

landbouw, natuur en
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SPEN – Interactions between Policy Concerning Spatial Planning and
Ecological Networks in Europe

Country Study for the Netherlands

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1 Executive Summary

In the Netherlands the nature, policy and process of spatial planning and its interactions with the ecological networks have been very much influenced by history, physical and natural characteristics of the country's economy and population.

Some important features that have affected the nature of spatial planning are: a low lying country, centuries of battle against the water, high population density, space in short supply and an economy based on services and transportation.

Because of the high demand for space from various sectors of society, nature has been under high pressure, especially since the 1970ies.

The new Spatial Planning Act (SPA, 2008) replacing the original one from 1965 puts a great emphasis on decentralisation of spatial planning activities and responsibilities, and on planning by development as opposed to planning by control.

The need to protect nature by devising a national ecological network of connected protected areas arose in the 1980s and was officially introduced in the Nature Policy Plan in 1990, before the European Union Habitats Directive was adopted and integrated into Dutch policy.

Legislation and policy on spatial planning and ecological networks are highly integrated and regulated in the Netherlands.

The practical consequences of the new SPA for nature conservation and the planning and implementation of the National Ecological Network are not yet fully understood. At the time of the writing of this report, the provinces and municipalities were still adjusting to these changes, and the full application of the new Act was still in a transitional phase.

Conservationists argue that, because of the further decentralisation introduced by the new SPA, central government will lose its control over the municipal Land Use Plans which will tend to favour the local interests. The protection of nature areas including the NEN are therefore at stake.

The complex regulation, the many levels of decision-making and overlapping prerogatives require a good exchange of information and coordination between departments at all levels of administration, but the complexity makes the understanding of the procedures and responsibilities by those involved a difficult task.

There are discussion platforms (*overlegorganen*) at all levels of administration, but still many civil servants, especially in smaller municipalities, feel they are not sufficiently informed to perform their tasks with regards to spatial planning and ecological networks.

The high demand on land for various economic activities, combined with concerns for the environment and climate change have prompted the Government to invest into research and development concerning sustainable, innovative and multi-functional land use.

Water plays an important role in planning and ecological networks, and increasingly so as a result of the anticipated effects of climate change on the safety of the Netherlands. It is increasingly used as a guiding principle for an innovative approach to spatial planning, with an important role for the 'wet NEN'.

Ecological networks present significant opportunities as a guiding principle for spatial planning, as they potentially provide a wide range ecosystem services, challenging new approaches to multifunctional land use and other benefits to society.

In spite of the government's efforts, several practitioners report that knowledge underpinning the planning and implementation of ecological networks is not readily available, especially to land use planners in smaller municipalities.

Furthermore, this study indicates some barriers in the integration of spatial planning and ecological networks in terms of lack of sufficient financial resources, the need for improvement of the science-policy interface, and the lack of monitoring, assessment and feedback.

The Netherlands promote a pro-active approach to planning and conservation. The Government therefore attaches great importance to research into, and communication of the multiple benefits of biodiversity conservation (including the development of a NEN) to society, by means of the ecosystem services they deliver.

2 Introduction

The results of this report on the interactions between spatial planning and ecological networks should be considered in the context of the country's geography and history, especially if it is to be compared with the findings of similar exercises carried out for other countries in the framework of this project. Therefore in a nutshell we present some of the most striking characteristics of the Netherlands that can help better understand some of the outcomes of this report.

A predominantly cultural landscape - The Dutch countryside is the result of centuries of close interactions between man and nature. Among its most precious, rich and rare ecosystems are areas that originated from the direct actions of man, through generations of low intensity land use in balance with the prevailing natural processes. Heath lands, peat extraction bogs, dystrophic hay lands are among those highly valued ecosystems that wouldn't have existed in their present form without human activities such as peat extraction, wood cutting as well as hay making, sheep keeping and other extensive agricultural practices. Much of today's countryside is in fact a cultural landscape. A wide variety of plants and animals has adapted to these extensively used cultural landscapes, and has become characteristic of the Dutch countryside¹. Recent changes in land use and agricultural practices are putting these farmland and cultural landscape species at risk.

A history marked by a battle against the water - Almost one third of the land in the Netherlands has been gained on the sea, lakes, wetlands, peat lands and river floodplains. Over generations, the battle against the sea and water has become part of Dutch culture and has prompted the development highly organised forms of governance in the Middle Ages that still play a role today: the water boards. The ever existing threat of flooding from rivers and storm surges at sea required forms of organisation and cooperation that became part of Dutch culture. The Dutch are raised with the conviction that land is makeable and that the forces of nature can be dominated and contained. The *polders* and sea defences in Zeeland are good examples of such no-nonsense attitude. In recent years, the major changes to be expected as a result of climate change have moved water and its management higher up the agenda, and new innovative forms to deal with expected sea level rise and high river discharges are being actively developed. Water has become very much one of the major connecting elements in the spatial planning of the Netherlands.

Space is in short supply - The Netherlands have long been referred to as a muddy delta not fit for a civilised society. But even so, strength, perseverance and entrepreneurship resulted in the development of a well organised and affluent society. A long and international trading history and early industrialisation has resulted in the Netherlands nowadays being a pivotal hub for the Europe wide and global distribution of goods requiring a complex transport infrastructure. Population density is among the highest in the world. Agriculture, housing, industry, transport all need space to develop and flourish. And nature is also part of this equation. The high demand for space needs creative and innovative solutions that can reconcile often conflicting forms of land use.

Nature under increasing pressure - Rapid economic growth, industrialisation, urbanisation and intensification of agriculture all have played their part in putting enormous pressure on the conservation of nature in the Netherlands. Four processes are commonly reported as the main pressures on nature in the Netherlands: over-fertilisation (*vermesting*), acidification (*verzuring*), dessication (*verdroging*) and fragmentation (*versnippering*). Their impact on the quality of the ecological networks is important, but perhaps with the exception of fragmentation, their nature is so complex and diffuse that they cannot be addressed by spatial planning alone.

¹ The Black tailed godwit (*Limosa limosa*), a red list bird species was originally an inhabitant of dispersed small bogs in vast lowland forests as it still is in the Boreal Region. It is believed that before the arrival of man it did not occur in high densities in our regions. In the extensively used wet hay lands and pastures in the peaty West of Holland, it found a new environment that perfectly corresponded to its ecological requirements, and it became a very common sight in summer. Holland became the European stronghold for this species. Recent intensification of agriculture, especially, lowering of the water table and early mowing of grasslands have placed their toll of the godwit whose population has halved between 1990 and 2000 (SOVON, 2002).

3 Methodology

This report is the reflection of eight in-depth interviews with experts and practitioners in the field of spatial planning and ecological networks. The interviewees included three senior civil servants: from the Ministry of Agriculture, Nature and Food Quality (ANF), from the Ministry of Housing, Spatial Planning and Environment (HSPE), from the Province of Noord-Brabant and from the municipality of Boxtel. In addition, two private spatial planning consultants, a spatial planning researcher of Wageningen University and Research Centre and a policy officer of a nature conservation NGO have been interviewed. The information gathered through the interviews, was complemented by a review of policy documents, articles and relevant websites.

4 The Process of Spatial Planning in the Netherlands

4.1 Definition of Spatial Planning

According to the Information and Knowledge Centre on Spatial Planning (IKC RO, 2008), Spatial Planning (*ruimtelijke ordening*) is a governmental activity that deliberately interferes in societal developments. It is focused on achieving the best possible balance between physical space and society's needs and results in decisions related to the planned function and use of the land. It deals with the distribution of space by the Government to societal activities. Distinction is to be made between spatial planning as a policy field and spatial planning as the implementation process of the policy. The former provides a neutral legal framework for the assessment of (conflicting) spatial claims existing in one given area.

4.2 The Legal Framework of Spatial Planning

The main law which governs the spatial planning in the Netherlands is the Spatial Planning Act² (WRO, *Wet op de Ruimtelijke Ordening*). It was first introduced in 1965, and was subsequently amended at regular intervals. The Spatial Planning Act (SPA) describes how spatial plans should be developed, carried out and amended. The SPA defines the distribution of tasks and responsibilities of the various layers of government regarding the spatial planning of the territory and describes the rights and duties of citizens, companies and institutions in this process.

A new SPA (*nieuwe Wro*) came into force on 1 July 2008. This new SPA decentralises responsibilities regarding spatial planning procedures, decision-making and implementation. It confers more responsibility to the provinces and municipalities in the planning and implementation of the plans. The new Act has been devised with the objective of making the planning procedure less complex and clarifying where the responsibilities of the different parties lie. It seeks to spell out what the mutual relations are between the different levels of governance in the process of spatial planning. It integrates the amendments that had accumulated in the former Act so as to provide a document that is easier to read and understand.

This more complete and comprehensive Act places the emphasis on spatial planning by development, meaning a pro-active approach to finding solutions to spatial challenges, rather than its more restrictive predecessor, where the emphasis laid on control of development, leading to endless procedures.

In the new simplified SPA, the planning consists of two documents: a strategic plan and a legally binding plan. The strategic plan and its general policy underpinning are set out in a structure vision (*structuurvisie*) whereas the legally binding policy is described in the land use plan (*bestemmingsplan*). This dual structure is applied to all levels of government. For smaller projects a project decision (*projectbesluit*) can be made. The structure vision therefore replaces the spatial planning key decision (*planologische kernbeslissing*, PKB) at national level, the regional plans (*streekplan*) at provincial level and the structure plan (*bestemmingsplan*) at municipal level.

2 A list of all cited legal and policy documents and institutions referred to in this report, together with their translations is provided in Chapter 9: References.

A General Administrative Order (*Algemene Maatregel van Bestuur*) has been introduced giving the Government the power to protect the national spatial interests in the context of the decentralisation which is a consequence of the new SPA.

With the enactment of the new SPA, the Minister of HSPE obtained a greater role and responsibility to coordinate and mutually fine-tune the different spatial planning activities of the government departments, more particularly those of the Ministries of ANF, of Economic Affairs, EA (*Economische Zaken, EZ*) and Transport, Public Works and Water Management, TPWWM (*Verkeer en Waterstaat, VenW*).

The SPA acts as a spatial umbrella to other laws with a clear spatial component such as the Transport Infrastructure Planning Act (*Tracéwet*, 1993), the Water Defence Act (*Wet op de Waterkering*, 1995), the Nature Conservancy Act (*Natuurbeschermingswet*, 1998), the Transport Planning Act (*Planwet Verkeer en Vervoer*, 1998), the Reconstruction Act for Concentration Areas (*Reconstructiewet Concentratiegebieden*, 2002) and the Rural Planning Act (*Wet Inrichting Landelijk Gebied*, 2006).

4.3 The Policy Framework of Spatial Planning

A wide range of policies having a spatial planning component (each of which operates at a different scale) exists in the Netherlands. The most important of these is the National Spatial Strategy, NSS (*Nota Ruimte*, 2004), which acts as an umbrella to all other spatial policies. It spells out the Government's views on, and objectives of spatial development in the Netherlands. It aims to contribute to the following government objectives: a strong economy, a safe and liveable society and an attractive countryside. This agenda also integrates sectoral policies and strategies having a spatial dimension but which are developed by other government departments: the Ministry of Agriculture Nature and Food Quality (ANF), the Ministry of Transport, Public Works and Water Management (TPWWM) and the Ministry of Economic Affairs (EA).

The new NSS replaces and integrates older spatial strategies and other spatial planning key decisions (PKB, *planologische kernbeslissing*) such as the Fifth National Policy Document on Spatial Planning (*Vijfde Nota Ruimtelijke Ordening*, 2001) and the Second National Structure Plan for Green Areas (*Tweede Structuurschema Groene Ruimte*, SGR2, 2002). The NSS is itself a spatial planning key decision, and is still supported by a limited number of other (new) spatial planning key decisions, such as regional strategies for the Wadden Sea (*Derde Nota Waddenzee*, 2006) and for the major rivers.

The main goal of the NSS is to provide the tools and distribute the limited available space to the spatial functions required by Dutch society. These functions should underpin the four main strategic objectives of the government: strengthening the international competitive position of the Netherlands, promoting strong cities and a vibrant, dynamic countryside, securing and developing important national and international spatial values, and ensuring public safety.

Following the general trend of government decentralisation, the National Spatial Strategy was developed with the following motto in mind: to decentralise whatever possible, and to centralise what is needed (*decentraal wat kan, centraal wat moet*). Local authorities thus acquired more autonomy and could start playing a more pro-active role with regards to spatial planning.

In order to protect the spatial issues of national interest that might be threatened by the decentralisation required under the new SPA, all the spatial key decisions of national importance have been bundled into one spatial planning implementation document (*Realisatieparagraaf Nationaal Ruimtelijk Beleid*).

The practical approach of the NSS is to opt for a dynamic spatial policy driven by development: the Government puts more emphasis on planning by development and less on planning by control. Local and regional actors, including the governments, social organisations, NGO's, citizens and enterprises are encouraged to actively participate in the planning process. This should ensure that the local and regional visions about spatial planning acquire a strong public support base.

The National Spatial Strategy, developed by the national Government, which includes the guidelines for spatial planning in the Netherlands till 2020, has obtained a legal status, which means that all spatial planning authorities need to take account of the prescriptions included in the

NSS when they develop their plans. Planning wise, the NSS is protected under the Spatial Planning Act.

As the spatial development umbrella, the National Spatial Strategy covers a broad range of issues. However, it only provides a general strategy with guidelines. Structural details are explained in other policy documents which describe specific issues of spatial planning such as infrastructure or ecological networks. The Dutch National Ecological Network (NEN) is one of the important elements of the National Spatial Strategy (Figure 1).



Fig. 1. The National Ecological Network as illustrated in the National Spatial Strategy (Source: National Spatial Strategy).

The National Spatial Strategy is accompanied by an Implementation Agenda that seeks to combine in a coherent way the objectives of the Spatial Planning Act with other existing and anticipated policies. These are the strategies and multiannual programmes of the Ministries of TPWWM (“Mobility Strategy and Multiannual Programme for Infrastructure, Space and Transport”, MIRT), of ANF (“Agenda and Multiannual Programme Agenda for a Vibrant and Dynamic Countryside”) and Economic Affairs (“Regional oriented economic perspectives” and the “Action plan for industrial estates”).

Since the publication of the NSS, the Government has introduced a new programme called Beautiful Netherlands (*Mooi Nederland*). It translates the objectives of the NSS into concrete actions and has slightly changed the priorities which are now: combating the untidiness of the landscape and making sure that the Netherlands are prepared for climate change.

4.4 Institutional Framework of Spatial Planning

In the Netherlands, the Spatial Planning process is coordinated by the Ministry of Housing, Spatial Planning and Environment HSPE (*Ministerie van Volkshuisvesting, Ruimtelijke Ordening en Milieu, VROM*). As the above description of the policy framework has indicated, the main other national level institutions actively participating in the spatial planning process are the Ministry of Transport, Public Works and Water Management, TPWWM (*Ministerie van Verkeer en Waterstaat, VenW*), the Ministry of Agriculture, Nature and Food Quality ANF, (*Ministerie van Landbouw, Natuur en Voedselkwaliteit, LNV*), the Ministry of Economic Affairs, EA (*Ministerie van Economische Zaken, EZ*), and to a lesser extent, the Ministry of Education, Culture and Sciences (*Ministerie van Onderwijs, Cultuur en Wetenschappen*).

provincial authorities and municipalities operate in close relationship with the national Government institutions in the spatial planning process. They are supported by a wide range of specialised advisory and implementation agencies, which are mentioned and briefly described in the Actor Analysis (see 4.5.).

4.5 Spatial Planning: Actor Analysis

Government institutions - The government institutions described in the previous paragraph are the main actors involved in the process of spatial planning. Public authorities at all levels (national, regional and local) are concerned with spatial planning although their roles and responsibilities differ. The ministries and their relevant departments responsible for spatial planning are supported by a wide range of agencies that play a role in specific phases of the spatial planning process.

Government Advisory Councils - Policy making by the Government and Parliament is supported by a series of independent advisory councils. The advisory councils that are relevant to policies concerning spatial planning are: the Council for Housing Spatial Planning and the Environment (*VROM Raad*) which is the official advisory body to the Ministry of HSPE; the Council for the Rural Area (*Raad voor het Landelijk Gebied*), the Advisory Council for Transport, Public Works and Water Management (*Raad voor Verkeer en Waterstaat*) and the Social and Economic Council (*Sociaal Economische Raad*). The Advisory council for research on spatial planning, nature and the environment (*Raad voor Ruimtelijk, Milieu- en Natuuronderzoek, RMNO*) gives advise to the Government on research into problems related to environmental issues on the mid-long term; spatial planning and nature conservation. In the context of spatial planning, the Council for Culture (*Raad voor Cultuur*) advises on spatial matters regarding the conservation and sustainable use of the cultural dimension of the landscape and the public space.

Government research institutes - Three research institutes are formally part of Government but operate independently as far as their research agenda's are concerned. They conduct research that is relevant to the development, monitoring and assessment of central, regional and local government policies. Until recently, research on spatial issues was conducted by the Netherlands Institute for Spatial Research (*Ruimtelijk Planbureau, RPB*). It explored the relation between spatial developments and social processes and studied spatial trends in the past and future, identified and raised new issues, outlined new visions and designs for the spatial development in and outside the Netherlands and translated new and existing knowledge to policy recommendations. In May 2008, the RPB merged with the Netherlands Environmental Assessment Agency (*Milieu en Natuur Planbureau, MNP*); collectively they are now known as *Planbureau voor de Leefomgeving, PBL*. The other relevant government research institute relevant to the field of spatial planning is the Netherlands Bureau for Economic Policy Analysis (*Centraal Planbureau, CPB*).

Governmental implementation agencies - At national level, the Government is also supported by a series of agencies that implement the spatial decisions, plans and projects. These agencies also accumulate practical knowledge that is fed back into the planning and decision-making process, although their main responsibility is the coordination of the implementation of projects. The relevant implementation agencies for spatial planning include the Agency for the Rural Area (*Dienst Landelijk Gebied, DLG*), the Agency for Public Works and Water Management (*Rijkswaterstaat*), and the National Service for Archaeology, Cultural Landscape and Built Heritage (*Rijksdienst voor Archeologie, Cultuurlandschap en Monumenten, RACM*).

Spatial planning consultancies - Since smaller municipalities especially tend to lack employees with sufficient knowledge and skills of spatial planning they usually contract consultancy firms in the development of their spatial plans. The spatial planning consultancies employ a range of specialists in ecology, hydrology, urban and rural planning and soil science which enables them to advice on planning subjects or design in relation to infrastructure, industrial areas, urban planning, landscaping and ecological networks.

Governance interest groups - The lower levels of public administration (provinces, water boards and municipalities) are represented at national level by umbrella organisations that watch over their member's interests and play an active role in the development of national policy, including spatial planning policy. They also report back from their constituencies in order to fine tune, adapt or correct those policy measures that turn out not to work in the field. They are: the Association of Municipalities (*Vereniging van Nederlandse Gemeenten*, VNG), the Interprovincial Council (*Interprovinciaal Overleg*, IPO) and the Union of Water Boards (*Unie van Waterschappen*, UVW). They play an important role in feeding back and ensuring the link between national Government and the citizens, because their constituencies (provinces, municipalities and water boards) work more closely with the citizens.

Other interest groups - Besides the governmental institutions and their agencies the spectrum of spatial planning stakeholders involved in spatial planning is staggering. Indeed, the activities of most sectors of society have a spatial dimension and need space to be carried out. Sectoral interest groups therefore keep a close eye on spatial policy development and implementation. Interest and lobby groups that are most active and vocal when it comes to spatial planning and decision-making and who participate and contribute to the policy development and decision making by using the opportunities offered for consultation and public participation include: the Dutch Federation of Agriculture and Horticulture (*Land en Tuinbouworganisatie*, LTO), VNO NCW Confederation of Netherlands Industry and Employers, and the Federation of Private Landowners (*Federatie Particulier Grondbezit*, FPG).

Civil society organisations - Civil society organisations active in the field of cultural and natural heritage conservation also follow spatial planning developments and projects closely and actively participate in the debate and the policy making. Being independent, they also play an important role as watchdogs, reporting irregularities in the spatial planning process to the press and waging campaigns to raise public awareness about the threats (and opportunities) of spatial planning decisions for the cultural and natural heritage. In the field of environmental issues, the most active NGOs are: the Netherlands Society for Nature and the Environment (*Stichting Natuur en Milieu*), Friends of the Earth Netherlands (*Milieudefensie*) and the Provincial Environmental Federations (*Provinciale Milieufederaties*). Some NGOs combine the purchase of nature areas with management. The most important of these are: The 12 provincial Landscape Associations (*De Landschappen*), the Association for the Conservation of Nature Monuments (*Vereniging tot Behoud van Natuurmonumenten*) and the State Forest Service (*Staatsbosbeheer*).

4.6 The Spatial Planning Knowledge Base

Introduction - The spatial planning knowledge base consists of a wide variety of disciplines: geography, information technology, engineering, social sciences, economy etc. Spatial planning requires a good understanding of political, economic, social and environmental processes but also needs a sound technological base in geoinformatics. As it is a multidisciplinary activity, it requires platforms for the exchange of knowledge between experts and practitioners from different backgrounds. The results of spatial planning are highly relevant to the citizens, who are entitled to express their views and participate in the decision making. Good channels for the public dissemination of relevant knowledge and information are therefore needed.

Generating fundamental knowledge - Knowledge relevant to the process of spatial planning is generated by institutions such as universities and research institutes. The Netherlands Organisation for Scientific Research (NWO) coordinates the national research agenda and funds fundamental research programmes, including projects relevant to the field of spatial planning. It also encourages the exchange of knowledge and experience by organising congresses and meetings linking science and knowledge to society, such as for example on the role of ICT for spatial policy.

Universities and research institutions that carry out research and develop technology in the fields relevant to spatial planning include: the University of Amsterdam, the Free University of

Amsterdam, the University of Groningen, the International Institute for Geo-Information Science and Earth Observation, the University of Nijmegen, Utrecht University, and Wageningen University and Research Centre (including Alterra, *Landbouw Economisch Instituut* (LEI) and Van Hall Larenstein).

The Netherlands Environmental Assessment Agency (a recent merger of *Ruimtelijk Planbureau* (RPB) and *Milieu en Natuur Planbureau* (MNP) now called *Planbureau voor de Leefomgeving*, PBL) analyses spatial and social developments in (inter)national context, which are important to the human, plant and animal environment. It conducts scientific assessments and policy evaluations, relevant to strategic government policy. These assessments and evaluations are produced both on request and at the agency's own initiative, and have a marked spatial component.

Financing research and innovation - Faced with a fragmented research infrastructure in the Netherlands resulting in piecemeal generation of knowledge with little connection or relevance to the relevant policy fields, the Dutch Government decided to launch a programme for the financing of research relevant to society: *Besluit Subsidies Investerings Kennisinfrastructuur* (BSIK) financed through the national revenues of Dutch gas exploitation (*ICES gelden*). One of the multiannual projects financed under this regulation is called High Value Spatial Use (*hoogwaardig ruimtegebruik*). It stimulates innovation in the fields of multifunctional land use (*Habiforum*), adaptation to climate change (*Klimaat voor Ruimte*), water management (*Leven met Water*) and the wider use of geo information in society (*Ruimte voor Geoinformatie*).

Channelling information and knowledge among the practitioners and to the public - The Netherlands Institute for planning and housing (*Nederlands Instituut voor Ruimtelijke Ordening en Volkshuisvesting*, Nirov) is a network association of spatial planning professionals (experts, practitioners and policy makers), with over 10.000 members representing a wide range of disciplines. Because of its diverse membership including experts, scientists and policy makers, it functions as a science policy interface for the wider field of spatial planning. The Information and Knowledge Centre on Spatial Planning (*Informatie en Kenniscentrum voor de Ruimtelijke Ordening*, IKC RO) is an internet repository on spatial planning and related fields in the Netherlands, managed by Nirov and the Ministry of HSPE.

The new SPA requires the government authorities to present their spatial plans in a standardised digital format in an attempt to increase transparency towards the public and to improve coordination between the various stakeholders involved in the process (and in particular, the municipal and provincial authorities). Therefore efforts have been made and are continued to be made in the field of geo-information technology. In future, all spatial plans will have to be published on one central website (www.ruimtelijkeplannen.nl), which provides public access to and consultation of all spatial plans and municipal Land Use Plans, of every region in the Netherlands. According to the new Spatial Planning Act from 1 July 2008 onwards all spatial plans must be presented digitally according to the national agreements and standards and published on the website. These digital plans have the status of original or authentic plan. This will allow national Government, provincial authorities and municipalities to consult each other's plans online and coordinate efforts for a coherent and effective planning procedure.

In order to stimulate public interest for the future planning of the Netherlands, Nirov collects all available the structure visions and land use plans as prepared by the public authorities and combines them into one overview showing the future map of the Netherlands presented online: The New Map of the Netherlands (*De Nieuwe Kaart van Nederland*).

4.7 The Dynamics of Spatial Planning in Practice

4.7.1 Preparation

The first phase in spatial planning is prepared by the national Government which develops the National Spatial Strategy. The national spatial interests are described in the National Spatial Structure (*Ruimtelijke Hoofdstructuur*). This includes the main elements that are deemed essential for the general lay-out of the Netherlands as considered from a national interest point of view. The National Spatial Strategy also contains guidelines that are to be considered by the spatial planners working at the provincial and municipal level when developing a plan. The NSS is taken up by each of the twelve provincial authorities which fine-tune the national plans and confer more detail to the

map units. This results in effectively enforceable regional plans with maps that illustrate planning themes and objectives such as the NEN, among others.

Since 1 July 2008, in line with the new SPA, all three levels of government administration are required to produce spatial structure visions, which spell out their spatial interests, their policy priorities and also an implementation agenda. These spatial structure visions are self-binding which means that once approved they are obligatorily taken account of by the designers themselves. Thus, for example, a municipality must commit itself to its own structure vision (which has taken account of the provincial spatial structure vision). The spatial structure visions, as developed by the provincial authorities, are supported by spatial plans (Figure 2). The provincial structure visions are the result of a long consultation process with representatives of all stakeholder groups and are presented for public inspection (on the Internet, at the local council-houses and at the provincial house).

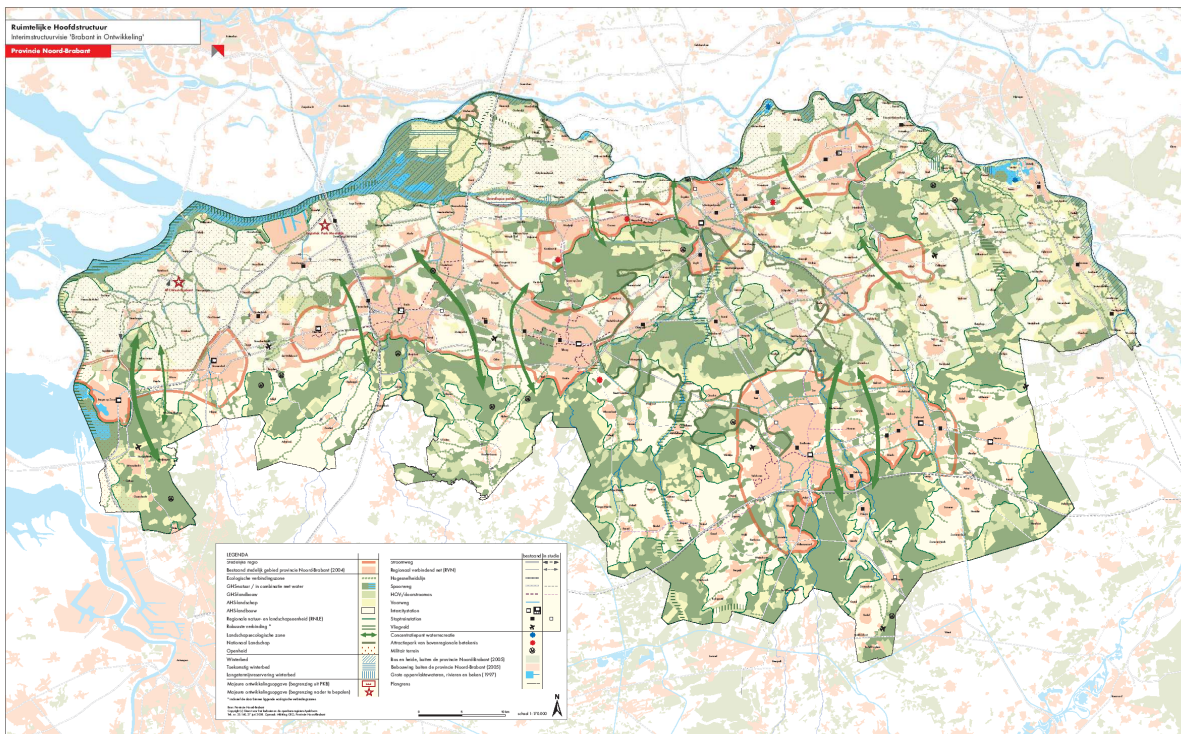


Fig. 2. Spatial plan as shown in the interim structure vision of the Province of Noord-Brabant (Source: <http://roplan.brabant.nl/>)

The regional plans which date from 2002 disappear, although in practice they have largely been incorporated in the newly developed spatial structure vision and updated where necessary. The structure vision presents the provinces' interests and the instruments applied to realise these, further defined in an implementation agenda. The role of the provincial authorities in spatial planning issues increases when infrastructural or NEN related projects are carried out at inter-municipal or provincial level. Under the old SPA the provincial authorities had to oversee the correct implementation of the regional plans by the municipalities. They had the authority to approve the legal status of the land use plans developed by the municipalities. The provincial authorities had to take measures to ensure the correct incorporation of the regional plans in the plans developed by the municipalities. They also used to have the power to require municipalities to redraft the original plan, The new SPA has somewhat changed these mutual duties. Whereas under the old SPA all municipal Land Use Plans (LUPs) were required to be officially recognised by the provincial authorities, under the new SPA the provincial authorities should work on a basis of confidence and therefore no official recognition of the municipal LUPs is required anymore. However, the provincial authorities still need to react to wrongly designed LUPs and municipalities still are obliged to take account of the spatial plans of the spatial structure visions (formerly known as regional plans). Now that they have lost their authority to approve them, Provinces can now only intervene reactively to municipal LUPs, for example by imposing a plan developed by the province itself (*Provinciaal inpassingsplan*).

4.7.2 Implementation

The National Spatial Strategy is accompanied by an Implementation Agenda that seeks to combine in a coherent way the objectives of the Spatial Planning Act with other existing and anticipated policies. These are the strategies and multiannual programmes of the Ministries of TPWWM ("Mobility Strategy and Multiannual Programme for Infrastructure, Space and Transport", MIRT), of ANF ("Agenda and Multiannual Programme Agenda for a Vibrant and Dynamic Countryside") and Economic Affairs ("Regional oriented economic perspectives" and the "Action plan for industrial estates").

The projects and activities which implement the spatial plans are mainly carried out by the municipalities, in cooperation with the provinces, the water boards and the relevant government agencies, such as *Rijkswaterstaat* and *Dienst Landelijk Gebied*.

At provincial level the structure vision is implemented through a provincial implementation agenda which includes a number of instruments, to guide or to overrule (if needed) the plans and projects at municipal level: the imposed land use plan (*inpassingsplan*), the ordinance (*verordening*),

The provincial structure vision is implemented alongside other regional plans dealing with specific themes, such as traffic and transport (*Verkeer en vervoersplan*), the environment (*Milieubeleidsplan*) and water management (*Waterhuishoudingsplan*).

In the provinces where the subsoil consists of sand (*zandgronden*) the Act on Reconstruction of Concentration Areas requires special comprehensive regional plans to be implemented by the province and the municipalities to address the specific environmental problems caused by intensive agricultural practices (dessification, over-fertilisation, acidification) having a strong negative effects on the protected areas.

In the countryside, the implementation of the spatial plans is funded through the Rural Areas Investment Budget (*Investeringsbudget Landelijk Gebied*, ILG) which includes the Management Program (*Programma Beheer*) consisting of the Nature Conservation subsidy scheme 2000 (*Subsidieregeling natuurbeheer 2000*) and the agri-environmental subsidy scheme (*Subsidieregeling agrarisch natuurbeheer*).

4.7.3 Evaluation

At national level, the effectiveness of spatial policies and their implementation are monitored by the Netherlands Environmental Assessment Agency (PBL). Each year it publishes the Nature Balance (*Natuurbalans*), the Environment Balance (*Milieubalans*) and since 2006 the Monitor of the National Spatial Strategy (*Monitor Nota Ruimte*). Provinces also evaluate the effectiveness of their policies, including those pertaining to spatial planning. These evaluations are carried out by the provinces themselves, by appointed Committees and are supported if needed by private consulting companies.

5 Planning Ecological Networks in the Netherlands

5.1 Definition of the Ecological Networks

5.1.1 The National Ecological Network

The rapid decline of nature in the Netherlands prompted the thinking about ecological networks in the Netherlands, which started with the introduction of the term National Ecological Network, NEN (*Ecologische Hoofdstructuur*, EHS) in the Nature Policy Plan (*Natuurbeleidsplan*, 1990) of the Ministry of ANF. The NEN is a spatially coherent network of existing and newly created nature areas that is being developed and is planned to be ready by 2018 (Hootsmans & Kampf, 2005). It should help sustainably preserve, restore and develop ecosystems of national and international importance. It mainly addresses the ongoing process of fragmentation and loss of quality of nature. This is achieved by increasing the area of the NEN and of the individual natural areas, restoring their environmental quality and increasing the coherence of the network by creating connections. The NEN is composed of a coherent network of core areas, ecological development areas, management areas, connections zones and buffer zones.

Core areas are large areas of nature or a group of smaller areas of national and international significance. Ecological development areas are designed to increase (and reinforce) the core areas, but can grow to develop into new core areas. Preservation areas are high nature value agricultural areas in private hands managed in a nature friendly way under an agri-environmental scheme contract. Connection zones are areas, structures or stepping stones that enable the expansion, migration and exchange of plant and animal species between core areas. Buffer zones are areas created around core areas to protect them against adverse external influences.

Over the years, the National Ecological Network became the backbone of the Dutch nature conservation strategy. In total, the net delimited NEN will include 728,500 hectares of nature (17% of the total Dutch land area). Of these, 453,500 hectares consist of already existing woodlands and nature areas and approximately 248,000 hectares of nature areas and 27,000 hectares of robust connections (wide fauna corridors of high quality and up to kilometres long) that are currently being developed. In addition to nature and protected areas, and in order to strengthen the quality of the net NEN, agricultural areas are subsidized to be managed under an agro-environmental scheme. Together the nature and agricultural areas constitute what is coined the Gross NEN.

5.1.2 Green-blue veining

At a lower spatial level than the NEN, ecological connectivity and landscape permeability also benefit from so-called green-blue veining (*groen blauwe dooradering*). This concept, a kind of fine meshed ecological network, describes the complex landscape structure formed by small scale (often linear) landscape elements, such as hedgerows, tree lines, thickets, embankments (green) and ditches, small streams, and ponds (blue). A review by Geertsema (2002) has shown that this veining does contribute significantly to the core values of the countryside in terms of aesthetics, identity and nature. Plant and animal species find it easier to move through a landscape with a high green-blue veining density. The small scale landscape elements of the green-blue veining, if present in sufficient numbers, allow many plant and animal species to survive in the countryside, outside the protected nature areas.

5.1.3 Other ecological connections

Ecological corridors are also realised outside the NEN. Municipalities, land owners create green corridors, without being forced to do so by higher levels of government. These corridors are often combined with other functions such as parks or recreation areas, mostly in or around urban areas, such as the *Groene Mal* around the city of Tilburg. Sometimes, the term ecological corridor is used to promote the green agenda of the municipality, but sometimes these corridors also have a genuine ecological function.

5.2 Legal Framework of Ecological Networks

The legal status of the NEN is complicated and represents a bottleneck in the process of the execution of policies concerning ecological networks.

The National Spatial Strategy has a legal status and therefore confers a protected status to the NEN by means of the Spatial Planning Act. The NEN is therefore said to be protected by planning (*planologische bescherming*). Within the NEN only the core areas fall under the Nature Conservancy Act (*Natuurbeschermingswet*, 1998) and the Bird and Habitats Directives (both which have been integrated in the Nature Conservancy Act) and are therefore better protected than the other constituent parts of the NEN.

Other legislation relevant to the planning, implementation and protection of the National Ecological Network include the Forest Act (*Boswet*, 1961), the Flora and Fauna Act (*Flora en Faunawet*, 1998), the Environmental Management Act (*Wet Milieubeheer*, 1993) and the Act on Ammonia and Livestock Farming (*Wet Ammoniak en Veehouderij*, 2002).

The Forest Act and the Flora and Fauna Act do not regulate the implementation ecological networks nor do they stimulate or oblige the execution of existing policies to that effect. Their main objective is to protect and conserve the existing flora, fauna and habitats (woodlands), including when these occur in the NEN.

The Environmental Management Act includes a legal decision concerning environmental impact assessment (*Besluit M.e.r.*), which takes into account the NEN status of areas for which interventions are proposed and the effects of planned activities on neighbouring NEN areas.

The Act on Ammonia and Livestock Farming (*Wet Ammoniak en Veehouderij*, 2002) was introduced to protect the most sensitive areas protected by the NCA from an excessive ammonia deposition from intensive livestock farming. It prohibits extensions to farms or increases in livestock for farms within a 250 meter wide buffer zone around these protected areas.

Because the different parts of the NEN depend on different legislations, their protection status is also different. The assessment framework for planned activities or development in areas that fall under the Nature Conservancy Act and Natura 2000 areas is more stringent than the one for NEN areas. In areas protected under the NCA or the Birds and Habitats Directives, less impact is tolerated than in the other parts of the NEN and the Minister of ANF must approve any proposed development in these areas.

5.3 Policy Framework of Ecological Networks

5.3.1 The National Spatial Strategy

The main Dutch policy concerning ecological networks is the National Spatial Strategy, NSS (*Nota Ruimte*, 2004), but since this policy has a legal status and its execution is compulsory, it can be considered a law rather than a policy. Other policies that relate to ecological networks include the Multiannual Plan for Defragmentation (*Meerjarenplan Onstsnippering* or MJPO), the Species Policy (*Soortenbeleid*), the Agenda for a Vibrant and Dynamic Countryside (*Agenda voor een Vitaal Platteland*).

5.3.2 Multiannual Plan for Defragmentation

Of particular interest to the planning and realisation of the NEN is the Multiannual Plan for Defragmentation (*Meerjarenplan Onstsnippering* or MJPO). It is a policy framework developed by the ministries of TPWWM, ANF and HSPE dating from 2004 which aims at mitigating the fragmentation of the landscape (and of natural corridors) caused by transport infrastructure (such as highways, train tracks, and waterways with steep banks). In response to several identified bottlenecks mitigation measures are designed which include the construction of overpasses (ecoducts), tunnels and gently sloping, natural river banks (Figure 3). Each province identifies potential physical bottlenecks for the implementation of the NEN that resulted from infrastructure

development. These bottlenecks are then eliminated through close cooperation between different actors: government agencies, provinces and terrain managers (see actor analysis).

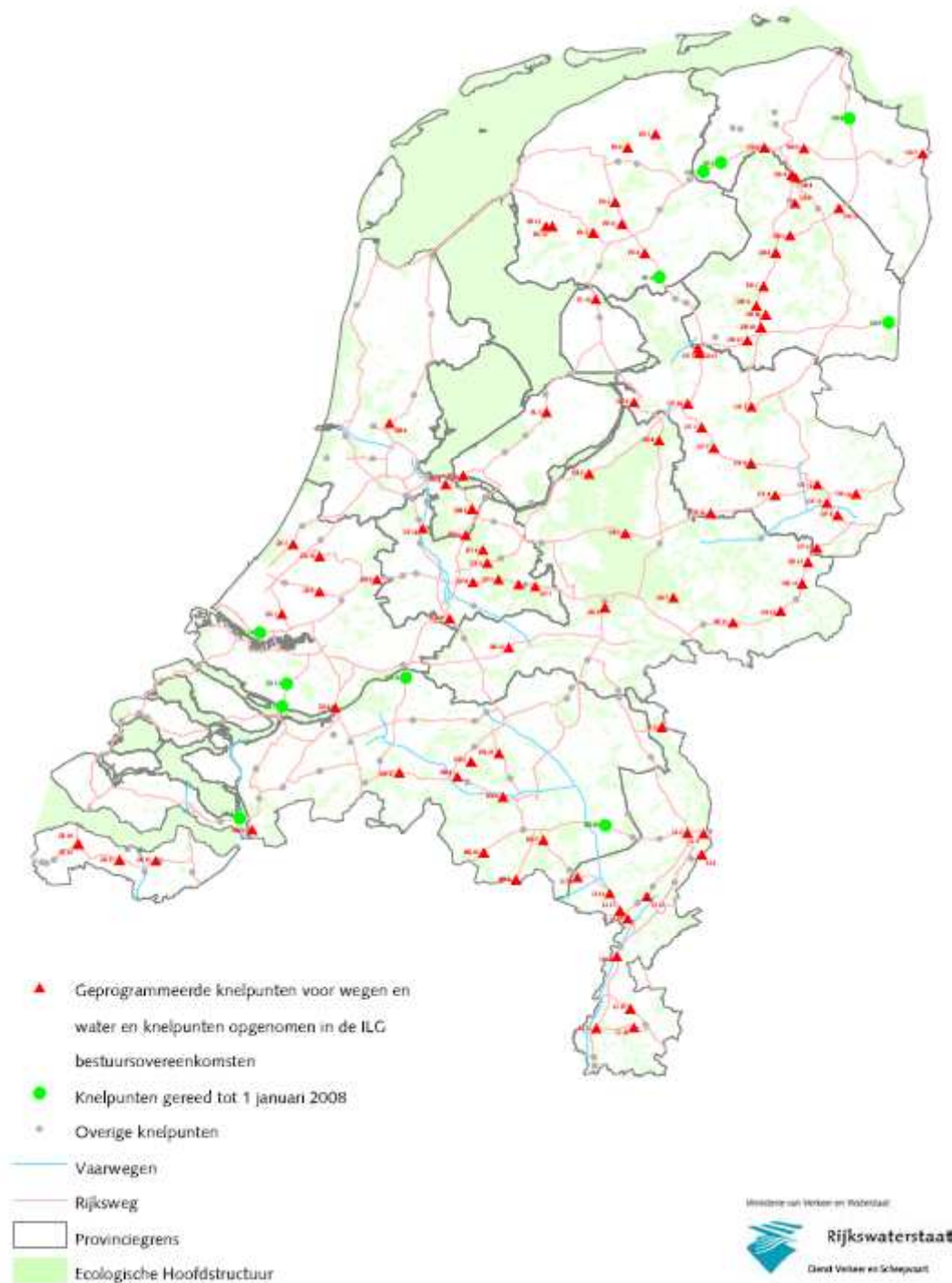


Fig. 3. Identified bottlenecks which have been solved (green dots), will be solved (red triangles) and are still remaining (grey dots) (Source: MJPO Annual report 2007).

5.3.3 Species Policy (*Soortenbeleid*) and the Habitat Approach (*Leefgebiedenbenadering*)

The multiannual program for Species Policy (2000-2004) was set up by the Ministry of ANF in order to actively protect the most vulnerable species. Attempts were made to conserve the species selected on basis of the IUCN Red List, by setting up management and conservation / recovery plans inside and outside protected areas. The duration of those plans was five years. The species

policy was not that successful because the responsible parties did not take sufficient account of species conservation interests in the spatial plans and projects. Although it yielded some isolated species recoveries, overall the Species Policy did not yield the expected results in terms of protecting the most vulnerable target species. It was therefore followed by the Habitat Approach (*Leefgebiedenbenadering*) which is now being implemented by the provinces and their partners. The Habitat Approach has also been developed by the Ministry of ANF to improve the quality of the habitats of more than one species alone. If the cause for a species' decline is habitat fragmentation, the Habitat Approach can encourage development of a network in terms of ecological corridors, so that a specific habitat is defragmented. Both the Species Policy and the Habitat Approach seek to improve the conservation status of threatened species and their habitats both inside and outside the protected areas, and can therefore be considered as valuable policy additions to the nature conservation objectives of the NEN.

5.3.4 Agenda for a Vibrant and Dynamic Countryside (*Agenda Vitaal Platteland*)

The Vital Countryside Agenda (multiannual program 2007-2013) puts into practice the State's policy to create a liveable, vital and sustainable countryside as it is formulated in the National Spatial Strategy. The finances originate from the Investment Budget Rural Area (*Investeringsbudget Landelijk Gebied*). The agenda addresses issues related to nature, agriculture, recreation, landscape, soil, water, reconstruction of areas around sandy soil arable lands (where nature has been strongly affected by the intensive agricultural practices) and social-economical vitality. The targets of this policy sometimes coincide with ecological networks, such as the development of ecological networks to contribute to an attractive landscape.

5.4 Institutional Framework of Ecological Networks

As the planning and implementation of the NEN are fully integrated in the spatial planning process, the institutional framework is roughly similar. The ministries of HSPE and ANF are the main state government institutions responsible for the NEN, but they cooperate with the Ministries of TPWWM (e.g. defragmentation and the "wet NEN"), and EA (e.g. in cases involving conflicting interests with economic development).

As indicated above, general strategies and guidelines for the NEN are devised at national level, but the fine-tuning and actual translation into project plans and land use plans is done by the municipalities and the water boards, and coordinated by the provinces. More detail about the specific roles of state institutions in the planning, implementation, monitoring and evaluation process of the NEN is given in the two following paragraphs (Actor Analysis and Knowledge Base).

5.5 Ecological Networks Planning: Actor Analysis

Introduction - As the above clearly indicates, state institutions have a key role to play in the planning and implementation of the ecological networks. The entire policy cycle is quite complex and involves a large number of actors. The general outline of the NEN at national level has been defined and is no longer subject to major alterations. At sub-national level, planning and actual implementation are part of an iterative process consisting of agenda setting, planning, consultation and participation, implementation, monitoring and assessment. The cycle is completed when the implementation assessment results are fed into the policy planning stage, and the cycle starts again. Provinces, municipalities and water boards are federated in associations that bundle their interests and actively participate in the policy making regarding spatial planning and therefore also regarding the ecological network.

National Government - The national Government has produced the National Spatial Strategy, which contains the guidelines for the NEN. The spatial planners working at the provincial and municipal level must take these guidelines into account when developing a plan. They also provide financial resources to the provinces for the development of the NEN (through the Investment Budget for the Rural Area, *Investeringsbudget Landelijk Gebied*, ILG). The Ministry of ANF has set up a subsidy scheme which ought to promote the natural values of agricultural land and the Dutch landscape. Recently the Ministries of ANF and HSPE jointly developed NEN 'rules of the game'

(*Spelregels EHS*) wherein the 'no, unless' principle and what a municipality will have to do if it applies this principle are broadly explained.

Provincial authorities - The provinces are in charge of the development of the NEN and the planning process and they are responsible for the net delineation of the NEN. In general, the borders are strictly defined and the province considers that the municipalities deal carefully and responsibly with the NEN, so that the NEN is not harmed. All local plans, as they are developed by the municipalities, are checked for irregularities by the provinces, which are supposed to have the capacity to do so. They can reject local plans and oblige municipalities to redraft their plan. The majority of the implementation of the NEN is carried out by the provinces. Provinces also decide which landowners receive subsidies for the nature management subsidies and the subsidised agri-environmental schemes and also decide which areas should be purchased for the conversion into nature.

Water Boards - The water boards generally do not play a major role in the actual strategic planning of the NEN (at national to local level) but they are very closely involved in the actual practical planning for implementation of the "wet parts" of the NEN. Their knowledge and expertise in the field of regional hydrology makes them essential partners for translating the general outlines of the NEN into practical projects. Their role is to ensure a safe and high quality water management, making sure that each project that requires alterations to the regional or local hydrology does not create public safety risks. They also help creating positive synergies between nature development (within or outside the NEN) and flood control measure.

Governmental implementation agencies - The relevant agencies for the implementation of the NEN include the Agency for the Rural Area (*Dienst Landelijk Gebied*, DLG) focusing on the dry NEN and the Agency for Public Works and Water Management (*Rijkswaterstaat*) in charge of the wet NEN. They work together with their local and regional counterparts and also participate in some phases of the planning, although their main focus is on implementation. The Agency for the Rural Area which is affiliated to the Ministry of ANF acquires the land which is designated as NEN. Once purchased, the ownership of the land is transferred to nature management organisations such as State Forest Service (*Staatsbosbeheer*), the Association for the conservation of nature monuments (*Vereniging Natuurmonumenten*) or to one of the provincial Landscapes Associations (*Provinciale Landschappen*).

Municipalities - The municipalities have to adopt the NEN as it has been designated by the provinces and should be recalled by the provinces if they do not or insufficiently take up the NEN in their land use plan. If they have good arguments to not adopt the NEN, they must take the "no, unless" principle into account (see 5.7.). If a municipality would, for instance, like to develop a residential area, which is of great public interest, in the NEN, they will have to compensate this loss. How this must be done has been explained precisely in the recently published brochure 'NEN rules of the game' which has been developed by the Ministries of ANF and HSPE. Some municipalities enthusiastically support ecological networks by developing extra networks outside of the NEN within their territory and they try to persuade farmers to change farming practices and to contribute to nature conservation (in relation to the Agri-environmental schemes). Except for taking the NEN into account in their land use plans, the municipalities do not have major responsibilities concerning the NEN. However, municipalities have very different attitudes towards ecological networks. Some of them are very proactive towards ecological networks, witnessed by the independent development of ecological corridors and the encouragement of farmers to apply agri-environmental schemes some municipalities do.

Nature management organisations - The ownership of land purchased by the provincial authorities or DLG is often transferred to nature management organisation such as State Forest Service, the Association for the preservation of nature monuments and the provincial Landscapes. State Forest Service is financed by the national Government and The Association for the preservation of nature monuments receives its income from its (individual) members. Most nature management organisations are inevitably involved in the planning and development of ecological networks, since they are the owners of nature areas which have been taken up in the NEN and may even be designated as Natura 2000 areas, and have quite some expertise in the field.

Ecological consultants - Provinces and municipalities hire independent consultants to design spatial plans or concrete elements of spatial plans, such as ecological corridors. These consultants have a wide range of expertise relating to different aspects of spatial planning and ecology. They employ spatial planners, hydrologists, ecologists etc. Other consultants (e.g. juridical advisory firms) provide municipalities with advice on laws and policies if necessary.

Conservation NGO's - The key actors in the planning phase of the NEN are very similar to those concerned with the overall spatial planning. As far as knowledge and specific interests are concerned there are however some noticeable distinctions. The main groups that are actively involved in the planning process for ecological networks are nature conservation organisations. Among the main ones are: The Dutch Association for Nature and Environment (*Stichting Natuur en Milieu*, SNM), Friends of the Earth Netherlands (*Milieudefensie*), The Landscapes (*De Landschappen*), the Association for the Conservation of Nature Monuments (*Vereniging tot Behoud van Natuurmonumenten*), the Provincial Environment Federations (*Provinciale Milieufederaties*). Through letters, participation in debates they try to influence the decision making and planning process. They also have an important role as far as the raising of public awareness about the importance of ecological networks (and nature conservation more in general) is concerned.

Other actors: entrepreneurs - Besides these proponents of ecological networks, there are the interest associations of groups that are affected in their activities by the planning of ecological networks. Notable among them are the farmers, private land owners and (real estate) developers. The planning of ecological networks can have profound negative (or positive) effects on their activities, so their associations take particular interest in the planning of the NEN. Their attitude towards the NEN varies a great deal. Some land owners, farmers and farmers' groups happily adopt the subsidised agri-environmental schemes, while others remain vehemently opposed. The Dutch Federation of Agriculture and Horticulture (*Land en Tuinbouworganisatie*, LTO) and the Federation of Private Landowners (*Federatie Particulier Grondbezit*, FPG) are the main national representatives of these groups.

5.6 The Ecological Networks Knowledge Base

Introduction - The knowledge base of the NEN has its main foundations in (landscape) ecology, biology, environmental sciences and spatial sciences (including planning). As the NEN and spatial planning are strongly integrated in the Netherlands, their knowledge base exhibit quite some overlap. Therefore, this section focuses on the ecological knowledge base, as the spatial planning knowledge base has been discussed in chapter 4.6.

Numerous research institutions generate (part of) the knowledge that is needed to plan, implement, monitor, assess and report progress back to policy makers to close the policy cycle. Some government programmes are also geared towards the stimulation of innovation in the field of sustainable spatial planning and multifunctional land use. In addition, efforts are made to encourage the exchange of knowledge between experts, practitioners and policy makers. Finally, in line with international agreements on public participation in the field of environmental decision making, efforts are made to make plans and knowledge available to the wider public. A short overview of the main players in the knowledge and information fields follows.

The Netherlands Organisation for Scientific Research (NWO) funds top researchers at universities and institutes and steers the course of Dutch science by means of subsidies and research projects. Besides funding and steering research in the specific environmental fields relevant to ecological networks, it also plays a key role in generating knowledge about optimizing the science policy interface.

Generating ecological knowledge - Universities are generating fundamental knowledge about species ecological requirements and about the spatial dimensions of ecological processes that are needed to understand the possible effects of increasing connectivity on the conservation of biodiversity. Universities that are very active in this field include: the University of Amsterdam, the Free University of Amsterdam, the University of Groningen, Leiden University (CML), the Radboud University of Nijmegen, Utrecht University and Wageningen University and Research Centre (*Alterra* and *Landbouweconomisch Instituut*, LEI).

Other institutes that generate ecological knowledge for a better understanding and planning of conservation policies and projects include the Netherlands Institute for Ecological Research (NIOO), the Royal Netherlands Institute for Sea Research (NIOZ), the Institute for Marine Resources and Ecosystem Studies (IMARES). The newly established Water Service (*Waterdienst*) of the Ministry of TPWWM, replacing RIZA and RIKZ, also conducts ecological research and monitoring.

Government departments are advised by special bodies and agencies that provide knowledge in support of sound policy and decision-making, as well as the monitoring and assessment of policy

effectiveness. For the field of ecological networks the most relevant include: the Advisory Council of the Ministry of HSPE (*VROM Raad*), the Council for the Rural Area (*Raad voor het Landelijk Gebied*) and the Netherlands Environmental Assessment Agency (PBL). The latter publishes annual reports on the state of the nature and the environment (*Natuurbalans* and *Milieubalans*) and also an evaluation of the NSS (*Monitor Nota Ruimte*).

Stimulating Innovation - Research programmes on multifunctional land use, the costs and benefits of conservation practices (including ecological networks) in which ecological networks play a role are increasingly being financed by the Government in order to generate novel approaches and ideas to tackle future spatial challenges related to climate change, water management and the costs and benefits of nature conservation. The BSIK has been discussed in chapter 4.6. More specifically relevant to ecological networks is an independent innovation platform (*Innovatienetwerk*) financed by the Ministry of ANF.

Monitoring biodiversity trends - Basic data and information about the distribution and abundance of animal and plant species is collected by the 10 private data managing organizations (*Particuliere Gegevensbeherende Organisaties*, PGO). They coordinate the collection of distribution and abundance data of different animal and plant groups, e.g.: *SOVON* for the birds, *FLORON* for vascular plants, *RAVON* for reptiles, amphibians and fish, the *Vlinderstichting* for butterflies and dragonflies etc. They are federated in the Association of Flora and Fauna Research (VOFF). These organizations, which work with a large number of volunteers help monitoring the state of Dutch biodiversity. Their data are centralized in the National Database for Flora and Fauna (NDFF) which is operated under supervision of the Dutch Nature Data Authority (*Gegevensautoriteit Natuur*) in close cooperation with the Central Bureau of Statistics (CBS) and are made available to the authorities and other interested parties. Aggregated data are available on the Environment and Nature Compendium (*Milieu- en Natuurcompendium*) and are used to measure the trends in the quality of Dutch nature and to assess policy measures.

Channelling information among the practitioners and to the public - Information on the presence of red list species or species protected under the Nature Conservancy Act and the status, delimitation and state of ecological networks and protected areas inside them is provided to the public and interested parties through a number of mainly digital channels, including the Nature Counter (*Natuurloket*). This service provides georeferenced data on the presence and abundance of protected species to planners and developers. Knowledge on ecology and ecological networks is shared among professionals and practitioners through a number of networks and platforms such as the Dutch / Flemish Association of Ecologists (NECOV) and the Working Group on Landscape Ecology (*Werkgemeenschap Landschapsecologie*).

In spite of the efforts described in this chapter, it seems that the sharing and exchange of information between the policy makers and the scientific community could still be improved. Staff members at provinces, municipalities and ecological consultants are therefore not always aware of the latest knowledge and insights concerning Ecological Networks. It was suggested that an official communication platform or body, which could facilitate the interaction between scientists and the implementing stakeholders, is missing.

5.7 The Dynamics of Ecological Networks Planning in Practice

5.7.1 Preparation

The outline of the NEN has been presented on several maps in the NSS and then acquired a legal status. The level of detail of the national map is not very high. Details of the elements of the NEN are more clearly indicated in the regional plans (now structure visions) which are developed at provincial level. The municipalities take account of the net delimited NEN and they may not, unless urgent matters force a municipality to act otherwise, hamper the NEN by direct interference.

At the level of the development of the "structure visions" (*structuurvisies*), active participation by all interested parties is possible, but no appeal is allowed once the structure vision has been approved. The structure vision of the province determines the general outline of the NEN at provincial level, based on the general national map. The structure vision is self-binding, meaning that it only binds the institution that produced it. It is not binding for other parties. Based on the provincial structure visions, the municipalities develop their own. These maps should take account

of the outline of the NEN in the provincial structure vision. This stage is also open to public participation in the process.

5.7.2 Implementation

In the context of this report implementation is understood as the translation of the NEN to local (and regional) plans which ultimately result in concrete projects (land purchase, agri-environmental schemes, management plans etc) leading to the elaboration of a coherent national ecological network. The concrete implementation actions will only be briefly mentioned and described in as far as they are relevant to the planning process, as planning and implementation are part of a dynamic process of consensus building, and give and take.

Integrating the national NEN vision and guidelines into regional plans and local land use plans

The twelve provinces take the main responsibility for the implementation of the NEN. They decide on how the NEN should look like, where it should be developed and as a consequence of that which areas need to be purchased. The goal is to have the total of net delimited 728,500 hectares of the NEN implemented in 2018. As yet, areas of the gross NEN that should strengthen the net NEN have only been vaguely designated, but since their realisation completely depends on voluntary cooperation of farmers and other landowners, achieving agricultural land under permanent nature friendly management remains a problem.

In the beginning, the NEN did not contain so-called "robust corridors". However, a couple of years after the start of the implementation of the NEN, the corridors were considered not to be effective enough. Moreover biodiversity was still declining. In an attempt to reverse this trend, "robust corridors" were developed, whose aim it was to enhance the quality of the NEN. The robust corridors connect ecosystems at a national scale, increase the habitat surface and enable species migration.

The provincial authorities are also responsible for purchasing agricultural land that needs to be developed into nature. The actual purchasing of land to be developed into nature is in the hands of the Agency for the Rural Area (DLG) which resorts under the provinces and the Ministry of ANF (which also finances this activity). They can allot the ownership of the purchased land to nature management organisations such as State Forest Service (*Staatsbosbeheer*) and the Association for the preservation of nature monuments (*Natuurmonumenten*) which convert it into nature and set up the necessary management plans. Overall, the implementation of the NEN as a whole remains a responsibility of the provinces. The provincial authorities communicate and negotiate with landowners about the distribution of subsidies (which are financed by the Ministry of ANF, through the ILG) for nature friendly farming practices and private nature management.

The purchase by the authorities of areas which are planned to become part of the net delimited NEN is subject to much discussion. As it happens, for the realisation of the corridors, which are considered to be necessary for the migration of species between areas and the vitality of populations, land needs to be purchased. However, this land can only be obtained if farmers and other landowners voluntarily sell it. Since expropriation of farmland is not popular, serious complications regarding the completion of the NEN will arise if farmers and landowners are not willing to make a deal. Another problem is that the gross NEN, meant to strengthen the vitality of the nature areas and the corridors between them, are not protected and also completely depend on voluntary cooperation of farmers and other landowners.

The provincial authorities should keep an eye on the local plans as they are developed by the municipalities. Once a local plan does not correctly incorporate the NEN the provincial authorities must thoroughly check the plan and if applied also the correctness of the use of the 'no, unless' principle, and if necessary, they need to reject the plan and call back the responsible municipality. Then, the municipality must develop a new plan and if it continues to fail, the provincial authority may finally replace the local plan by a plan developed by themselves. However, despite of the provinces' possibility to reject the municipalities' plans, they formally do not have any juridical power, so that implementation of a rejected plan might not automatically involve prosecution of the municipality or other sanctions.

Dealing with conflicting (land use) interests: the precautionary principle

Interventions may be allowed in the planned NEN for reasons of overriding public interest under a so called “no, unless” regime (or precautionary principle). The “no, unless” principle should prevent municipalities from deploying any activities in areas designated as net NEN. The “no” indicates that by way of principle no development is allowed. The “unless” prevents the principle from becoming too strict. If a municipality considers the envisaged development as being of overriding public importance it will still be able to carry out residential, commercial or other developments, but only if such a proposal is backed by good arguments. If the municipality uses the “no, unless” principle for instance to develop residence building, it must compensate the loss imparted to the NEN.

The precautionary principle leaves much room for interpretation and has therefore been the subject of much debate. In order to precisely inform municipalities about how to interpret and how to deal with the precautionary principle, the Ministries of ANF and HSPE have published a “Rules of the Game”-document. In this way, together, the Ministries of ANF and HSPE and the provinces hope to provide more clarity about how to deal with this principle. Spatial planning operations which negatively affect the NEN are only allowed if so called “re-delimitation” of the NEN or compensation measures are taken. These have to be ecologically sound. Areas that fall under the Nature Conservancy Act (NCA) are fully protected. Proposed interventions in areas protected by the NCA are subject to more stringent conditions the public interest and compensation measures must be implemented beforehand. Financial compensation is not allowed in these cases. The NCA requires that management plans for the designated areas are developed. The corridors of the net delimited NEN however are not regulated by the NCA or Natura 2000. The agricultural areas which are included in the gross NEN are not protected by law.

5.7.3 Evaluation

Control of the planning and implementation - Most activities related to the actual implementation of the NEN are carried out at local level by the municipalities in close cooperation with their partners (see Actor Analysis) and follow the directions set out in the municipal land use plan. Both the national Government and the provincial authorities have the power to reactively overrule proposed local plans and projects (see Dynamics of Spatial Planning).

Evaluation of the effectiveness of the NEN planning and implementation - The progress in the implementation of the NEN and its management plans as well as the state and quality of the nature they try to protect are monitored, evaluated and reported. The Netherlands Environmental Assessment Agency (PBL) evaluates the quality of Dutch nature, the state of execution of the NEN and the effectiveness of the NEN in conserving species (see Knowledge Base). This information is fed back to the policy-makers who can then adjust policies and spatial planning objectives and procedures. At regional level, the provinces also monitor the state of nature and assess the effectiveness of their policies. They share the knowledge and information needed for these tasks with the national networks and institutions. The municipalities are responsible for keeping track of the status of the red list species in their territory, in order to make sure that proposed plans do not threaten their survival.

6 Planning Ecological Networks: Interactions, Synergies and Barriers

6.1 Horizontal Interactions

6.1.1 Between regions

The provincial authorities are responsible for the construction of (the major part of the) roads and for the implementation of the net delimited NEN. Basically, the planned items which require inter-municipal or international communication are usually coordinated by the provincial authorities. Since spatial plans are developed at a provincial level, no specific communication about regional planning is needed between municipalities. The regional plans (now structure visions) already take into account the often inter-municipal status of the ecological networks. Municipal ecological networks are harmonized in the regional plans. The interprovincial communication has been very well developed. The Inter Provincial Platform (IPO) encourages and provides the means for a good communication between the provinces. How to deal with the ecological networks that transcend provincial boundaries is discussed in the IPO. In addition the IPO facilitates the in-depth communication between the provinces involved in a certain transboundary nature areas. A specific platform for the exchange of knowledge and ideas regarding countryside development in the provinces is provided by the policy advisory group for the countryside (*Beleidsadviesgroep Landelijk Gebied*, BALG), a body of the IPO.

6.1.2 Between countries

Until recently, international trans-boundary communication was limited. At this moment however, the communication between Belgium and the Netherlands and Germany and the Netherlands is slowly increasing and the awareness of the necessity to communicate internationally is definitely present. The main responsibilities for the trans-boundary communication are given to the specific provinces adjacent to Belgium or Germany. The Netherlands actively participates in the Kleve Meeting Process (*Kleve Treffen*), an international initiative to explore the possibilities of linking ecological networks across the borders between Belgium, Germany and the Netherlands.

6.2 Vertical Interactions

6.2.1 With the EU level

The Habitats and Birds Directives are the first and major EU directives relating to nature conservation, and have been integrated in Dutch legislation and policy. Article 10 of the Habitats Directive in particular considers ecological connectivity between protected areas as an important factor for ensuring the coherence and effectiveness of the Natura 2000 network. The Netherlands had already started developing its own ecological network policy before the introduction of the Habitats Directive, so its introduction went smoothly. Of all the European legal, policy and financial instruments relevant to biodiversity the Birds and Habitats Directives and the Natura 2000 network are absolutely the best known and at this moment it is in the last phase of being implemented on a large scale. Many people are involved in the implementation of Natura 2000 (e.g. management plans are set up for every Natura 2000 area). As the NEN and the laws which are the most related to nature conservation are based on the Birds and Habitats Directives, these are well known and widely applied in the Netherlands, although many actors involved in ecological networks are not particularly aware of these Directives.

The implementation of the EU Water Framework Directive, WFD (*Kaderrichtlijn Water*, KRW) is under way and it has shown to offer quite some positive synergies with the implementation of the NEN, as the positive impact of the NEN on the conservation of the biodiversity depends to a great

extent on the abiotic conditions such as water quantity and quality in these areas which are the subject of the WFD.

The EU Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA) Directives have been integrated in Dutch legislation and policy and are widely applied. They do not seem to play a role in the planning or implementation of the NEN which depends on other legislation and policy. As shown in 5.2., the NEN is an important factor which is taken into account in Environmental Impact Assessments carried out in the Netherlands (Netherlands Commission for Environmental Impact Assessment, NCEIA).

Spatial planning is a policy area still very much protected by the individual EU Member States, which are reluctant to align their planning concepts, approaches and priorities to European ones. However, there are European attempts at improving the spatial coherence of the EU territory, such as the European Spatial Planning Observation Network (ESPON), European Spatial Development Perspective (ESDP). As an EU Member State, the Netherlands participates in these processes.

European financial mechanisms that are available for regional development, territorial cohesion, and nature conservation (Leader, Interreg, Life etc) are being used in the Netherlands. Their role in spatial planning and the planning of ecological networks is limited, as they are more geared towards the financing of projects than in implementation of visions and plans.

6.2.2 Vertical interactions with the Pan-European Level

At ministerial level, the Netherlands participates in pan-European intergovernmental processes and initiatives mostly carried out under the auspices of the Council of Europe, United Nations Environment Programme and United Nations Economic Commission for Europe. These intergovernmental initiatives that set the agenda for Europe-wide priorities in the fields of spatial planning and nature conservation include Pan-European Ecological Network (PEEN), Pan-European Biological and Landscape Diversity Strategy (PEBLDS), the Bern Convention, and the European Landscape Convention. The international agreements that are reached through active participation in these are integrated into Dutch policy.

Although the Netherlands actively participates in these pan-European processes and initiatives regarding spatial planning and certainly biodiversity conservation and ecological networks at governmental level, the level of awareness among the wider public of this involvement tends to be low. The lower the authority level, the lower the awareness of European instruments. Most of the actors involved in ecological networks at the lower levels of governance seem to be unaware of the European policies that concern spatial planning. The same accounts for the Pan-European Ecological Network (PEEN), although some of the interviewees had heard about it, it was as far as they knew not of great influence on the planning of ecological networks in the Netherlands. European guidance and policies such as the Guiding Principles for Sustainable Spatial Development of the European Continent (GPSSDEC-CEMAT, Council of Europe) are being used at Ministerial level but not considered to be of direct relevance by the practitioners working with ecological networks in the field.

6.2.3 With the Global Level

The NEN is an important instrument for the Netherlands to implement its international obligations vis-à-vis the Convention on Biological Diversity (CBD) and notably its programme of work on protected areas, the Bonn Convention (on migratory species), Unesco World heritage Convention and the Ramsar Convention (on wetlands). The Netherlands has integrated the prerogatives of these international conventions in its legislation and policy.

6.3 Synergies of Spatial Planning and Ecological Networks Integration

Conceptual synergies - The NEN is not merely a means towards the protection, conservation and enhancement of biodiversity in the Netherlands, which is often considered as a cost by some segments of society. Indeed, it also offers many additional benefits to society, known as ecosystem services, as was explicitly underlined in the Policy Programme Biodiversity Works, for Nature, for People, for Ever (*Beleidsprogramma Biodiversiteit werkt voor natuur, voor mensen, voor altijd*, 2008). Planners have already creatively used the most evident ecosystem services provided by

ecological networks, such as water buffering in nature areas, as a measure for flood control. The combination of protected areas and other services it provides to society (besides protecting biodiversity) is known as multifunctional land use³. The ecosystem services provided by ecological networks that have shown to be inspiring to spatial planners and policy makers in the Netherlands to work with include:

- filtering and purifying run-off and water infiltrating to the aquifers;
- filtering the air (capture of fine dust particles), of particular interest for human health near urban areas;
- production of oxygen;
- carbon sequestration (in the growing wood and the accumulating soil organic matter) as a mitigation of climate change;
- sustainable production of wood and non timber forest products such as berries and mushrooms;
- sustainable production of biomass (such as residue from nature management activities like wood coppice and hay);
- temporary storage of excess river discharge to avert flooding;
- combating the erosion of riverbanks, coastlines and soil;
- protecting rural, cultural, historical, archaeological and geological values;
- fulfilling some types of recreational and cultural functions;
- attractive locations for living and business development;
- integrating the countryside and the urban space;
- the right environment for mental relaxation and mental health.

These are all functions provided by the NEN that can benefit society if integrated in a creative way in a vision developed for an area. The creative application of multifunctional land use alternatives involving ecological networks is especially relevant in the context of planning for climate change, both in terms of mitigation and adaptation. The Dutch Government invests in innovative models for spatial development and adaptation to climate change through the financing of research and innovation programmes (SenterNovem, an agency of the Ministry of Economic Affairs). In particular, the Climate for Space (*Klimaat voor Ruimte*) programme facilitates research on the interface of climate, nature and spatial planning. *Innovatienetwerk*, which resorts under the Ministry of ANF but operates independently, also coordinates cutting edge innovative research integrating sustainable economic development with agriculture, spatial planning and the conservation of biodiversity.

Practical synergies - The integration of Ecological Networks and Spatial Planning seems to be quite well in the Netherlands. Good communication between most of the actors exists (but could be improved as is reported in 6.4.). The planning of the NEN does seem to be well organised and based on solid ecological foundations. The staff working at the ministerial departments and provinces, which determine the nature and delineation of the NEN, have a wide range of backgrounds including ecology, hydrology and spatial planning. There is no lack of expertise and of communication between the various experts within the provinces. Participation in exchange platforms such as the Inter Provincial Platform (*Interprovinciaal Overleg*, IPO) helps the authorities increasing their effectiveness and cooperation related to ecological networks and spatial planning (as well as other subjects).

6.4 Barriers to Spatial Planning and Ecological Networks Integration

Spatial planning and ecological networks are conceptually and policy-wise well integrated in the Netherlands. Many of the barriers listed below are being addressed through efforts for better communication, simplification of policy and procedures and the creation of better conditions for cooperation. However, in spite of these efforts, the barriers have not yet been overcome.

The main barriers to the effective integration of spatial planning and ecological networks include:

- the complex nature of the spatial planning policy field;
- the difficult and complex governance structure related to spatial planning and nature conservation:

³ In a true sense, multi-functional land use is of course a much wider concept than this definition which takes the protected natural area of the NEN as a starting point, and should therefore only be considered as such in the context of this report. Multi-functional land use can apply to any combination of functions in a given area without nature necessarily being part of the equation.

- unclear division of responsibilities between the many players
- overlapping prerogatives between departments and administrative levels
- lack of understanding and clarity about the consequences of the recent decentralisation;
- a generally insufficient level of communication between departments, administrative levels and other players;
- a lack of coordination within the complex field between departments, administrative levels and other players;
- insufficient skills and knowledge of the staff involved at some stages of the planning, decisions making and implementation (mainly in smaller municipalities);
- a lack of sufficient financial resources;
- a science policy interface that could be improved;
- a lack of monitoring, assessment and feed back;
- a lack of political support, especially at the lower levels of administration (especially regarding the NEN), both horizontally and vertically.

7 Conclusions and recommendations

In the Netherlands the nature, policy and process of spatial planning and its interactions with the ecological networks have been very much influenced by history, physical and natural characteristics of the country's economy and population.

Some important features that have affected the nature of spatial planning are: a low lying country, centuries of battle against the water, high population density, space in short supply and an economy based on services and transportation.

Because of the high demand for space from various sectors of society, nature has been under high pressure, especially since the 1970ies.

The new Spatial Planning Act puts a great emphasis on decentralisation of spatial planning activities and responsibilities, and on planning by development as opposed to planning by control.

The need to protect nature by devising a national ecological network of connected protected areas arose in the 1980s and was officially introduced in the Nature Policy Plan in 1990, before the EU Habitats Directive was adopted and integrated into Dutch policy.

Legislation and policy on spatial planning and ecological networks are highly integrated and regulated in the Netherlands.

The practical consequences of the new SPA for nature conservation and the planning and implementation of the National Ecological Network are not yet fully understood. At the time of the writing of this report, the provinces and municipalities were still adjusting to these changes, and the full application of the new Act was still in a transitional phase.

Conservationists argue that, because of the further decentralisation introduced by the new SPA, central government will lose its control over the municipal Land Use Plans which will tend to favour the local interests. The protection of nature areas including the NEN is therefore at stake.

The complex regulation, the many levels of decision-making and overlapping prerogatives require a good exchange of information and coordination between departments at all levels of administration, but the complexity makes the understanding of the procedures and responsibilities by those involved a difficult task.

There are discussion platforms (*overlegorganen*) at all levels of administration, but still many civil servants, especially in smaller municipalities, feel they are not sufficiently informed to perform their tasks with regards to spatial planning and ecological networks.

The high demand on land for various economic activities, combined with concerns for the environment and climate change have prompted the Government to invest into research and development concerning sustainable, innovative and multi-functional land use.

Water plays an important role in planning and ecological networks, and increasingly so as a result of the anticipated effects of climate change on the safety of the Netherlands. It is increasingly used as a guiding principle for an innovative approach to spatial planning, with an important role for the 'wet NEN'.

Ecological networks present significant opportunities as a guiding principle for spatial planning, as they potentially provide a wide range of ecosystem services, challenging new approaches to multifunctional land use and other benefits to society.

In spite of the government's efforts, several practitioners report that knowledge underpinning the planning and implementation of ecological networks is not readily available, especially to land use planners in smaller municipalities.

Furthermore, our study indicates some barriers in the integration of spatial planning and ecological networks in terms of lack of sufficient financial resources, the need for improvement of the science-policy interface, and the lack of monitoring, assessment and feedback.

The Netherlands promote a pro-active approach to planning and conservation. The Government therefore attaches great importance to research into, and communication of the multiple benefits of biodiversity conservation (including the development of a NEN) to society, by means of the ecosystem services they deliver.

8 Case studies)

8.1 The Renkum Gate (De Renkumse Poort)

Country/location: The Netherlands, Province of Gelderland, Renkum

Brief background and abstract: Provincial/local level ecological network delivery plan wherein the National Park the Hoge Veluwe is connected with the flood plains of the Rhine. The objective is to establish a robust corridor where through particularly red deer and wild boars can migrate between the two areas. An industrial area had to move and some overpasses for fauna have to be developed as well as some traffic adjustments (to prevent road kills).

Outcome: In 2010 the project will finish despite some delay. Some parts of the corridor still need to be established and in the future some facilitations for specific species migrations should be developed. Within five years after the establishment of the corridor the first red deer, roe deer and wild boars are expected to forage in the floodplains of the Rhine.

Critical Success Factors: The most critical success factor is the removal of a small industrial area (12 hectares). It is situated in the middle of the corridor and needs to be removed if the corridor is to become seriously robust. Furthermore some roads and a railroad cut through the area. These require overpasses for fauna. The motivated commitment of many stakeholders (e.g. Ministry of ANF, State Forest Service, Municipality of Renkum) contributes to the achievement.

Problems/Issues: The companies on the industrial area had to move, but some of them objected. However most of them cooperated and the last entrepreneur is expected to move in 2008.

Solutions: Most of the companies have been bought up after a period of negotiations. The resisting ones were send back by the Council of State which declared their objections to be groundless and therefore they are obliged to sell their property.

Key Learning Points: Expropriation might be required in order to establish this robust corridor. However, the negotiations with and collaboration of the entrepreneurs has largely prevented this from being necessary.

Sources:

- http://www.renkumsbeekdal.nl/BeukenlaanInrichtingsplan_internet.pdf
- http://www.renkumsbeekdal.nl/BeukenlaanInrichtingsplan_internet.pdf
- <http://www.renkumsbeekdal.nl/>

- http://www.minlnv.nl/portal/page?_pageid=116,1640949&_dad=portal&_schema=PORTAL&p_document_id=110237&p_node_id=1490922&p_mode=BROWSE

8.2 The Ridge of Utrecht (De Utrechtse Heuvelrug)

Country/location: The Netherlands, Province of Utrecht

Brief background and abstract: In 2002 'The Ridge of Utrecht' gained the status of National Park. A management plan had been set up which contains the targets over a time span of ten years. The area is unique in the Netherlands, because of its relief which was created in the last ice-age. The area has been fragmented over the last century.

Outcome: The objective is to restore the area and to reconnect the different areas. A defragmentation plan has been designed and particularly robust corridors for red deer are planned to be made. There have also been planned some corridors for small mammals, amphibians and reptiles. The management plan also foresees the enhancement of the nature value of the forests and heathlands, by an integrated management approach. Furthermore the area has very good recreation possibilities, which have even been depicted as one of the targets of the management plan.

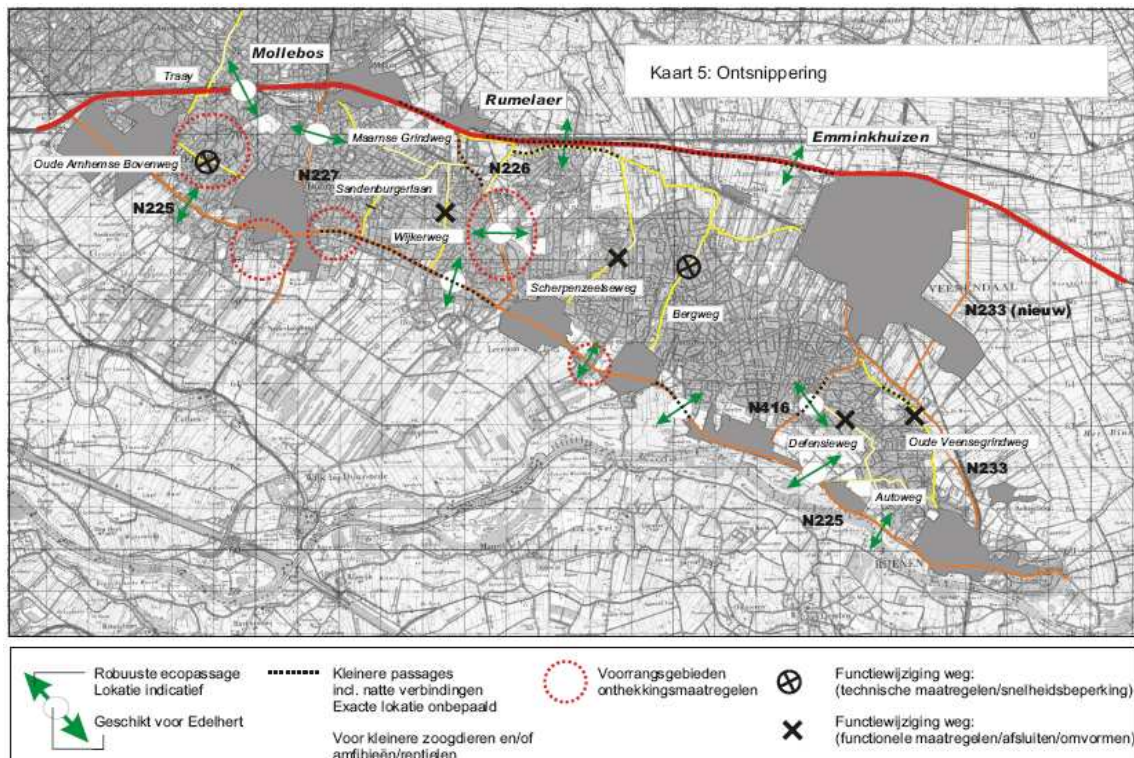
Critical Success Factors: National Parks are designated by the National Government. Then, the different landowners jointly participated in the planning process. The meetings for this process are still continued. Among other participants are three private landowners, the State Forest Service, the Association for the preservation of Nature Monuments and local authorities.

Problems/Issues: The Ridge of Utrecht has been largely disconnected. In order to create a high quality Natural Park many obstacles needed to be overcome.

Solutions: A joint steering committee facilitated the proper communication between the landowners. The result was a thorough management plan for the whole area.

Key Learning Points: A good communication between the different landowners ensured a fluent process.

Map:



Map 1. The green arrows represent the robust corridors for red deer; the dotted lines represent smaller corridors (for small animals) of which the exact location is still to be determined.

Sources:

- <http://www.nationaalpark-utrechtseheuvelrug.nl>
- <http://www.nationaalpark.org/docs/200503091657092407.pdf>

8.3 Crailoo Ecoduct (Natuurbrug Crailoo)

Country/location: The Netherlands, Province of North Holland

Brief background and abstract: Provincial/local level ecological network delivery plan wherein the 'Spanderswoud' is connected with the 'Bussumerheide' and the 'Westerheide'. The objective was to defragmentate a nature reserve ('Goois Natuurreservaat'). By the establishment of an overpass for many different animal species (e.g. European badger, black grouse, European Pine marten, field vole, natterjack toad, grass snake, sand lizard, silver-studded blue and the great crested newt) could again migrate between the areas.

Outcome: The overpass has become 800 meters long which means that it is biggest overpass for fauna in the world. Over the whole length, the overpass is at least 50 meters wide. Furthermore it has taken into account the different animal migration requirements. By its varying vegetation and the inclusion of pools the overpass facilitates migration of many different animals. After four years of work the overpass was established in 2008.

Critical Success Factors: The involvement of many stakeholders was particularly essential before the start of the process. The overpass had to bridge a road, some railroads, an industrial area and a sport park and therefore the Dutch Railways Real Estate, the Provincial Authorities and Ministry of Agriculture, Nature and Food Quality were among the partners.

Problems/Issues: Due to the intensive and constructive contribution of the partners no serious problems arose. The required road diversion, a potential obstacle, was facilitated by the provision of land free of charge by the Dutch Railways Real Estate.

Solutions: The intensive communication between the different stakeholders enhanced the process which resulted in good progress.

Key Learning Points: The stakeholder involvement was very successful and contributed to social support and the progress went off smoothly.

Photographs:



Development of the overpass (Source: Google Earth)



The overpass aims at facilitating migration of different species and therefore also includes watery elements (Source: Google Earth)

Sources:

- www.natuurbrug.nl

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Ministerie van Verkeer en Waterstaat (VenW), Ministry of Transport, Public Works and Water Management (TPWWM)
www.verkeerenwaterstaat.nl/english/

Ministerie van Volkshuisvesting, Ruimtelijke Ordening en Milieu (VROM) Ministry of Housing, Spatial Planning and Environment (HSPE)
<http://international.vrom.nl>

Policy Advisory Councils

Commissie voor de milieueffectrapportage - Netherlands Commission for Environmental Impact Assessment (NCEIA)
www.commissiemer.nl

Raad voor het Landelijk Gebied (RLG) – Council for the Rural Area
www.rlg.nl (in Dutch only)

Raad voor Ruimtelijk, Milieu- en Natuuronderzoek, RMNO - Advisory council for research on spatial planning, nature and the environment
www.rmno.nl

Raad voor Verkeer en Waterstaat – Advisory Council for Transport, Public Works and Water Management
www.raadvenw.nl

Sociaal Economische Raad (SER) - Social and Economic Council
www.ser.nl

Raad voor de Wadden – Wadden Sea Council
www.raadvoordewadden.nl

VROM Raad – Council for Housing, Spatial Planning and the Environment
www.vromraad.nl

Government Research Institutions

Centraal Planbureau (CPB) – Netherlands Bureau for Economic Policy Analysis
www.cpb.nl

Planbureau voor de Leefomgeving (PBL) – Netherlands Environmental Assessment Agency
www.pbl.nl

SenterNovem
www.senternovem.nl/english/index.asp

Government Implementation / Executive Agencies

Dienst Landelijk Gebied (DLG) Agency for the Rural area
www.dienstlandelijkgebied.nl

Rijkswaterstaat (RWS) - Agency for Public Works and Water Management
www.rijkswaterstaat.nl

Other actors

Interprovinciaal Overleg (IPO) Interprovincial Council
www.ipo.nl (in Dutch only)

Unie van Waterschappen (UVW) Union of Water Councils
www.uvw.nl/engels/index.html

Vereniging van Nederlandse Gemeenten (VNG) Association of Municipalities
www.vng.nl/smartsite_dws?id=41361

Environment and nature conservation NGOs

Milieudefensie – Friends of the Earth Netherlands
www.milieudefensie.nl/english

Stichting Natuur en Milieu (SNM) Netherlands Society for Nature and the Environment
www.snm.nl/page.php?pageID=35

Provinciale Milieufederaties, Provincial Environmental Federations
www.natuurenmilieunederland.nl (in Dutch only)

Wereld Natuur Fonds WNF – Worldwide Fund for Nature
www.wnf.nl

Nature management associations

De Landschappen - The Landscapes
www.delandschappen.nl (in Dutch only)

Staatsbosbeheer (SBB) State Forest Service
www.staatsbosbeheer.nl/English.aspx

Vereniging tot Behoud van Natuurmonumenten (NM) Association for the Conservation of Nature Monuments
www.natuurmonumenten.nl (in Dutch only)

Other interest groups

Federatie Particulier Grondbezit – Federation of Private Landowners

www.grondbezit.nl (in Dutch only)

Land- en Tuinbouw Organisatie Nederland (LTO) Dutch Federation of Agriculture and Horticulture
www.lto.nl (in Dutch only)

VNO NCW Confederation of Netherlands Industry and Employers
www.vno-ncw.nl/web/show/id=96470

Natuurlijk Platteland Nederland (NPN) Association for High Nature Value Farming
www.natuurlijkplatteland.nl

Knowledge Base

Alterra
www.terra.wur.nl/UK/

Institute for Marine Resources and Ecosystem Studies IMARES
www.wageningenimares.wur.nl/UK/

Landbouw Economisch Instituut (LEI) Agricultural Economics Institute
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www.nioo.nl

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www.nioz.nl

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Vrije Universiteit Amsterdam VU – Free University of Amsterdam
www.vu.nl

Universiteit Utrecht UU – Utrecht University
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Universiteit Leiden – Leiden University
www.leidenuniv.nl

Vereniging Onderzoek Flora en Fauna (VOFF) Association for Flora and Fauna Research
www.voff.nl

Wageningen Universiteit en Researchcentrum (WUR) - Wageningen University en Research Centre
www.wur.nl

Werkgemeenschap Landschapsecologisch Onderzoek (WLO) Working Group for Landscape Ecology
www.landschap.nl

Information, consultation and public participation

Informatie en Kenniscentrum voor de Ruimtelijke Ordening (IKC RO) Information and Knowledge Centre for Spatial Planning
www.ikcro.nl

Kennisplein Wro – Knowledge Centre for the Spatial Planning Act
<http://ruimteforum.vrom.nl>

Het LNV Loket - Ministry of ANF Information Desk
www.hetlnvloket.nl

Milieu- en Natuurcompendium- The Environment and Nature Compendium
www.milieuennatuurcompendium.nl

Natuurloket – The Nature Counter
www.natuurloket.nl

De Nieuwe Kaart van Nederland – The New Map of the Netherlands
www.nieuwekaart.nl

Servicepunt Nieuwe Natuur – Service Point for new Nature
www.servicepuntnatuur.nl

(Applied) research programmes

Habiforum
www.habiforum.nl

InnovatieNetwerk – Innovation Network
www.innovatienetwerk.nl

Kennis voor klimaat – Knowledge for Climate Research Programme
www.kennisvoorklimaat.nl - www.knowledgeforclimate.org

Klimaat voor Ruimte
www.klimaatvoorruijnte.nl

Leven met Water
www.levenmetwater.nl

Ruimte voor de Rivier - Space for the Rivers
www.ruimtevoorderivier.nl