by PAANEEAC: they included environmental NGOs, academics, lawyers, journalists and occasionally also politicians. There is now an accepted agenda for improvement of EIA, and a platform where all professionals can meet and discuss. This practice also emerged at seminars at national and Central African level, and is continuing even though the programme has ended. The evaluation revealed that respondents do not regard EIA to be merely a technocratic instrument but that instead they consider the programme outcomes to be an invaluable contribution to governance for sustainable developments. They often referred to specific examples from sectors such as mining and forestry.

“The learning networks of EIA professionals may now have crossed a threshold beyond which they can function without financial support from PAANEEAC.”

Joint projects of EIA agencies and associations

One of the elements of the PAANEEAC approach was the availability of seed funding that could only be accessed jointly by the EIA agency and the EIA association. As intended, this greatly stimulated relationships between EIA professionals and the government. In all five countries the associations started joint projects with their national EIA agencies: for example, they produced EIA manuals, they developed EIA management information systems, or they drafted proposals for legislation together, depending on the specific needs for improving the EIA system.

Organising the training of trainers in EIA

The EIA mapping showed the need for training in EIA at national level. An important element of the PAANEEAC programme was therefore the training of national teams of trainers in EIA. In each country, five national EIA trainers were trained by a didactic expert, NCEA technical staff and a technical resource person. Subsequently, the national trainers developed their own training curricula and programmes. National courses were organised, sometimes with significant success, reaching dozens – sometimes hundreds – of professionals. In the course of the programme, such activities strengthened the relationships between EIA professionals in general and specifically between those active in the national EIA agency.



The future of EIA associations

The number of people who pay to be member of an EIA association has grown significantly, which is important since the associations now have to function without PAANEEAC's seed money. This is not easy because, as is also the case in Europe, associations of environmental professionals have long been supported financially by their governments, precisely with the aim of creating a non-partisan platform. However, it seems that many EIA professionals that were active in the PAANEEAC programme are now willing to continue the platform function, as they have noticed they have influence on improvement of the EIA system through the platform. The learning networks of EIA professionals may now have crossed a threshold beyond which they can function without financial support from PAANEEAC. In the coming years, the NCEA is available for technical support on request. This has already been formalised in multi-year agreements by SEEAC and the national associations in Rwanda and Burundi.

In conclusion, we are very content with the promising developments reached so far and are looking forward to work with inspiring EIA professionals in the future!

Sibout Nootboom
Technical Secretary, NCEA
snooteboom@eia.nl

Gwen van Boven
Technical Secretary, NCEA
gboven@eia.nl

Reinoud Post
Technical Secretary, NCEA
rpost@eia.nl



Flexibility in spatial plans requires modified environmental assessment

Marja van Eck and Corrie Smit



In the coming years, after the new Environment and Planning Act has come into force in the Netherlands, spatial plans will be more flexible. They will have to contain more leeway to accommodate an as yet unpredictable future. This new way of planning poses a challenge for environmental assessment. When plans are being prepared, an environmental assessment report must give the person in charge and stakeholders involved a sound insight into the environmental consequences of what the plans will make possible. How this can be done if plans are flexible and the future uncertain, is the subject of this article.

Spatial planning in the Netherlands

There is a long and illustrious history of spatial planning in the Netherlands. As early as 1935, the municipal council of Amsterdam established a spatial development plan for the area it administered. In the decades that followed, the entire country was blanketed with plans: structure plans at national, provincial and local authority level, giving the main motives of the desired future developments, and more concrete plans: the so-called “land use plans”. Land use plans lay down exactly what is permitted and what is not for every square metre of land and water, in accordance with the provisions of the Spatial Planning Act.

However, the Spatial Planning Act no longer meets today’s requirements. It is particularly striking that the rules relating to spatial quality and environmental quality are laid down in separate acts, even though their interests are closely interwoven. The new Environment and Planning Act, due to come into force in 2018, integrates both policy areas and refers to “environmental quality”. Some 30 to 40 sectoral laws and rules have been sifted through. Also the economic crisis has made it painfully apparent how difficult it is in these uncertain times to make detailed plans with a long shelf life. The government is nowadays less an initiator of new developments and has had to step aside in favour of private initiatives. New spatial plans should therefore provide more leeway for coping with an unpredictable future and must tempt private investors to achieve new qualities. In the Netherlands this is called invitation planning.

Useful environmental assessment information, in four steps

On the basis of past experience the NCEA has discussed with experts in the field of environmental assessment how environmental assessment can best contribute to the quality of the decision-making when there is more flexibility in planning. The discussions yielded a series of recommendations, which are presented below in the form of a stepwise plan.

1. Ambitions and potential;
2. Analysis of the living environment;
3. Exploration of options;
4. Finger on the pulse: monitoring and evaluation.

“In the current economic climate, the first item on the wish list of many administrators is economic growth.”

Step 1 - Ambitions and potential

The first step is a general reconnaissance in order to clarify the ambitions for the area in question:

- What are the characteristics of the area for which a new plan has to be made?
- Which problems in the environment need to be solved?
- What is the potential for improvement, and in which direction should this improvement proceed?

These questions should be answered taking into consideration the government’s ambitions for the environment in the plan area and the targets to be achieved. The resulting information can e.g. be presented in a preliminary document (a preliminary memorandum in Dutch environmental assessment procedure).

Step 2 - Analysis of the living environment

The second step is the more accurate visualisation of the quality of the living environment in and around the plan area, in order to ascertain the bottlenecks and barriers. In the current economic climate, the first item on the wish list of many administrators is economic growth. But the question is, whether this leads to an increase in the burden to the environment and would it therefore be desirable. The *available environmental space* is determined by policy and also by legislation. Nearly every level of government (from local authority to European Union) has established targets for sustainable development and so-called “Inclusive Green Growth”. And legislation and rules impose clear constraints on nature conservation, air quality, noise and safety, among others. Confront the ambitions with this information. To what extent are they compatible.

Available environmental space as a precondition for economic growth

Rotterdam

After the construction of the Maasvlakte 2 (an extension of Rotterdam harbour and industrial area), the municipality of Rotterdam wishes to transform the existing harbour area: economic activities and light industry will be situated nearer to the city, and heavier industry will be situated further from the city. The municipality’s ambitions are not to allow the burden on the environment to grow – even if there is economic growth – and to reduce the environmental burden wherever possible. When preparing the land use plan for the existing harbour area, the municipality used a *Havenvisie 2030* (Vision of the harbour in 2030) to investigate which types of business could fill the empty plots in the existing harbour area and which plots might be eligible for transformation that would fit in with the desired future scenario including residential areas.



In the strategic environmental assessment (SEA) report the available environmental space was analysed and described. Then it was discussed what impact the *Havenvisie 2030* would have on it. The result is that for each type of plot of land, there are now preconditions for emissions (noise, air quality) and safety. It was only possible to determine these preconditions after an intensive process involving very detailed information. As a result the businesses in the area have been given a clear framework: they know what they must comply with in order to be given permission for their activities. That is exactly the invitation they need in order to invest in sustainable economic growth in the harbour area.

Step 3 - Exploration of options

Ambitions are sometimes very concrete: for example, the construction of 1000 new homes. In such cases, the environmental assessment can be “traditional”. Find out the possible locations for the build, compare them in terms of environmental consequences, work out possible options for the layout of the preferred location, and after weighing up the environmental and other pros and cons, specify the preferred layout in the plan. It goes without saying that this must be done carefully, in consultation with various parties and taking their advice on board.

But in the case of invitation planning, the ambitions of government are less concrete and it’s all about transformation or the prevention of impoverishment or a gradual change in functions. In this situation, translation into a concrete traditional plan is neither possible nor desirable. It is then advisable to follow a “reverse approach”, which involves considering what can and cannot be done, given the ambitions, the available environmental space and the preconditions. This can be done by comparing divergent possibilities (such as different spatial programmes or spatial zoning) in order to establish the room for manoeuvre: a bandwidth exploration. It is especially important to find out what must absolutely not be allowed. The exploration of alternative possibilities is what forms the core of every environmental assessment report.



Economic growth possible only if the environmental space is enlarged

Zeeland

The problems in Zeeland province are very different to those in Rotterdam. In this province on the periphery of the Netherlands the population is declining, as are economic activity and employment. But, as was the case in Rotterdam, when Zeeland was preparing the provincial structure plan, in its SEA report the province also investigated the environmental space in the area. This was done on a higher level of abstraction than was the case in Rotterdam, by testing the provincial environmental targets by means of a “traffic light method”:

- **Red:** in no way does the particular environmental aspect of the present situation meet the provincial environmental targets.
- **Amber:** in the present situation, less than 50 percent of the area meets the province’s environmental targets.
- **Pale green:** the present situation largely meets the province’s environmental targets and measures are being taken to improve the situation.
- **Dark green:** the environmental quality is sufficiently good to allow the desired economic growth, even if this were to lead to some additional degradation.

The SEA report included clear messages for the provincial administration:

- The quality of the nature reserves in the province is moderate to poor. As further deterioration is not permitted under European and Dutch nature conservation legislation, it is vitally important to invest in improving quality. In this way, not only will environmental space for the desired economic growth and increased employment be created, but tourists will also be attracted and this will generate jobs in this sector.
- Various businesses in the existing industrial areas have a “noise buffer” in their permits, which they are not using. Retrieving this unused buffer will free up land for new businesses.

Bandwidth explorations

Amsterdam

The municipality of Amsterdam wishes to transform the Overamstel area, which is currently an outdated and run-down industrial area. As the area has excellent connections with public transport (train, tram, bus and metro) and is relatively near the city centre, the municipality wishes to transform it into a “high-value urban area”, with homes, offices, facilities and businesses that do not cause nuisance.

In the SEA report the municipality has done a bandwidth exploration. A distinction has been made between definite and uncertain developments. It was, for example, uncertain how many homes could finally be fitted in, how quickly the transformation could occur, when the large prison complex would vanish from the area, whether it would be possible to convert the motorway next to the area into a city thoroughfare and integrate it as such into the plan. For the uncertain developments, a maximum scenario and a minimum scenario were elaborated.

The SEA report describes how the development in both scenarios can be incorporated within the prescribed environmental preconditions and fits in with the municipality’s ambitions for the area. However, converting the motorway to an urban thoroughfare went too far.

On the basis of this information, the municipality established a land use plan for those subareas which will be the first to become available for the transformation once the businesses have been bought out. The remainder of the plans will follow later.

“Particularly useful and necessary in the case of uncertain transformation processes is evaluation and monitoring, with remedial measures held in reserve.”

Step 4 - Monitoring and evaluation ‘Finger on the pulse’

What is particularly useful and necessary in the case of uncertain transformation processes is evaluation and monitoring, with remedial measures held in reserve. Regular checks made at preordained times to see whether the development is still on course to meet the previously established ambitions, enable the environmental quality to be kept under control. Although evaluation is a mandatory step under current Dutch environmental assessment legislation, in practice it is rarely carried out because of the absence of sanctions. But when there is uncertainty about transformation processes and spatial plans contain more flexibility for coping with an unpredictable future, evaluation can provide a useful extra guarantee.

It also offers the option of postponing research until later. Dutch (and European) legislation on nature conservation requires that when plans are being established there is “certainty” that the consequences for protected habitats and species will not be significantly negative. If the guarantee cannot be made beforehand because the government insists that plans include some leeway to accommodate still uncertain future developments, then two options remain:

- either assume the only conceivable development that the plan theoretically makes possible, and demonstrate that even this meets the preconditions imposed by the legislation, rules and policy;
- or
- ensure that the requirements in the plan are such that it will be regularly investigated whether developments still meet the preconditions, and also that should it be necessary to intervene, there are measures or budgets on hand.

Evaluation and monitoring as preconditions in the plan

Lelystad

The SEA report for a new residential area in Lelystad revealed that strictly protected bird species in the adjacent Oostvaardersplassen nature reserve foraged in the area where the residential area was planned. The first phase of development could be given the go-ahead, but because of the legislation on nature conservation, the second phase could proceed only if a new foraging area was created for the birds and found to be functioning effectively. The municipality incorporated this precondition in the plan requirements. When the evaluation research was done several years later, it was decided that the second phase could be given the green light.



In conclusion

The desire to make plans more flexible means that difficult choices must be made, balancing the leeway in policy against compliance with legislation and providing legal certainty for citizens and businesses alike. The challenge for environmental assessment is to support decision-making based on flexibility with a sound risk analysis combined with monitoring and evaluation to modify developments when needed. It is an inspiring challenge, and so far, we have been tackling it with the greatest of confidence, based on our experience. Our recommendations:

- Take as a starting point a clear administrative vision on the desired general direction of the environment (ambitions).
- Provide a good elucidation of the qualities (both positive and negative) and possibilities of the plan area, i.e. the “environmental space”, taking account of the preconditions emanating from legislation and rules and ambitions.
- Organise a creative process of brainstorming to ascertain which developments are possible and promising, and which would be undesirable (bandwidth exploration).
- In the decision about the plan, specify a monitoring and evaluation programme that must be used as the basis for testing the actual developments against the ambitions and for making any necessary corrections. These could be supplementary measures or modified ambitions.
- In each step, ask which information is essential and which points could be investigated later without incurring unduly large environmental risks.

Marja van Eck

Technical Secretary, NCEA
meck@eia.nl

Corrie Smit

Technical Secretary, NCEA
csmit@eia.nl

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Visiting address

Netherlands Commission for Environmental Assessment
Arthur van Schendelstraat 800
3511 ML Utrecht
The Netherlands

Postal Address

P.O. Box 2345
3500 GH Utrecht
The Netherlands

t +31 (0)30-2347660
e mer@eia.nl
w www.eia.nl



Netherlands Commission for
Environmental Assessment

Arthur van Schendelstraat 800
3511 ML Utrecht
The Netherlands

P.O. Box 2345
3500 GH Utrecht
The Netherlands

t +31 (0)30-2347660
e mer@eia.nl
w www.eia.nl