PBL Netherlands Environmental Assessment Agency

PBL Netherlands Environmental Assessment Agency
Self-evaluation Report

May 2008 – May 2012

Table of Contents

Appendices

Separate Annexes:

Annex 1. Project information about the eight projects selected by the audit committee
Annex 2. Contextual Response Analysis of reports of the PBL Netherlands Environmental Assessment Agency by Dr. A. Prins

Preface

It is a pleasure for the Advisory Board of PBL to welcome the members of the international audit committee visiting PBL in November 2012.
For the first time since the PBL Netherlands Environmental Assessment Agency was founded in 2008, an audit will take place at the request of the Advisory Board. Previous audits were related to PBL's predecessors: the Netherlands Institute for Spatial Research (RPB) and the Netherlands Environmental Assessment Agency (MNP).
PBL is not an ordinary research institute. It is one of the three policy analysis agencies of the Dutch Government that produce policy evaluations, outlooks and special reports. Reports and advice from these agencies play an important role in policy preparation and political discussions and the public debate in the Netherlands.
An important task of the Advisory Board is to see to the quality of the products delivered by PBL. For this purpose, we highly appreciate the opinion of distinguished scientists in the fields of environment and spatial planning. Such an audit committee is most suited to judge the quality of PBL products and activities, taking into consideration PBL's mission to conduct policy-relevant research. Furthermore, the audit committee may give advice to PBL, not only in matters of quality control, but also regarding PBL's future strategy.
The Advisory Board looks forward to meeting the audit committee members in November. We hope there will be interesting and fruitful discussions with PBL researchers and the representatives of various organisations that PBL works for or collaborates with. We trust your audit report will provide us with useful recommendations and suggestions with which to maintain and improve quality standards in the future.

Wim van de Donk
Chair of the Advisory Board of the PBL Netherlands Environmental Assessment Agency
Queen's Commissioner in the Province of North Brabant

Foreword

What is an audit? The most common answer might be that it is an instrument to periodically evaluate the performance of an organisation. A cynic might regard an audit as a necessary 'hoop' to jump through, a process that is required by following conventions. A more vain view may be to see it as an opportunity to showcase the best aspects of your organisation to the outside world, while hiding any negative elements. All three come with serious downsides. The first is too flat and routine, the second too bureaucratic and the third simply a bad idea. For me, an audit is an opportunity to share views and doubts, to learn, to reflect and to improve your performance as an organisation.

The international scientific audit of PBL in November 2012 presents us with such an opportunity. It is a unique possibility to hear what respected scientists think of the work of PBL. PBL's core business is not science per se, but rather that of presenting scientific assessments for public policy. It is the quality of the advice that PBL gives to government and the way PBL organises the quality control for its products which is our concern. But we would also like to invite the committee to give its views on a broader range of topics that PBL thinks are important for its strategic choices for the future with regard to its interface function. These topics cover questions concerning the role of PBL as an independent advisor to the government in view of subsequent budget cuts. What does the audit committee think of the choices PBL has made with regard to the kinds of products it wants to concentrate on, its national and international embedding and its ambitions?

The PBL Netherlands Environmental Assessment Agency has a mission to provide policy-relevant knowledge. When assessing the quality of the scientific knowledge that PBL produces, this fact has to be taken into account. 'Knowledge that matters' is our core business. For this purpose, interaction with our clients is essential. We require knowledge from several scientific disciplines, and instruments and concepts for combining that knowledge to form policy-relevant facts. And of course, we need the right people to help us do so. These are not easy issues in times of budget cuts and changing priorities. Here, too, context matters.

We are delighted that the audit committee will look at our work and choices for the future from a scientific point of view and we look forward to their suggestions and recommendations.

Maarten Hajer
PBL Director

1. Introduction

For the start of PBL we have to go back to 15 May 2008, when the PBL Netherlands Environmental Assessment Agency was founded by Royal Decree. PBL is the product of the merger of the Netherlands Environmental Assessment Agency (MNP) and the Netherlands Institute for Spatial Research (RPB). The merger was a political decision by the Dutch Cabinet. PBL is a government institute under the Ministry of Infrastructure and the Environment (IenM) but operates as an independent organisation. In the 2012 government regulation for policy-analysis agencies (*Aanwijzingen voor de Planbureaus*), governance issues related to PBL's position have been laid out, including ministerial responsibilities and guarantees for PBL's independent position.
This PBL Self-evaluation Report is about PBL's activities and results over the 2008–2012 period. Questions are addressed, such as: What has influenced PBL's performance in those years and what concrete figures are available to illustrate this performance? And what has changed over the past years? Strategic consequences of developments in policy and society, such as changes in environmental policy and budget cuts by consecutive governments, and the ambitions that PBL has for the future, will be discussed following this introduction.
The introduction discusses some general points with regard to the audit, and the current audit is set against past visitations of PBL. Subsequently, the focus and method used for the self-evaluation are discussed briefly.

1.1 Audits of PBL

The audit in November 2012 is the first of two audits that will take place in the period up to 2015. In the first audit, the quality of products and activities is the main point of attention. For 2014–2015, another audit has been planned. During that audit the emphasis will be on PBL's mission, its interaction with clients and its position within the Dutch system of scientific advice to policy.

Text box 1. Objective of the 2012 audit

The Terms of Reference describe the goal of the 2012 audit, namely to evaluate the quality and relevance of the research that is conducted by PBL from an international perspective. The audit committee will produce an evaluation report, indicating what goes well and what could be done better with regard to the quality and relevance of the research conducted by PBL. The committee can make recommendations with regard to improvements to the research, its relevance, PBL management and its positioning in the future. The committee may identify actions to be taken to further an internationally prominent role for PBL.

Scientific quality is not only about underlying data, the underpinning of the conclusions and the quality of the models and the methods used. Scientific quality cannot be regarded separate from the context in which a scientific institute such as PBL operates. It cannot be seen separate from its mission. PBL is neither a university institute nor a consultancy, but it is a national institute that provides policymakers with policy-relevant knowledge. Often this is done at their request, or in close interaction with them, but advice is also provided on PBL's own initiative.
Therefore, an evaluation of the scientific quality of the assessments provided to policymakers cannot be limited to the scientific quality as attested by peer-reviewed publications or by university positions of PBL researchers, but rather should take the

interface function as a starting point and look into the way this interface function is performed.

1.2 The self-evaluation method

For an evaluation of the interface function, methods are available that are considered appropriate for the kind of research PBL carries out as a consequence of its interface function. The 'Standard Evaluation Protocol' – protocol for research assessment in the Netherlands, by the Royal Netherlands Academy of Arts and Sciences (KNAW), the Association of Universities in the Netherlands (VSNU) and the Netherlands Organisation for Scientific Research (NWO) – has been used as inspirational guide for the self-evaluation of PBL, but it has not been strictly applied. In addition, the self-evaluations and past audits of one of the other policy-analysis agencies, the CPB Netherlands Bureau for Economic Policy Analysis, were studied. Earlier versions of the Standard Evaluation Protocol were found not to suffice as a tool for evaluating the scientific quality; the guidance needed a supplement: 'Evaluating the societal relevance of academic research: A guide' (ERiC). The ERiC guide was developed by the KNAW, NWO, VSNU, the Netherlands Association of Universities of Applied Sciences (HBO-raad) and the Rathenau Institute. For the present self-evaluation report, both the Standard Evaluation Protocol and the ERiC guide have been consulted. For the future, it is interesting to see whether the set of evaluation criteria that have been used for this self-evaluation can be further developed to include not only the data on product use, but also indications of how they were used.

This self-evaluation report not only considers indicators that illustrate the scientific quality (e.g. number of peer-reviewed publications), but also those of the societal impact of the products, answering questions, such as: For which purpose did policymakers, politicians, parliament and societal groups use PBL publications? And what role did the publications have in societal and political deliberations?
The Standard Evaluation Protocol proposes four criteria for evaluation by an audit committee: quality, productivity, relevance and vitality/feasibility.
PBL would like to hear the opinion of the audit committee on these aspects, but is even more interested in their opinion about possible consequences of choices PBL has made regarding the future.

For an audit of an institute, it is customary to look also at the products produced by sections of the institute. In the case of PBL, these are the departments (see Chapter 4).The audit committee agreed it would make a selection of projects proposed by the PBL departments (see Annex 1).
For the self-evaluation, the following activities have been elaborated:

- The audit committee was presented with a list of 14 projects that PBL considers representative of PBL work, from which the committee could select a number of reports for thorough review. The proposed list was accepted and the committee chose a total of eight projects.

- Subsequently, a detailed description of the eight projects was presented to the audit committee with an indication of their scientific quality, contextual response, evaluative remarks and several other points of interest for the audit committee. Project descriptions are included in Annex 1.

- An analysis of the contextual response to 40 PBL publications was made, including the eight projects selected for review by the audit committee; the results of this analysis by Dr A. A.M. Prins are presented in Annex 2.

1.3 Focus of the self-evaluation is on 2011 and 2012

Although the evaluation comprises the period from May 2008 to May 2012, most of this self-evaluation report will be dedicated to PBL activities and publications of the last two years. There are several reasons for this.

First of all, following the merger, it was not until 2009 that a new work programme was compiled that covered all the relevant fields of interest in an integrated way. In addition, more time was needed for the PBL to shape its new identity, to reorganise itself into new departments (in 2010), and for employees to get accustomed to the new organisation and the new colleagues. Another reason to focus the self-evaluation on the last two years is the fact that most reports that were selected by the audit committee were published in those last two years. Furthermore, availability of data from the first two years of the new PBL organisation is somewhat problematic in certain areas, for example with regard to visitors to the website.

Chapter 2 highlights PBL's strategy for the future, and the audit committee is asked about its opinion on some crucial choices for the future. Chapters 3 to 8 are different in character, providing information on several subjects that are important in standard evaluation procedures.

2. Strategic Choices for the Future

PBL, as an intermediary organisation, must take notice of developments in interfaces with politics, society and science.
Tensions are believed to be concentrated mainly around the following issues:

- the policy science interface;
- the positioning of PBL in society;
- scientific quality control;
- national and international embedding of the institute, from the perspective of the choices made;
- the internal organisation.

When considering these tensions, the organisation's strengths and weaknesses should be kept in mind.
Strengths of PBL include:

- policy relevance of PBL activities and products;
- dedicated and highly motivated employees, forming a flexible workforce;
- expertise in various domains is of high quality;
- experience and expertise regarding integrated analyses and assessments.

PBL weaknesses include:

- a rather limited level of expertise in, for example, institutional aspects of policy implementation, due to limited knowledge on this subject;
- under the present economic and political circumstances, PBL is not in a position to supplement its rather large group of older employees by attracting new and young people;
- although a substantial amount of attention is devoted to quality assurance and quality control with regard to data and models, the available capacity is insufficient to bring all data and models up to the high standards that PBL sets itself;
- sometimes prioritisation around projects is not strong enough, and planning goals cannot always be met.

2.1 Tensions at the science-policy interface[1]

Tensions at the science policy interface may arise when considering the roles of researchers and their communication with parliament, policymakers and decision-makers . Tension may also be caused when researchers and policymakers work with different time frames.

Interactions with parliament
Over the past years, PBL has intensified its contacts with the House of Representatives. As a result, PBL reports were presented there more often during 'technical briefings' or meetings of Permanent Parliamentary Committees. The House of Representatives also requested PBL to produce reports on specific subjects (see Appendix 2). The PBL policy line will be continued, which will probably result in more requests for specific assessments. Parliament and ministers may differ in what they would like PBL to do. Ultimate responsibility for the PBL work programme and acceptance of requests from parliament resides with PBL's director, who has to consult with ministries with respect to prioritisation of work and use of PBL capacity.

Roles of researchers
Not only with parliament, but also with the ministries, more intensive interaction has been established through informal contacts and by the installation of PBL account managers who can receive and discuss suggestions related to the PBL work programme.

[1] Opinions and suggestions are indicated in italics.

An example of strong interaction between PBL researchers and policymakers is given in Text box 2 on the Ex-durante Evaluation of the Dutch Spatial Planning Act.

Text box 2. Strong science–policy interaction to optimise the ex-durante evaluation of the Dutch Spatial Planning Act

On 1 July 2008 a 'new' Spatial Planning Act (*Wet ruimtelijke ordening*, abbreviated as 'Wro') came into force. It replaced the 1965 Spatial planning Act (*Wet op de Ruimtelijke Ordening*, abbreviated as 'WRO'). Although in the course of time several changes were made to the old Act, this new Act was seen as a fundamental review of the Dutch planning system. The traditional decentralised structure was abandoned in favour of a system that enables every tier of government to achieve its spatial development and management goals on its own. New legal instruments were introduced, while others were abandoned or altered.

In view of the major change in the planning system from the old to the new Spatial Planning Act, the Dutch Senate passed a motion calling on the government to carry out an ex-durante monitoring and evaluation of 'the progress, problems and successes of the Wro in practice right from the start'. The minister asked PBL to carry out this evaluation,

PBL made the evaluation design in consultation and interaction with the Ministry of Infrastructure and the Environment. During the research period, between the first and second PBL reports, several changes were made to the Act and new legislation was introduced. And finally the Minister of Infrastructure and the Environment announced the start of yet another major fundamental legal reform: the preparation of a new Environmental and Planning Act in which several Acts were to be integrated. As a consequence of this announcement – a significant change of the policy process – PBL decided, in consultation with the ministry, to cancel the foreseen third report of the ex-durante evaluation.

Against this background, the conclusions of the second report were not limited to experiences with the Spatial Planning Act alone. Lessons learned were also formulated in terms of recommendations for the forthcoming Environmental and Planning Act.

The fact that the so-called knowledge function within departments has been steadily declining over the past years makes it all the more probable that PBL will be more often engaged in thinking out policy alternatives, as a strategic advisor, assisting policymakers in strategic deliberations. The independent position of PBL is of high value and close consideration should be given to the possible roles that PBL researchers could play in these interactions. Does this role require 'speaking truth to power' or is it a role of strategic advisor or even co-creator of knowledge? Will PBL continue to focus on the science arbiter role[2] or will the role of strategic advisor become more prominent? PBL researchers should be aware of these different roles when they engage in strategic deliberations. At least they should be aware of possible frictions occurring in practice. What variations in role enactment are possible in the future, given the existing function demarcations in the Dutch advisory system? And what synergies may be achieved in collaboration with other advisory bodies?

The fact that sometimes the outcome of research is not welcome in policy circles is a well-known fact of life for advisory bodies. An interface organisation such as PBL should always be aware of the context in which it operates. It is always a possibility that a certain

[2] Science arbiter role: see Pielke, 2007. *The Honest Broker: Making sense of science in policy and politics.* Cambridge University Press.

message is not welcomed by policymakers in a particular situation. The question is whether, when PBL researchers fill varying roles, these situations could occur more often. Agencies such as PBL have a function in raising awareness of inevitable developments in the near future that will feature on the political agenda. See Text box 3 on putting demographic decline on the political agenda.

Text box 3. Putting demographic decline on the political agenda

Since 2006, PBL and one of its predecessors (RPB) have studied the fields of demographic decline, spatial effects (in the regional housing market and the regional economy) and policy responses. The motivation was agenda setting and exploring the rather new phenomenon of demographic decline. At the time the first (RPB) study was started, little attention was paid to planning for demographic decline, either in academic discussions or in actual practice. The RPB was one of the first institutes to address the importance of demographic decline to policy.

To date, PBL has published three separate studies about this subject (Van Dam et al., 2006; Verwest et al., 2008; and Verwest and Van Dam, 2010) and, together with the former Ministry of Housing, Spatial Planning and Environment, has organised a conference on this subject. Furthermore, in 2011, the PhD thesis by Verwest was published on demographic decline and local government strategies. Moreover, PBL is often asked for their input regarding this topic; for instance, by ministries, political parties, regional and local governments and their representatives (VNG and IPO), and national institutes such as the Social and Economic Council of the Netherlands (SER), NICIS the knowledge institute for urban issues, and the Netherlands Interdisciplinary Demographic Institute (NIDI).

After the subject had been put on the national policy agenda (in 2009) by the then Minister of Housing, Communities and Integration (Van der Laan) and the State Secretary for Interior Affairs (Bijleveld), many initiatives followed. Examples of such initiatives are the top team on shrinkage (for the Dutch provinces of Zeeland, Groningen and Limburg), Action Plan about Population Decline, national network on population decline (NNB), and the strategic knowledge agenda about demographic decline. PBL studies were used as input for these initiatives, and for political party visions on this subject (by CDA, VVD, and D66). PBL studies are also used by local governments (in both shrinking regions and those that are anticipating shrinkage) in the formulation of their spatial planning and housing policies. In regions anticipating shrinkage, PBL studies continue to play an agenda-setting role and are used for raising awareness and informing actors about demographic decline and its consequences.

Serving various clients at various government levels

PBL works not only for the national government and parliament, but also for regional and local government bodies, the European Commission and international organisations such as OECD and UNEP.

The political decentralisation of Dutch environmental policy in its broadest sense has led to a shift in the demand for knowledge from a national to a local and regional levels. The national government has a so-called system responsibility and PBL has an obligation to support government in effectuating this responsibility. The extent to which PBL can also serve the knowledge needs of local and regional government authorities is debatable. Although PBL is not a consultancy firm, it can make integral evaluations of policy proposals or produce outlooks that are more or less adapted to the particular circumstances of such local and regional authorities. The question is which activities would be compatible with the role PBL plays on national government level. The role of strategic advisor to provinces is likely to be not compatible with that of advisor to the national government. Other

questions relate to the extent to which PBL will be engaged in research questions that tackle the 'how?' question, and which expertise would be needed to address those questions. Sometimes, on a local or regional level, research becomes transdisciplinary in character, involving local users and local knowledge to produce meaningful results. This would therefore require PBL researchers to carry out such research, but the required skills are not a general competence.

In its international strategy, PBL has outlined when and why it is to engage in research for supranational institutions or become involved in international research programmes (see Chapter 6). A similar strategy could be outlined for the local and regional level, which may help to make certain choices on these subjects.

Publicity, independence and various clients
PBL's independence is laid down in the government regulation for policy-analysis agencies (Aanwijzingen voor de Planbureaus), which also deals with questions about the publication of PBL products (see Chapter 3). Tension may arise around the publication of research results because of different client perceptions and attitudes. There could be international clients, for example, who would not want research results made public for a variety of reasons. As PBL is an institute that, organisationally speaking, falls under the Dutch Ministry of Infrastructure and the Environment, serving two masters may lead to problems with regard to the confidentiality of research results. In practice, it has been possible to serve the European Commission, for example, by calculating the effects of possible climate policy options, without causing problems for Dutch policy or policymakers. However, sometimes it is difficult to navigate such situations.

A passive or an active communication policy
Producing reports and sending these to clients is not always the best mechanism for interface organisations such as PBL to get their message across to policymakers and politicians. PBL is of the opinion that an active communication policy is needed, to promote publications and bring them to the attention of the intended target audience, especially if the subject chosen is at PBL's own initiative. If regular interaction with policymakers takes place during the preparation of a report, it is likely they will be interested in the results, but that depends on the actual relevance for policy making.
See Text box 4 about 'The energetic society' which gives an example of an active communication policy.

Text box 4. Active communication: 'The energetic society'

During the production of the trends report 'The energetic society', relatively much time was being dedicated to communication with possible audiences in The Hague. Via several communication routes the basic ideas from 'The energetic society' were promoted and put to the test. First, Maarten Hajer personally had discussions with some directors general and secretaries general. To get the message across, a brief two-page description of the nature and content of the trends report had been produced. Hajer also had a discussion with the Prime Minister Rutte's Council Advisor on Sustainability. This eventually led to a discussion with Prime Minister Rutte about The energetic society, shortly before the report was published. Rutte subsequently also sent out a tweet on 'The energetic society'.

To inform societal organisations, businesses and local government officials, a 'diner pensant' was organised. During this dinner, the guests were given a preview of the report and asked to reflect upon it. In the run up to the publication, the project leader contacted Frans Suyker (Ministry of EL&I, Directorate of General Economic Policy), which resulted in a presentation on the report during a meeting of interdepartmental officials (IVIM) who prepare Cabinet discussions about infrastructure and the environment.
To generate interest and to hear the opinion of policymakers, a concept of 'The energetic society' was sent to a select group of officials at various ministries.

At the time the report was published, Maarten Hajer presented it to the governing board of the Ministry of Infrastructure and the Environment. Soon after the report was published, a columnist of the Dutch newspaper 'De Groene Telegraaf' paid attention to the report at the suggestion of Maarten Hajer.

Timeliness and quality

A well-known source of tension in the interface function is time. Policymakers and scientists work with quite dissimilar time frames. Deadlines in policy-making are more stringent than those related to scientific projects. Thus a choice has to be made from case to case in discussions with clients, looking at what they would like, whether that is possible within the given time frame and what consequences time constraints may have for the quality of research results. Often, the basic attitude of researchers is that time is subordinate to product quality. The reverse sometimes seems to be true for policymakers. Problems related to deadlines in the past have been solved by putting more people on the job or by postponing other, less urgent projects. Timeliness has to be planned. One way of approaching this problem is to reserve a certain part of the work programme (say 20-30%) for projects as yet unspecified in interaction with policymakers. PBL has done so since 2010.

The immediate effect of this approach is that reprioritisation of projects becomes inevitable. Projects with clear deadlines most often are finished on time. If clear deadlines are lacking, work may become delayed and reports produced later than originally scheduled. For prioritising client requests, strict and generally applicable criteria are needed. Over the past years, PBL has acquired more experience in dealing with this problem. Interaction with clients is necessary to understand the degree of urgency related to such requests and to consider the possibilities of slowing down other projects, or even stopping them altogether. If the priority of certain already planned projects changes, this presupposes flexibility of the researchers and sometimes a fair degree of internal mobility. This, in turn, may create some tension.

Responding to urgent policy requests and the knowledge base

On the one hand, PBL has to be alert and address policy questions when they arise and therefore it also has to make difficult choices, while on the other hand it has to ensure that sufficient strategic knowledge is produced through research that is organised in multiannual strategic research programmes. The different time frames of politics and research also causes a certain amount of tension. The PBL Advisory Committee has indicated the danger of specific knowledge production for urgent political questions taking on such a dominant role that it impedes the build-up of a solid knowledge basis for the future. In order to avoid such a situation, it is necessary to earmark a certain percentage of the budget for strategic research and to be aware of the types of research that are likely to produce the knowledge needed in the years to come. This requires information on strategic knowledge, innovation agendas, knowledge gaps and foresight studies.

2.2 Tensions at the interface between science and society

PBL and complex societal problems

PBL's mission is to provide policy-relevant knowledge to government, parliament, and groups within society. People who know PBL are mostly familiar with PBL evaluating the impacts of policies and providing 'building blocks for alternatives' for such policies. PBL is also well-known for its outlooks and agenda-setting reports. These publications provide insights into possible and/or desirable futures and into societal, physical and/or policy developments that may realise them. Sometimes policy issues represent complex societal problems, characterised by value differences and disputed knowledge, which begs the question of whether and to what extent PBL should take values in society into consideration when producing an outlook study. In 2012 PBL published its Nature Outlook,

which is based on four different visions of nature which have been constructed from interviews and discussions with people from very different backgrounds and occupations. See Text box 5 about the Nature Outlook.

Text box 5. Values in the Nature Outlook

In 2012 PBL published the *Nature Outlook 2010–2040*, which explores the future of nature and landscape policy in the Netherlands. The main objective of the 2012 Nature Outlook was to inspire political and societal discussions about nature policy. This policy was criticised by some societal groups for being too technocratic and legalistic and too little responsive to societal interests. As a result, consensus on the goals of nature policy has eroded. In order to inspire discussion, normative scenarios were built and interaction with policymakers and stakeholders was organised. In addition, models were simplified in order to make and assess the scenarios.

Four normative scenarios were used to describe alternative desirable futures of nature and landscapes in the Netherlands as well as alternative policies to realise these futures. The four scenarios are 'Vital Nature', 'Experiential Nature', 'Functional Nature' and 'Tailored Nature'. Each scenario focuses on different values of nature. The scenarios not only provide relevant insights into alternative futures, but also structure discussions on the future of nature, and help building coalitions for a new nature policy. In these ways, policymakers and stakeholders can use the scenarios in strategic decision-making processes. PBL itself is not involved in these processes.

Earlier outlook studies showed that the use of scenario studies could be improved by interactions with policymakers and stakeholders. Interaction played an important role during the making and the communication of the scenarios. A wide variety of activities took place, such as discussions that were held with senior policymakers, scenario workshops that were organised with a variety of policymakers and stakeholders, and presentations that were given for these actors. Thus, not only insights into alternative futures and strategies were provided at an early stage, but also preliminary results were tested, and discussions about the future of nature and landscape policy were stimulated. In this process, PBL delivered scientific insights from literature and model studies.

Simplified models were applied to generate insights into the impacts of alternative policies and to assess them in terms of biodiversity, recreational use, ecosystem services and implementation costs. These insights were more useful for policymakers and stakeholders than those provided by the complex 'model trains' that had been used in earlier outlook studies. Moreover, the simplified models made it easier to integrate model output with insights generated from workshops, literature review, and design activities. Furthermore, the models enable integration between maps of terrestrial nature (based on model calculations) and those of maritime nature (based on sketches).

In the report 'The energetic society' (2011), PBL looks at the possibilities of other than the usual types of governance to solve environmental problems at a global and local scale. It is about how initiatives that spring up from society might be used to attain policy goals, how the genius, the creativity of society can be mobilised. Especially if researchers and policymakers consider a policy to be deadlocked, it is important to pay attention to alternatives that may come from within society. Text box 6 provides an example of how PBL researchers can present possible alternative routes for policymaking, taking into account ideas that arise from society.

Text box 6. Dealing with the 'how' question in exploratory studies

An example of such an exploratory study is the report 'Forks in the Road, Alternative Routes for International Climate Policies and their Consequences for the Netherlands' (2011).
The approach followed in this project differed from those of previous reports. The failures of global summits and consultation structures to produce global agreements on climate protection and biodiversity prompted this different approach. PBL decided to explore possible alternatives to international agreements and their effects. A non-negligible part of the world works with technological agreements. Existing situations around the globe should perhaps more often be taken as a point of departure and policy options and initiatives discussed in the light of the ineffectiveness of certain international agreements. For example, 'green growth' is an often propagated term by OECD and UNEP, but it evokes different perceptions in different parts of the world and ambivalent reactions. In some poor countries, 'green growth' is seen as a toy for rich countries. This means that reports on 'green growth' may have little effect on a global scale.

Target audiences and reach of PBL
It is interesting for an organisation to know which people and groups in society use its reports. An analysis of the contextual response to a selection (40) of PBL reports showed that a rather large percentage of these reports have infrequent users, compared to reports by other institutes such as the Netherlands Institute for Social Research (SCP) and the Dutch council for societal development (RMO). Furthermore, there is a wide variety of users of PBL reports, without clear segmentation. Some reports are likely to appeal more to a certain audience than others, but, in general, references to PBL reports are made by many different organisations with varying functions within society.
The contextual analysis also indicated that several specialised information channels serve to deliver information to users, such as knowledge centres or knowledge bases. This is an interesting point for the communication strategy of PBL, as these knowledge bases could be addressed more systematically in future.
However, PBL has also started to use new media to increase its reach. See Text box 7 about new media. Social media possibilities may be used more systematically in the coming years.

Text box 7. New Media

The report 'Roads from Rio+20, Pathways to achieve global sustainability goals by 2050' contains a great deal of information about the challenges and opportunities that will be encountered on the road towards achieving global sustainability goals, which means the content was likely to be of interest to a wide audience of policymakers, NGOs, scientists, companies and interested civilians, many of whom would not easily pick up a PBL report or even know it exists.
PBL decided that it needed an easy entry for interested audiences from within society, as well as provide people with the opportunity to share what they would find interesting. With the increasing use of smart phones and tablet computers, PBL found a perfect platform for a low threshold introduction to the *Roads from Rio+20* report, namely that of the 'app'. Within three months, PBL created 'http://roadsfromrio.pbl.nl/', a smart phone and tablet friendly 'app'. This app is easy to use, works on both Apple and Android smart phones and tablet platforms (and also on Windows) and gives the interested reader a change to dive deeper into the report, watch clips from the documentary or share interesting content via social media (e.g. Twitter, Facebook and LinkedIn). The mobile app has been online since early June 2012 and available from the Apple App Store and Android Play Market since October 2012. This new medium will be evaluated later this year for future PBL use.

The possibilities that the social media offer might be used more systematically in the coming years.

The discerning citizen and PBL

The 2009 turmoil about the IPCC Fourth Assessment Report (AR4) – the alleged bias and errors in the IPCC report – underlines the role of new media in generating political controversies over scientific reports. Scientific authority is no longer naturally acknowledged, but rather is something that has to be established in dialogue. When government asked PBL to assess the scientific quality of IPCC's Working Group II report, PBL decided the assessment procedures should be open to public scrutiny. See Text box 7 on useful criticisms. Scientific institutes should be aware that discerning citizens are looking over the researcher's shoulder. In politicised issues, the only way to deal with criticism seems to be to show in a transparent way how researchers have come to their conclusions. And when dealing with unstructured problems, questions arise, such as how can value orientations best be taken into account by an organisation such as PBL? Is contributing to deliberations the best way to ensure authoritative governance? And, in general, which mechanisms could be considered to enhance the public authority of science in a more or less politicised situation?

Text box 8. Useful criticisms or scolding?

When in 2011 PBL was asked by the Minister of the Environment to evaluate the scientific assessment report by IPCC's Working Group II on the consequences of climate change, PBL decided to launch a special website to collect possible errors in this part of the IPCC report. The idea was to see if, apart from the two already spotted errors (the information on melting glaciers of the Himalaya and the percentage of land below sea level in the Netherlands), more errors would surface.

The temporary website attracted many reactions, but most of these could be classified as 'scolding'. Only a few reactions proved to be useful as they pointed to other errors or generalisations that had been poorly underpinned. These reactions were addressed by the PBL team that looked into the underpinning of conclusions in the report.

After the turmoil about errors and alleged bias in IPCC's Fourth Assessment Report, PBL asked Wytske Versteeg of University of Amsterdam to make an analysis of the effects of this turmoil and its echo in the printed news media. See Text box 9 on the aftermath of the turmoil around the IPCC.

Text box 9. IPCC's Fourth Assessment Report – the aftermath of the turmoil

Over the past years, undoubtedly the turmoil about the IPCC's Fourth Assessment Report and 'Climategate' have had a large impact on PBL in terms of publicity in the media. The Dutch House of Representatives discussed climate science and the alleged errors in the IPCC report; the latter of which were used by sceptics to demonstrate that climate science was biased and untrustworthy.

In a separate report – by Wytske Versteeg from the University of Amsterdam – an analysis was made of the way Dutch newspapers had dealt with 'Climategate' and the turmoil about errors in the IPCC's Fourth Assessment Report. The assumption of PBL that one error in the IPCC report ('55% of the Netherlands below sea level') would lead to a massive rejection of all of the findings in the IPCC report, proved incorrect. This result was in line with similar reports by the Rathenau Institute (2010) that also concluded that 'Climategate' had not led to significant changes to the way Dutch newspapers reported on

climate issues. Most newspapers in fact did not question the anthropogenic causes of climate change.

However, the Dutch newspaper 'De Telegraaf' (which has the most subscribers of all Dutch newspapers), had already been the voice of climate sceptics long before 'Climate gate'. The Telegraaf generally frames the climate debate as a conspiracy among climate scientists against the general public.

PBL emphasised the fact that, although there were some errors in the IPCC WG II Report and conclusions sometimes had been based on a rather small amount of evidence, the main conclusions of IPCC remained fully supported by the underlying material. Wytske Versteeg recommended PBL should produce a narrative on climate that would take doubts, uncertainties and worries into consideration. PBL should more directly address the concrete questions inspired by other framings of the climate issue, as efforts to streamline the communication about climate issues in the Netherlands are understood by sceptics to be efforts of what they call the 'consensus machine'.

Openness towards society

One of the issues at the science–society interface that is likely to become more important in the coming years, is the openness about the data and models that PBL uses. PBL is not a consultancy firm, but a publicly funded organisation. In principle, the data and models used should be available for inspection. The Dutch website Compendium of the Environment (Compendium voor de Leefomgeving) is an example of publicly available information. Every citizen can see the facts and figures on this compendium website (see: http://www.compendiumvoordeleefomgeving.nl/). It is a joint production by PBL and Statistic Netherlands (CBS) and provides a wide variety of facts and figures with regard to the environment, spatial developments and nature. Over the past years, information was added about spatial developments and spatial planning.

There are trends in society and politics that point to even more openness being required. For more openness about data and models, additional investments are necessary, however, in the present economic situation and under the current budget, such investments are not possible. Suggestions and requests to make models available to the public or to municipalities and provinces, in the current situation, could not be granted.

2.3 Internal quality control

Transparency of assessment procedures for a broader public could be paralleled by increased internal quality control. For example, transparency about the models and data that PBL uses. Researchers at other institutes are not always able to reproduce the results of model calculations. The scientific underpinning of models needs attention, as has been indicated in evaluations of several projects (e.g. Rethinking Global Biodiversity Strategies (2010) and the OECD Environmental Outlook to 2050 (2012)).

Peer-reviewed publications may be considered the building blocks on which PBL work rests. Some PBL departments (e.g. the Department of Climate, Air Quality and Energy (KLE)) publish more than other sectors and are more engaged in international projects. This could be seen as a consequence of PBL's international strategy with its focus on climate, energy, biodiversity, territorial cohesion and agriculture. But perhaps there are also possibilities for increasing the scientific production of some of the other departments.

As described in Chapter 5, PBL has several mechanisms for internal quality control of scientific research. In theory, the internal mechanisms should be sufficient, but in practice, researchers are often too busy in projects and have little time to spare to review the quality of the products colleagues. Systematic feedback of what has been done with comments and suggestions is not always given. Some argue that quality control should be the responsibility of a limited and specific number of staff members, as in the present situation responsibilities are not clear. And there are different opinions about which

product quality level would be acceptable. A discussion about the quality standards that PBL should employ seems essential.

Some people argue that the internal seminars could be upgraded to a quality control mechanism not only for projects, but also for products and publications. PBL seminars are part of a procedure for internal deliberations and quality control, but are also criticised by some, as they not always meet expectations of critical examination. PBL also provides guidance documents, for example about dealing with uncertainty and about stakeholder involvement. In the coming months, a new handbook for research will be compiled, putting all the guidances and regulations in one clear framework.

Different roles and quality control
As mentioned under a), it is likely that when PBL engages in projects at a decentralised level and pays more attention to both the 'how' question and governance aspects, a transdisciplinary approach of problems may be adequate, as much of the knowledge about regional situations and governance aspects relates to local actors. With regard to quality control, the question is what PBL can learn from other institutes that have more experience with transdisciplinary research.

2.4 Choices for the future and their consequences

The PBL Provisional Strategic Plan ('houtskoolschets' (2012)) describes the choices that are being made for the future, for the years up to 2015 (see Appendix 4). What could be the consequences of these choices for scientific quality control? Below, some of these issues are elaborated.

Choosing the top of the knowledge pyramid
Choosing integrating studies and integrated modelling, thus moving towards 'the top of the knowledge pyramid' presupposes some arrangements with other knowledge producers and a certain quality control of their products. But how can PBL, for example, ensure a certain level of quality control of sectoral models of external knowledge suppliers? Efforts to come to a unified certification system for institutes that cooperate in the National Data and Model Centre, to date, have been not very successful, as this requires more than goodwill alone.

In the present situation, some PBL departments lack the expertise for critically examining the quality of models that are proposed by partner institutes. As these partner institutes may also become more and more dependent on financial input from others, it is obvious that quality control and thorough examination are essential. Some suggest developing a protocol to establish what is crucial for quality control in partnerships.

Another factor related to quality control is that when a research institute becomes smaller, the importance of its collaborating institutes and co-producers becomes greater. The collaboration will become more substantial and more intense.

How can PBL stay an attractive partner for collaboration? First of all, partners are interested in collaboration because of the special position of PBL as an institute that produces policy evaluations, outlook studies and other policy relevant reports. The synthesis of knowledge from several sources and turn it into a policy relevant product that can be used by policymakers is not something everyone can do. It gives a certain status to the knowledge provider. Another reason for collaboration is that it creates a win–win situation when several institutes work together on the improvement of models that they can each use in different situations and for different clients (e.g. the inundation module for global models such as IMAGE). PBL would not need to have all models available in house, but some may give comparative advantages. The link with the 'model world' is seen as an advantage by partners, as well as the fact that involvement in societal problems may enhance the societal impact of university research (see the report 'Valorisation as a

knowledge process'[3]). And last but not least, collaboration with PBL may result in publications that otherwise would not be produced by university researchers.

What kind of expertise is needed in such a 'top of the pyramid' institute?
First of all, there should be expertise that can synthesise knowledge from different sources. But there should also be a more general expertise on interactions between science, policy and society, requiring researchers who understand the language of both policymakers and politicians. Researchers should be able to do several jobs in different contexts, having a thorough theoretical framework for their work. These elements refer to the necessary competences of researchers.

Opting for integrated products
Integrated products are the result of combinations of different types of knowledge. The question here is how this could best be done; by coupling of models, agent-based modelling or by creating epistemological bridges. For scientific quality control, insight is needed into the strong and weak points of these various methods.
The integral products of PBL should be of state of the art quality. PBL should have in-house knowledge of quality control of integrated models, possible pitfalls and risks. As stated earlier, a greater transparency about the models and data that PBL uses is necessary as researchers at other institutes are not always able to reproduce model calculation results.

Opting for more attention to governance aspects
Paying more attention to governance aspects and policy implementation problems means that relevant expertise has to be found and engaged. PBL's expertise in the field of governance is limited. There are very limited possibilities in the present budget to increase this type of expertise by contracting external expertise.
Governance expertise, however, is not only a matter of attracting the right scientists. It is also about finding experienced practitioners and involving them in the research, especially if the policy problems are complex and very different problem perceptions exist among stakeholders.

2.5 National and international embedding of PBL

In view of the choices made for the future, the question arises if the national and international embedding of PBL is adequate for the coming years, taking into account that budgets and number of employees will decline.
In Chapter 6, Figure 6.1, the snapshot (2011) of PBL relationships with national, foreign and international organisations shows that those with Dutch institutes are predominantly with public research institutes, consultancies and government institutes, while internationally the partners mostly consist of universities.
If PBL were to focus on integrated assessments and integrated modelling and reduce its activities with regard to sectoral assessments and models, the question is what partners, present or future, may be expected to become more important at national and international levels. These partners must be able to deliver the required information and knowledge that is condensed in models.
It is important to know what interests these partners would have in collaborating with PBL. In economic terms, PBL should be able to offer comparative advantages, know where these comparative advantages are located and what should be done to preserve or enhance them.
Universities, in general, are interested in enhancing the quality of their scientific output. Some are eager to make use of or contribute to the validation of global models such as IMAGE and GLOBIO. These models, which can be worked and run by PBL itself, should be considered valuable assets. A recent publication by the Royal Netherlands Academy of Arts and Sciences (KNAW) [4], highlights the quality of Dutch integrated modelling, monitoring

[3] See the report of Van Drooge, L. Vandeberg, R. Zuijdam, F. ,Mostert, B., Bruins, E., Van der Meulen, B., 2011 *Valorisation as a knowledge process*. Utrecht, Rathenau Instituut and STW.
[4] KNAW, 2012. *Beyond the horizon of Rio+20. Science for sustainable development*.

and evaluation. PBL's IMAGE/TIMER model is mentioned, as is the fact that international organisations, such as UNEP, OECD and IEA, draw on the Dutch capacity for international assessments in the field of the environment, climate and energy.
Furthermore, for some universities, especially those that have a societal mission, the societal relevance of the research is important. And last but not least, the financial aspects of collaboration are important for universities.

It is also imperative for PBL to look outside the present network of relations. What possible collaborations with other institutes might be interesting to consider? Would a different division of responsibilities between those institutes and PBL be possible? How could new opportunities be created for PBL to realise its ambitions? And which developments could frustrate such opportunities?
Some argue that when PBL becomes smaller and decides to continue its present role and mission, it should not only look to universities and other research institutes as partners, but also to advisory bodies (with which a common trajectory on specific subjects may be possible) and knowledge centres. With other policy analysis agencies, such as CPB, there is already some collaboration on specific items, such as societal cost-benefit analysis.
There are two strategic documents that can play an important role in the coming years: the internal memorandum from 2008 ('Contourennota') and the international and EU strategy of PBL (recently updated) (the main points are mentioned in Chapter 6).

2.6 The internal organisation

In view of the choices made for the coming years, some argue that the present PBL internal organisation is inadequate.. The related issues are the following:

- *The internal and external mobility of employees is limited. A hiring freeze (due to budget cuts) aggravates this situation; the limited funds reserved to attract young promising researchers have not yet been used. What possibilities could there be for a shrinking institute to attract young people from universities or other institutes?*

- *In the coming years, more attention has to be paid to improving the expertise of PBL's workforce. This could be done through internal trainings, as well as by attracting generalists that have a good theoretical basis and can work within a variety of contexts. At the same time these generalists should have a good feeling for policy sensitivities.*

- *Some PBL employees are of the opinion that a common identity is still lacking. They feel part of their department rather than of a PBL as a whole. The locational divide (The Hague-Bilthoven) is also reflected in the departments. With the exception of the department of Spatial Planning and the Environment (ROL), the PBL departments are not locationally 'mixed'. Working together on large, structural projects, such as the Assessment of the Human Environment, however, would be conducive to the creation of a common identity.*

- *Project planning should be improved, as a relatively large number of projects suffer from delays. This could be reduced through the implementation of a clear policy on prioritisation.*

- *As government funding decreases, other financing mechanisms need considering, although the possibility to acquire external funds is limited (20%). However, such external funding may also lead to dependencies which, from the view of PBL as a whole are undesirable.*

- *EU funds become increasingly important, but the organisation is not sufficiently adapted to respond to opportunities arising in the European Research Area. It is PBL policy that EU projects should be in line with the PBL work programme and preferably relate to PBL strengths in research.*

- *Scientific quality control is not optimal. Various suggestions have been done to improve internal quality control; for example, by specific allocation of responsibilities. Others suggest that appointing a scientific deputy director would be more appropriate than having a chief scientist, as a director would have more power to intervene and enforce internal procedures for quality control.*

These arguments should be discussed further in PBL, but for now a safe conclusion would be to say that choices made by PBL for the coming years necessitate both organisational and cultural changes within PBL.

2.7 Questions to the audit committee

PBL is pleased to have the opportunity to put some questions to the audit committee.

1) Choices. What is the committee's opinion of the choices made in PBL's strategic document, the Provisional Strategic Plan?

2) Work programme. What is the opinion of the committee on the selection of subjects in the PBL work programme?
   Which expertise does the committee consider to be needed for realising the ambitions of PBL as described in its Provisional Strategic Plan?
   Does the committee have any suggestions regarding PBL's ambition to concentrate on integrated research projects? What could be an appropriate equilibrium between integrated and sectoral research projects?
   Which suggestions could the committee provide with regard to programming of strategic research (creating the most benefit for policy advice)?
   In the opinion of the committee, how could PBL's independence be guaranteed the most when working in increasingly close interaction with policymakers? How can PBL best ensure that its contribution to strategic deliberations remains traceable and suited to peer review?

3) Quality control in a shrinking organisation. What does the committee think of the quality of PBL's products? Are the research products 'state of the art'? Is there sufficient transparency regarding work methods and instruments? What are the committee's thoughts on the internal quality control procedures and processes, and on the role of the chief scientist vs having a scientific director?

4) Which national and international alliances could be considered strategic, with respect to high quality scientific results, shrinking budgets and staff reductions?

5) Which opportunities for PBL does the committee see with regard to research on a European and regional (provincial, municipal) level?

6) Organisation and Human Resources. Which recommendations could the committee give regarding the organisation of the research in view of PBL's ambitions expressed in the Provisional Strategic Plan? And what would be the committee's suggestions for the policy on Human Resource Management in a shrinking and ageing organisation?

3. PBL mission and governance structure

3.1 Mission

The PBL Netherlands Environmental Assessment Agency is the national institute for strategic policy analysis in the fields of the environment, nature and spatial planning. PBL contributes to improving the quality of political and administrative decision-making by conducting outlook studies, analyses and evaluations in which an integrated approach is considered paramount. Policy relevance is the prime concern in all its studies. PBL conducts solicited and unsolicited research that is always independent and scientifically sound.

Below follows a further explanation of this mission in terms of values, aims and tasks. The audit committee is invited to judge the extent to which PBL has been able to live up to its mission. The other chapters of this self-evaluation report provide part of the information needed for arriving at such a judgement.

Core values
The five core values of PBL are:

- policy relevance;
- independence;
- an integrated approach to policy questions;
- quality scientific research;
- being a learning organisation.

Policy relevance
PBL's research focuses primarily on strategic decision-making by the Dutch Government; in other words, on long-term objectives and the policy instruments needed to achieve them. PBL evaluates current and future policies and explores social trends and policy options. Policy-relevant research should also be opportune; the results should be available when they are needed in political discussions and government decision-making.

PBL provides information and advice primarily to national government. As policy formulation is increasingly becoming 'multi-level', international and other government authorities at local and/or regional levels also belong to the target audience. Because national policies are increasingly shaped by the European and global context, and Dutch standpoints are increasingly incorporated in international negotiations, it is important that the European and international dimensions are included in PBL research.

A key feature of PBL's research is that of taking a broad view of the subject matter and revealing the links between different scales of investigation (local/regional, national, European and transnational) in substantive analyses. Parliament and non-governmental organisations are also important users of PBL studies. Finally, policy relevance implies an understanding of the social context within which policies should take effect.

Independence
PBL is autonomous in defining both its research questions and the research methods used. PBL can also determine how to report results, for both solicited and unsolicited advice. PBL is free to consider questions within a wider context and examine them from a more interdisciplinary perspective. PBL identifies and draws attention to social topics which are expected to become important for policy in the near future (the 'agenda-setting role'). In the government regulation for policy analysis agencies (*Aanwijzingen voor de Planbureaus*), the independent position of the agencies, which includes PBL, is confirmed.

An integrated approach
Although domain-specific studies and outlooks form the basis of its work, PBL strives to establish links not only between different scales but also between different domains (economic, ecological, social and cultural). PBL takes this integrated approach from and between environmental, ecological and spatial perspectives, or from other angles if these are considered to be important for environmental, nature conservation and spatial planning policies.

Quality scientific research
The scientific quality of PBL research is of the utmost importance. One way to guarantee scientific quality is by holding periodic international scientific and general audits, which are commissioned by PBL's Advisory Board. In its reports, PBL aims to use or develops state-of-the-art theoretical and conceptual approaches. PBL also makes use of expert sounding boards for advice. The network within which PBL operates is also of vital importance for the exchange and delivery of knowledge. Quality control ideally encompasses the entire knowledge production chain.

An important activity is the presentation of PBL approaches and methods to international audiences. PBL researchers present their work at scientific conferences, participate in international networks and whenever possible publish their results in scientific journals. Third parties should be able to reproduce PBL research results.
If appropriate, PBL makes use of the diversity of views and approaches found within society, in order to increase the robustness of conclusions and recommendations. The reports and advice on policy-relevant matters should be accompanied by a clear statement on the conditions under which they are issued. More information on PBL's approach to scientific quality control is given in Chapter 6.

A learning organisation
PBL aims to be a learning organisation and invests in the quality of its staff and the continuity and quality of its products. This requires internal discussions on how PBL carries out its core tasks, and also on the question of how PBL researchers can learn from each other in view of the diversity of approaches and methods they use. Several possibilities for training and learning exist within and outside PBL. Within PBL there is the PBL Academy (see Chapter 5) and the PBL intranet (*Pebbles*) which allows researchers to learn from each other.

By operating in networks with other centres of expertise, such as universities, research institutes and other policy-assessment agencies, PBL researchers can draw inspiration from colleagues elsewhere and seek feedback on their work to guarantee and increase the vitality of the organisation. For more information about the PBL network, see Chapter 6.

PBL must ensure the continuity of the available expertise within the organisation, and if necessary, facilitate educational options for its employees. In times of austerity however, it is difficult to ensure continuity of all the available expertise.
PBL is also a learning organisation in the sense that it keeps in touch with developments related to both policy and society. Over the past years, increased interaction with policymakers has taken place. The advisory style has become more deliberative in order to be able to provide 'knowledge that matters'. For such interaction with policymakers, researchers have to be aware of their role at the science–policy interface.
A system of account managers has been set up to maintain regular contact with policymakers, so that PBL is closely informed of which subjects on the political agenda may be of interest from the point of view of research and policy advice.

Core tasks of PBL
PBL's core tasks can be described as follows:

1. To investigate and document current environmental ecological and spatial quality.
2. To explore future societal trends that influence environmental, ecological and spatial quality, and evaluate possible policy options.
3. To identify societal issues of importance to environmental, ecological and spatial quality and raise them for discussion.
4. To identify possible strategic options for achieving government objectives in the fields of environmental, nature and spatial policy.

3.2 Governance structure

In the official government regulation for policy-analysis agencies ('*Aanwijzingen voor de Planbureaus*', Staatscourant no. 3200, 21 February 2012), one of which is PBL, the governance structure of PBL is formally described and rules and procedures are laid down.

The three Dutch policy-analysis agencies – CPB Netherlands Bureau for Economic Policy Analysis, the Netherlands Institute for Social Research (SCP) and PBL Netherlands Environmental Assessment Agency – have a special function in the knowledge and advisory system in the Netherlands. From their specific, intersectoral and interdepartmental point of view, these organisations carry out policy-relevant and strategic research.

The Minister of Infrastructure and the Environment (IenM) is responsible for PBL. The formal basis for the activities of PBL is provided according to a special arrangement in the Decision on the organisation of the ministry. The PBL is part of the Ministry of Infrastructure and the Environment (IenM). The minister is responsible for PBL policy and administration (especially regarding its finances and human resources). If PBL carries out assignments for other ministries, or if it receives a fixed budget from them every year, it may also work under the authority of another minister or state secretary. It is essential that PBL can operate in an independent way.
PBL not only works for the Minister of Infrastructure and the Environment, but also for the State Secretary for Economic Affairs, Agriculture and Innovation, the Minister of Foreign Affairs and the Minister of the Interior and Kingdom Relations.

Advisory Board
The PBL Advisory Board, on behalf of the responsible minister, is responsible for supervising the scientific quality and societal relevance of PBL work. The Advisory Board must organise audits of PBL to assess the scientific quality of PBL's work and its societal relevance.

The responsible minister, after consultation with PBL's director, appoints the members of the Advisory Board. Its members should not be subordinate to the responsible minister or other ministers. It is up to PBL itself whether an audit, in addition to the scientific quality, also addresses the political and societal relevance of PBL products. The present Advisory Board consists of (May 2012[5]):

[5] Members of the former Advisory Board (up to May 2012) were:
- Ms. M. (Margreeth) de Boer, chair, former Minister of the Environment
- Mr. F.W.R. (Frans) Evers, former chief director of Natuurmonumenten (Nature Conservation Organization)
- Ms. H.M.C. (Lenie) Dwarshuis-Van de Beek, Member of the Provincial Executive of the Province of Southern Holland
- Professor G.A. (Bert) van der Knaap, Erasmus University Rotterdam
- Mr. A.A. Westerlaken (Anton), Erasmus Medical Centre Rotterdam

- Professor Wim van de Donk (chair)
  Queen's Commissioner in the province of North Brabant, former chairman of the Scientific Council for Government Policy (WRR)
- Ms Tanja Klip, member of the Provincial Executive of the province of Drenthe
- Professor Rudy Rabbinge, Emeritus Professor of Sustainable Development and Innovation at the Wageningen University and Research Centre
- Ms Annemarie van der Rest, engineer, Health Safety Security and Environment Manager at Royal Dutch Shell
- Professor Piet Rietveld, Professor of Transport Economics at the Faculty of Economics, VU University Amsterdam
- Professor Dirk Sijmons, Professor of Landscape Architecture of Delft University of Technology and partner at H+N+S landscape architects
- Professor Geert Teisman, Professor of Public Administration at the Erasmus University Rotterdam
- Mr Kees Vendrik, Vice-president of the board of the Court of Audit in The Hague
- Mr Hans van der Vlist, former Secretary General of the Ministry of VROM and TMG top consultant (ABD)

Over the past few years, the previous Advisory Board has emphasised several times the importance of strategic research for PBL to properly carry out its mission. The Advisory Board also underlined the importance of publishing in peer-reviewed journals. For guaranteeing the quality of the data PBL uses, a larger commitment to quality assurance of the parties involved should be pursued.

The Advisory Board's general policy is that once every four years a client satisfaction survey should be carried out and once every five years an integral (societal and scientific) evaluation by an audit committee. It has been decided, however, to organise two audits for the first integral evaluation of PBL, a scientific audit (also paying attention to the societal quality of research) in 2012 and a general audit in 2014/2015, concentrating on the role of PBL within the Dutch system of policy advice.

According to the Advisory Board, PBL should regularly evaluate its network in view of its strategic research programme. The Advisory Board also discussed the PBL work programmes, emphasising that PBL should focus more on getting the policy messages across, as there were some concerns over policymakers being able to absorb the many products produced by PBL. The Advisory Board, in previous annual reports, thought it positive that PBL pays due attention to the link between its products and policy processes.

In view of the government budget cuts (see Ch. 4), the previous Advisory Board advised PBL to rethink its functioning within the knowledge system and to concentrate on what should be the essence of PBL's work. The long-term PBL research agenda should produce enough knowledge and instruments to be able to continue its work in future. Furthermore, in view of the decentralisation of environmental policy, it would be interesting to see whether PBL information could be made available to and usable for actors at local and regional levels.

For whom does the PBL work?
The PBL primarily works for the Dutch Cabinet ministers. However, the House of Representatives and the Dutch Senate may also request information of PBL. Furthermore, also international organisations, such as the OECD, political parties,

---

- Professor R. (Rudy) Rabbinge, Wageningen University and Research centre
- Ms. A. (Annemarie) van der Rest, Shell Netherlands
- Professor G.R. (Geert) Teisman, Erasmus University Rotterdam
- Ms. P.J.L. (Nellie) Verbugt, spatial planner, independent advisor, former member of parliament
- Professor F.J.C. (Frans) Willekens, Netherlands Interdisciplinary Demographic Institute

parliamentary groups, European institutions and independent administrative bodies may do the same. The available capacity determines whether PBL can and will take on such a request. Formally speaking, PBL must first present any requests it receives to the Minister of Infrastructure and the Environment.

Work programme
The PBL director discusses the draft PBL work programme with the Advisory Board, in regular meetings with directors general, and with the Minister of Infrastructure and the Environment.

The minister can indicate which of the activities should definitely be included in the work programme. The PBL director decides on the final content of the work programme after his discussions with the Advisory Board, the directors general and the minister. The work programme covers one calendar year, but also includes several projects that run for longer periods of time. Possible changes to the work programme during the course of the year are discussed regularly with the ministry and the programme always has some capacity reserved to address urgent government requests.

Transparency and confidentiality
The rules for external contacts for government officials (Staatscourant 1998, no. 104), which include those for members of parliament, also apply to PBL staff members. Naturally, these rules do not apply when such contacts refer to information that is publicly available. Such information can be provided without the intervention of the minister or departmental contact person.

As soon as PBL has concluded a project, its results are made public. In a letter dated 6 April 2009, the Dutch Cabinet states that any report prepared at the request of parliament will be sent without delay and without interference to parliament by the responsible minister.

4. Organisation

PBL Netherlands Environmental Assessment Agency was founded in May 2008, following the merger of two policy-analysis agencies. Maarten Hajer became its director in October 2008.

It took quite some time for the staff from both former organisations to become accustomed to the new organisation. Today, the cultural differences (different disciplinary backgrounds, different policy domains, different traditions) between the two former agencies are gradually diminishing and a new corporate identity is developing. *Some people voice their concern that this corporate identity is still weak and hampered by the physical divide of working in two separate locations (the head office in The Hague and the office in Bilthoven) and the fact that most PBL departments are not a mix of employees from both former organisations.* The availability, since 2012, of a shared online work environment has enhanced the development of a corporate identity. From around 2015, PBL will occupy one location, which will be in The Hague, in a building that it will share with the two other government policy-analysis agencies, CPB and SCP.

4.1 Number of employees (in FTEs)

PBL's employees are in permanent employment or have a temporary contract. In addition, there are also trainees and guest researchers working for PBL. Since the implementation of a series of budget cuts by consecutive governments, PBL policy has been to drastically reduce the number of temporary employees, trainees and guest researchers. PBL faces a drastic budget cut of 25% over the 2011–2019 period, of which most has to be realised before 2015. A special coordinator was appointed in 2011 to help people find new jobs elsewhere (outplacement).

Since October 2010, PBL employees have been on the payroll of the Ministry of Infrastructure and the Environment (a merger of the former ministries of VROM (Housing, Spatial Planning and the Environment) and VenW (Transport, Public Works and Water Management)

	Permanent employees	Temporary employees	Contract workers, Secondees	Others	total FTEs
1/1/2009					296.8
1/1/2010	217.8	4.9	49.1	10.1	281.9
1/1/2011	203.1	6.8	36.4	7.2	253.5
1/1/2012	199.9	3.8	29.0	4.7	237.4

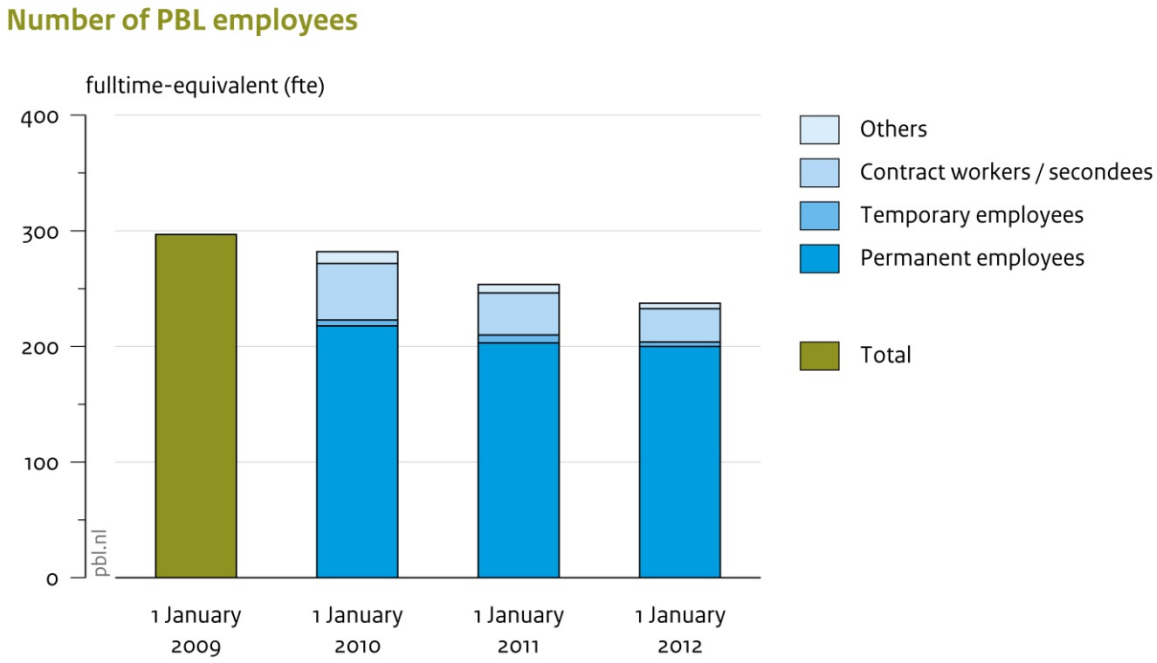

Figure 4.1.
Number of employees, contract workers and secondees or guest researchers over the years. These figures clearly show the reduction in the number of temporary employees, contract workers and secondees.

In 2011, the department section on Air Quality and European Sustainability and the section of the Pollutant Release and Transfer Register (emission registration), totalling about 16 FTEs, were transferred to the National Institute for Public Health and the Environment (RIVM).

The total number of FTEs of the two staff departments on 1 January 2012 was 27.24, compared to 22.94 in 2010. Over the same period, the total number of FTEs of the sector departments decreased from 175.22 in 2010 to 169.60 in 2012. Recently, a few PBL departments, such as *Urbanisation and Transport* and *Spatial Planning and Quality of the Local Environment*, have had problems mobilising the expertise necessary for a response to requests from government.

4.2 Organisational structure

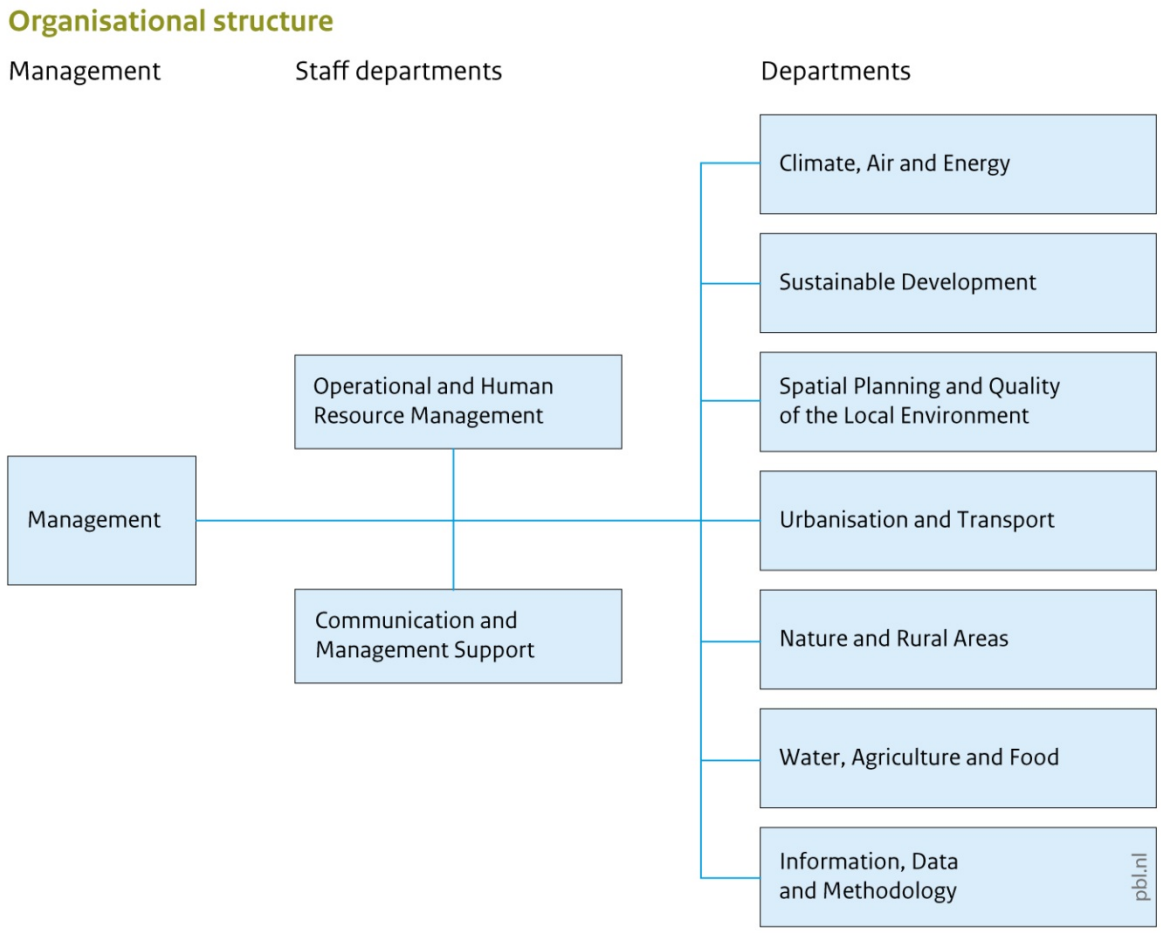

Figure 4.2.
Organisational structure of PBL

PBL comprises two staff departments and seven sector departments. PBL Management consists of the director, deputy director, secretary, department heads and chief scientist (the last acting in an advisory role). The present organisational structure has been in place since February 2010 (the role of chief scientist was added in January 2011).

After the formation of PBL, in 2008, a reorganisation process was started. Formal procedures laid down in the Guidance Document on Reorganisations of the former Ministry of VROM were followed. A placement plan for all employees of PBL was drafted. In 2009, in a series of workshops, PBL employees discussed the principles of the new organisation, its internal governance, allocation of responsibilities, and the formation of the new departments.

The new organisational structure has been built around seven sector departments, the general management and two staff departments. The names of some of the sector departments show that there is a direct relationship between those departments and the policy domains (e.g. nature, spatial planning, water) on which PBL regularly reports. However, there are also departments with a broader focus, such as the Sustainable Development department and the Information, Data and Methodology department, tackling cross-cutting issues.

The employees in the departments of *Urbanisation and Transport* and *Spatial Planning and Quality of the Local Environment* predominantly are located in The Hague, for the other departments this is Bilthoven. Management and staff departments are located in The Hague. The organisational structure, originally, had planned for two deputy directors, but the position of the second (scientific) deputy director was never filled. Since 2011, instead of having a scientific deputy director, PBL has appointed a chief scientist who performs some of the tasks originally planned for the scientific deputy director; the chief scientist operates as senior advisor to both directors.

4.3 Finances

PBL receives most of its funding from the Ministry of Infrastructure and the Environment. Before October 2010, the former Ministry of Housing, Spatial Planning and the Environment (VROM) was primarily responsible for PBL and provided most of its funding. When projects were carried out for other ministries, financing was sometimes obtained from these ministries. Furthermore, PBL received external funding from its collaboration in various international projects, such as those under the EU Framework Programmes.

According to the 2012 government regulation for policy-analysis agencies (*Aanwijzingen voor de Planbureaus*), at least 80% of PBL funding should be provided from the government budget, with external funding not exceeding 20%. Requests from parliament are financed from this government budget. Also long-running assignments which are financed from structural funds of provincial and municipal authorities are considered to be part of the government budget.

Table 4.1 Total PBL expenditures, 2009–2012

amount x 1,000 euros

Year	Total expenses	Financed by ministries	Financed by external parties
2009	41,703	39,789	1,914
2010	38,361	35,686	2,675
2011	35,028	33,213	1,815
2012	33,825	32,694	1,131*

* Amount financed by external parties 2012 subject to change

The Ministry of Economic Affairs, Agriculture and Innovation (EL&I) finances research that is carried out for PBL at the Wageningen University and Research Centre (Wageningen UR). This consists of strategic research for which PBL sets the agenda, and which takes place under the umbrella of the WOt – Legally Required Research Tasks – of Wageningen UR. The budget for this WOt research has been reduced from 6.350.000 euros in 2008 to around 3,562,000 euros in 2012. The Ministry of Economic Affairs, Agriculture and Innovation funds PBL's legal obligation to produce multiannual nature assessments and outlooks. This amounts to about 1,400,000 euros per year. In 2012, the Ministry of Infrastructure and the Environment allocated some additional funding to the themes of 'decentralisation' and further elaboration of the 'energetic society' theme in the PBL work programme.
PBL's financial overview shows a gradual reduction in the funding by ministries and fluctuations in external party funding.

Table 4.2 Revenues from participation in international projects, 2009–2012

	2009	2010	2011	2012
Revenue (x 1,000 euros)	1,175	1,035	960	1,060*

*Estimated revenue

4.4 Consequences of budget cuts

Over the past four years, PBL has faced several budget cuts. The first one was a reduction target of 20% which had to be effectuated in 2011. In 2011, another 25% reduction was announced for the budget for the years up to 2019, although the 25% reduction has to be largely realised by 2015. PBL is not the only government-owned organisation faced with drastic budget cuts as a consequence of Cabinet decisions.

PBL's policy for dealing with these budget cuts has been to aim for a gradual reduction of the number of employees. From 2008 to 2011, such a gradual staff reduction was accomplished by the transfer of tasks, by not filling positions vacated by leaving or retiring employees, and by restricting recruitment. Some department sections, notably the earlier mentioned Pollutant Release and Transfer Register and air quality and European sustainability section, were transferred to the National Institute for Public Health and the Environment (RIVM).

One of the consequences of budget constraints is that, currently, PBL is unable to hire enough young people to create the desired mixed-age workforce. Nevertheless, PBL has created a (very modest) special fund from which young promising professionals can be contracted. Un to 2012, the immediate consequences of budget cuts for PBL's work programme were not very obvious, but in some cases, projects had to be cancelled because the required expertise was not or no longer available, while other projects were sometimes delayed.

As noted in Chapter 3, PBL's Advisory Board expressed its concern over budget cuts and the reprioritisation of projects in the work programme resulting in insufficient attention being paid to strategic research that should generate new knowledge and instruments to deal with future government requests. This is a portfolio issue and is discussed more extensively in the Provisional Strategic Plan (*Houtskoolschets,* a document in which PBL outlines its strategic choices for the future in view of budget cuts amounting to 25% by 2015. As most of the PBL budget (80%) is spent on salaries, inevitably, a reduction in the number of employees has to be considered, as well as the possibilities to acquire additional financing from external parties (up to 20%).

4.5 Implementation of the Provisional Strategic Plan

The Provisional Strategic Plan is a document in which PBL outlines its policy for the coming years, up to 2019 (see Appendix 4). The year 2015 is important, as most of the staff reductions will have to be effectuated by that time. PBL has chosen which work fields it will concentrate on, as well as which research it will no longer perform. In close consultation with the various PBL departments, an implementation plan for this strategic document has been made, including the departments' contributions. Not only in terms of the activities that they intend to concentrate on over the next years, but also providing an indication of how staff reductions will be achieved. The PBL work programme shows how the strategic plan is translated into actual practice, combining short-term activities and long-term policy objectives.
The options for finding additional funding by external parties, although limited, are points of discussion within the departments.

4.6 Employee satisfaction

In November 2010, a staff satisfaction survey was held among PBL employees, using the 'Internetspiegel', an online instrument of TNS NIPO, the Dutch Institute for Public Opinion and Market Research. From this survey, three points were taken as well as from discussions held within the departments.

The decisiveness of managers should be improved, and the responsiveness of all the people involved should be enhanced. More career opportunities should be created and the internal communication improved. As a result of internal discussions about the survey, it was decided that more management issues would be left to the department heads, and less to the general management team. Also, more attention would be paid to the decisions taken by the entire Management Team (MO) and monitoring of the implementation of these decisions would be improved.

5. The present system of scientific quality control

For this 2012 audit, the emphasis is on how PBL performs its interface function with special attention to the quality of PBL products. PBL considers a high scientific quality of its products as a necessary condition for the proper execution of its task as policy-analysis agency and for maintaining its reputation as a trustworthy institute. PBL employs several methods to guarantee the scientific quality and is constantly looking for new and efficient ways of quality control. There are also specific institutional arrangements in and around PBL to guarantee the scientific quality of PBL products, namely review procedures (internal, external and peer review); seminars; procedures and support for information, data and methodology; the PBL Academy; the Chief Scientist; the Advisory Board and audits. The various arrangements are briefly described below.

5.1 Scientific review

For all kinds of publications by PBL researchers, a review procedure is obligatory. This is true for reports, but also for working papers, for which both internal and external reviewers are asked for their comments. Reviews by external scientists are an obvious part of the procedure for publications in scientific, peer-reviewed journals.

For larger projects, often, scientific sounding boards are set up to see whether the most suitable and best available methods are being employed in the research, and whether analyses are being carried out in the right way. An example of this is the committee from the Royal Academy of Arts and Sciences that acted as a sounding board for the PBL Assessment of the IPCC Assessment. At PBL, the final approval of a report or article depends on review by several people along the production chain.

5.2 Seminars

An important element of PBL internal quality control are the seminars organised on three occasions during the course of a project: at the start, midway and at the end of the project. These seminars are intended to provide colleagues – and possibly also people from outside PBL if there is not enough expertise available in-house – with the opportunity to critically examine project plans, ongoing work and project results.

Researchers from many disciplines work together in projects, such as planners, demographers, geographers, economists, environmental scientists, technologists, biologists, methodologists and political scientists. During the so-called start seminars, they engage in debates on projects that are in the start-up phase. Regularly, expert guests are invited take part in this debate to improve the quality of the products. Careful preparation and providing the right questions to trigger discussions are vital elements to stimulate the debate. At the end of projects, seminars serve to discuss the main findings and the messages (e.g. for policymakers) that could be formulated on the basis of these findings. The publication of the findings and the publicity aspects are also topics of discussion. There is a PBL guidance for seminars. *Experiences with seminars as a method of quality control vary.*

5.3 Information, data and methodology

To control the scientific quality of reports and studies, PBL-wide data management, information management, development and maintenance of models and the knowledge infrastructure of PBL have to receive continuous attention. This also applies to PBL-wide management of Information and Communication Technology (ICT), the maintenance of

geo data sets, editorial support and advice on methods and techniques. Quality control for each of the departments of PBL implies maintenance and adaptation of models. Quality control of the data and model instruments is also facilitated by imposing standard requirements for data and models on other institutes with which PBL collaborates. For example, PBL requires from the Wageningen University Research Centre that it guarantees the quality of several models that are used by PBL.
PBL has produced several guidance documents on uncertainty and on stakeholder involvement in research to assist individual researchers who have to deal with uncertainties and different value orientations of stakeholders.

5.4 PBL Academy

PBL has its own academy, which is led by the chief scientist. The PBL Academy offers courses for PBL researchers and other employees on various subjects, such as governance issues. Internal seminars are also organised, such as on the role of PBL researchers in projects for ministries, and external lectures are programmed for a wide audience. Speakers in the lecture series have included Anthony Giddens, Eric Beinhocker and Archon Fung. Regularly, lunch lectures are given at the PBL locations in The Hague and Bilthoven; external researchers are often invited to these lunch sessions.

5.5 Chief scientist

Since 2011, PBL has a chief scientist, Professor Arthur Petersen (for 0.4 FTEs), whose special assignment it is to see whether procedures and standards that have been worked out for quality control work, whether they are adhered to and/or need to be changed. He also facilitates internal and external discussions on contentious scientific issues and supposed biases towards particular scientific views. He acts as senior advisor to the director and deputy director, and has access to both the entire management team (MO) and the general management team. Professor Petersen is also Deputy Head of the Department of Information, Data and Methodology, which enables him to directly enlist the help of staff in performing certain chief scientist tasks.

In a memorandum on the policy with regard to scientific quality control (2011), agreed to by PBL management, the chief scientist formulated his ideas on scientific quality control in PBL. Some passages from this memorandum:

> *PBL needs a vision on the strategic scientific research[6] that it carries out. For example on the link between strategic scientific research and the multiannual strategic programmes of PBL. More high-quality scientific output – besides the reports directed to policy makers – is possible[7] and due attention has to be paid to new methods that might be interesting for PBL's work.*

From the point of view of scientific quality, internal and external aspects[8] can be distinguished. Internal aspects relate not only to quality control procedures, but also to the critical examination of leading theories and methods that is needed from time to time to avoid groupthink. This means that criticisms from other scientific institutes or from websites on specific subjects are used for critical reflection. External aspects relate to the question of whether PBL's research is representative enough in view of the societal problems it has to address. The formulation of the research question and the

[6] The category of 'strategic scientific research' should amount to about 15% to 20% of PBL's main budget; this research will deliver knowledge and tools for regular use in PBL's work within several years – preferably, results from this research can also be used immediately – and be published in peer-reviewed scientific journals.
[7] Thus, publications in peer-reviewed scientific journals should not be limited to projects within the category of strategic scientific research.
[8] 'Internal' and 'external' here mean internal/external to the wider scientific community (not internal/external to PBL).

framing of a problem in view of developments in society at large are important to consider.

Scientific quality control of products has four aspects:
- the quality of the processes underlying a product;
- the statistical reliability (quality of statistical information on uncertainties);
- the methodological reliability (suppositions, quality of reasoning);
- the quality of the presentation.

For each of these aspects, different people are responsible and various tools exist. For example, the guidance document and checklist on uncertainties are available to draw attention to the statistical and methodological reliability of research products. A manual for PBL in which several procedures, guidance documents and checklists are presented in a simple and efficient way, will be produced in the summer of 2012. *Internal review procedures will be reinforced.*

PBL's Staff Department for Communication and Management Support also has an important role in the presentation of research results, as well as in looking for possible risks. *To improve the quality of presentation, the idea is to collect examples of best practices.*

A new publication category, the 'PBL Working Paper', has been added to the portfolio of PBL publication series. These working papers are peer reviewed and under the editorial responsibility of the chief scientist, so as to give the external world an idea of scientific research that is being carried out to underpin specific reports without the delay associated with publishing in journals (working papers may therefore serve as 'preprints').

Lunch lectures on culture and learning are a good instrument for setting quality on the agenda and bringing it to the attention of PBL employees. *Internal education is a point that needs attention in view of the vision of PBL for 2015 (see Chapter 2).*

5.6 Advisory Board

As mentioned in Chapter 3, the PBL Advisory Board has an important supervisory and advisory task. The Advisory Board monitors the scientific quality of the PBL and advises on the work programmes. The members of the Advisory Board are working for universities, businesses or local or regional government bodies.

5.7 International audits

An international scientific audit is a good method for determining whether PBL 'is doing things right'. The international audit of 2012 has its focus on scientific aspects, while in 2014/15 a general audit will follow. The emphasis of the latter will be on the societal and especially the political relevance of PBL work ('are we doing the right things?'). The client in both cases is the PBL Advisory Board. For an overview of audits of PBL's predecessors RPB and MNP, in 2007 and 2008, see Appendix 3.

In 2000, when MNP was still part of the National Institute for Public Health and the Environment (RIVM), the overall judgement of the RIVM audit committee was very positive with regard to the quality of RIVM's integrated environmental policy assessment activities. Much good work had been done at national and international levels for which RIVM received wide international recognition. There were some concerns with respect to the position of the assessment function in the Dutch institutional set up, the methods used in the assessments, communication of the results and the composition of its staff. The audit committee, at the time, emphasised that the independence of the assessment function needed to be safeguarded and that

the agenda setting could be made more transparent through the inclusion of additional stakeholders in this process.
In 2007, in a national audit of RPB, the audit committee concluded that the scientific work by RPB was of good quality. The RPB researchers produced a great variety of reports that met scientific quality standards. However, the audit committee was less enthusiastic about the reports' relevance to policymakers. It recommended that the connection with policy processes be improved.

From the time the PBL was founded, the strategy of the management has been to increase the policy relevance of PBL's activities by actively seeking interaction with policymakers, while taking care not to jeopardise PBL's independence. Another point of attention over the past years has been the relevance of PBL's activities for society and societal actors (stakeholders).

6. Analysis of the context in which PBL operates

The context in which PBL operates is special in the sense that PBL is part of the Ministry of Infrastructure and the Environment, and evaluates the policy of this ministry (and other ministries, such as the Ministry of Economic Affairs, Agriculture and Innovation). PBL not only has the role of science arbiter[9] for this ministry and other ministries, but also may be asked to provide new ideas for strategic deliberations within these ministries (a role as a strategic advisor). However, the PBL target audience is not limited to the national government, as is elaborated in this chapter. First, a description is provided of the networks in which PBL participates.

6.1 Networks and relationships – national and international

The PBL networks consists of various stakeholders, societal groups and scientific institutes. Contacts with various political, scientific and societal organisations serve to:

- articulate knowledge demand in interaction with stakeholders;
- maintain quality control of scientific knowledge, such as in data and models;
- exchange knowledge and ideas, and suggestions for assessments;
- keep the methods used for integrated assessments up to date;
- utilise knowledge and data that are not readily available within the organisation.

For the purpose of this report, the first point will not be dealt with in detail. As pointed out earlier (Chapter 2), the interaction with policymakers has increased and the system of account managers for various policy items is a concrete way to receive information about possible subjects to be included in the PBL work programme.
Exchange of knowledge and of ideas is the aim of collaboration with advisory bodies and research institutes. There are regular contacts, for example, with the Dutch Council for the Environment and Infrastructure (Rli), as well as with the Wageningen University and Research Centre, with which special relationships exist as they provide models and methods that PBL uses.

In view of the ambitions of PBL, expressed in the Provisional Strategic Plan, to concentrate on integrated assessments, integrated modelling and to be at the top of the knowledge pyramid, it is of the utmost importance that the scientific networks within which PBL participates contribute to realise these ambitions. In its so-called *Contourennota* (internal memorandum, 2008), PBL formulated a strategy for relationships with other knowledge producers. Below, the main points are given:

PBL's network strategy for scientific institutes
The basic premise is that all knowledge, information and capacities needed for policy analysis and advice cannot be provided at PBL in-house. It is not necessary for PBL to possess all knowledge, nor does it need to do everything itself. However, it must stand for the policy conclusions that it produces.

As PBL should be able to integrate external knowledge and wants to conserve its scientific authority, this sets minimum requirements to the internal knowledge base necessary to assess the quality of the knowledge brought in.

The network structure for the knowledge base should be part of total knowledge management within PBL. External knowledge supply may be needed for several reasons:

- *to achieve a higher quality of product;*
- *to obtain knowledge that is not available at PBL;*

[9] See the typology of Pielke jr., R., 2007. *The Honest Broker: Making sense of science in policy and politics.* Cambridge University Press.

- *to create a larger scientific support base;*
- *to increase PBL's authority (societal and policy);*
- *to increase research capacity.*

Efficiency gains may also be the aim, but those should not threaten the required high quality of the conclusions.

It is evident that external knowledge should be sought:
- *if PBL looks at the context and the outer limits of its domains;*
- *if specific knowledge is needed only occasionally;*
- *to obtain support in the form of technical, repeated activities, the collection of data, the construction and the management of basic models, and the like;*
- *when learning is the main objective or for the construction of an internal knowledge base.*

Network relationships are also possible – on the precondition of having sufficient own knowledge available - for the following categories:
- *subjects characterised by a relatively great political or societal impact and extra risks of damage to the institutes image and loss of confidence;*
- *interactive policy evaluations or urgent Cabinet questions (short project time frame);*
- *the development and application of integrating, more complex models.*

PBL should be aware that if it needs the support of other institutes, a dependency is created. It is necessary to see in advance whether such a dependency may lead to vulnerability of PBL. The dependencies in possible network relationships are important for deciding on the parties, reasons and methods of collaboration.

The more policy relevant the subject and the greater the dependency, the more arrangements are needed to tackle vulnerabilities and risks. Risk factors that can disrupt the relationship, should be taken into consideration in advance. This means that PBL researchers should be capable of assessing such risks and that external network partners should subject their work regularly to external peer review.

The form of collaboration between PBL and partner institutes depends mostly on the type of product that is needed from the partner: data, development of basic or complex, integrating models, policy analyses, or evaluations. External relationships should preferably be established from the point of view of the policy process for which knowledge is needed on the demand side.

Per case, the form of collaboration should be decided on. Important points for PBL are guaranteeing the independent position of PBL and the ownership of the knowledge, user rights and public access to results.

Therefore, this strategy determines with which external parties the PBL cooperates and in what way, dependent on the subject (in the work programme), the type of product that is needed and the possibilities for quality control.

As the ambition of PBL, as expressed in the Provisional Strategic Plan (2012, see Appendix 4), is to increasingly focus on integrated assessments (to be 'at the top of the knowledge pyramid'), PBL will become more dependent on other institutes for the underlying sectoral knowledge.

From the point of view of quality control, the network of PBL in the scientific world is important for guaranteeing the scientific quality of PBL work and for keeping its knowledge up-to-date. However, PBL also requires a quality certification for the models that it uses and that have been developed by other institutes, such as those by the Wageningen University and Research Centre.

PBL has a formal relationship with several Dutch research organisations, such as: Utrecht University; the VU University Amsterdam; Wageningen University and Research Centre; the National Institute for Public Health and the Environment (RIVM); the University of Amsterdam (UvA); the Royal Netherlands Meteorological Institute (KNMI); Deltares (independent, institute for applied research in the fields of water, subsurface and infrastructure); the Council for Delta Research; Energy research Centre of the Netherlands (ECN); the OTB Research Institute for the Built Environment (programme committee); the Tilburg Sustainability Center (TSC) hosted by Tilburg University; and the Knowledge Institute for Mobility Policy (KiM) (PBL on the advisory board). Furthermore, in specific areas, PBL collaborates with the two other policy-analysis agencies CPB Netherlands Bureau for Economic Policy Analysis and the Netherlands Institute for Social Research (SCP), as well as with Statistics Netherlands (CBS).

PBL's international strategy

The choice for collaborations with international institutes and the grounds for doing so, are subject to the international strategy of PBL. Although many relationships appear to have historically grown, the idea behind PBL's international strategy is that international relationships, as well as national ones, should be chosen more explicitly. *The first criterion for international collaboration is that it must serve to strengthen the PBL knowledge base and fit in with its work programme. A second criterion is related to the types of projects that PBL produces. Internationally, PBL has chosen to focus on agenda-setting studies that can be used by the European Commission or European Parliament. As PBL has a good international reputation with regard to research on climate change and energy, biodiversity, food and agricultural policy, and territorial cohesion, it concentrates mainly on these subjects, not only in its European relationships, but also in those with other international organisations (e.g. OECD, UNEP). The European Commission and European Parliament sometimes commission PBL to carry out a specific study. However, PBL also serves the Dutch Government by evaluating the consequences of EU proposals. Furthermore, collaboration with the OECD is concentrated on Outlook studies.*

A snapshot of the PBL network 2011

A recent analysis, based on 67 project descriptions, revealed that PBL maintains more than 300 relationships, involving almost 150 different organisations, in 20 different countries. Table 6.1 shows the number of relationships with other organisations, divided into 7 groups. Each involvement in a project is counted as one relationship. Figure 6.1 shows that PBL collaborates with almost 50 foreign institutes and a similar number of supranational bodies; for instance, the European Commission, UNEP, OECD, the World Bank and the WHO. Especially in climate research and in projects concerning biodiversity, PBL maintains many relationships with international organisations. The Potsdam institute for Climate Impact Research, for example, is involved in work on the IMAGE model.

Table 6.1 Collaborations between PBL and other institutes

	Dutch institutes		**Institutes in other Countries**		**International institutes***	
	Single relationships	Relationships institutes	Single relationships	Relationships institutes	Single relationships	Relationships institutes
Research Institutes	63	14	7	6		
Consultancies	15	14	4	4		
Universities	84	9	25	25		
International organisations					49	30
Private organisations (incl. NGOs)	12	12	5	5		

Policy-analysis agencies / Advisory councils	15	6				
Government bodies	22	15	5	5		
Total	**211**	**70**	**45**	**49**	**49**	**30**

*International institutes include UNEP, OECD, WHO, EEA, JCR, World Bank, UN and ECE

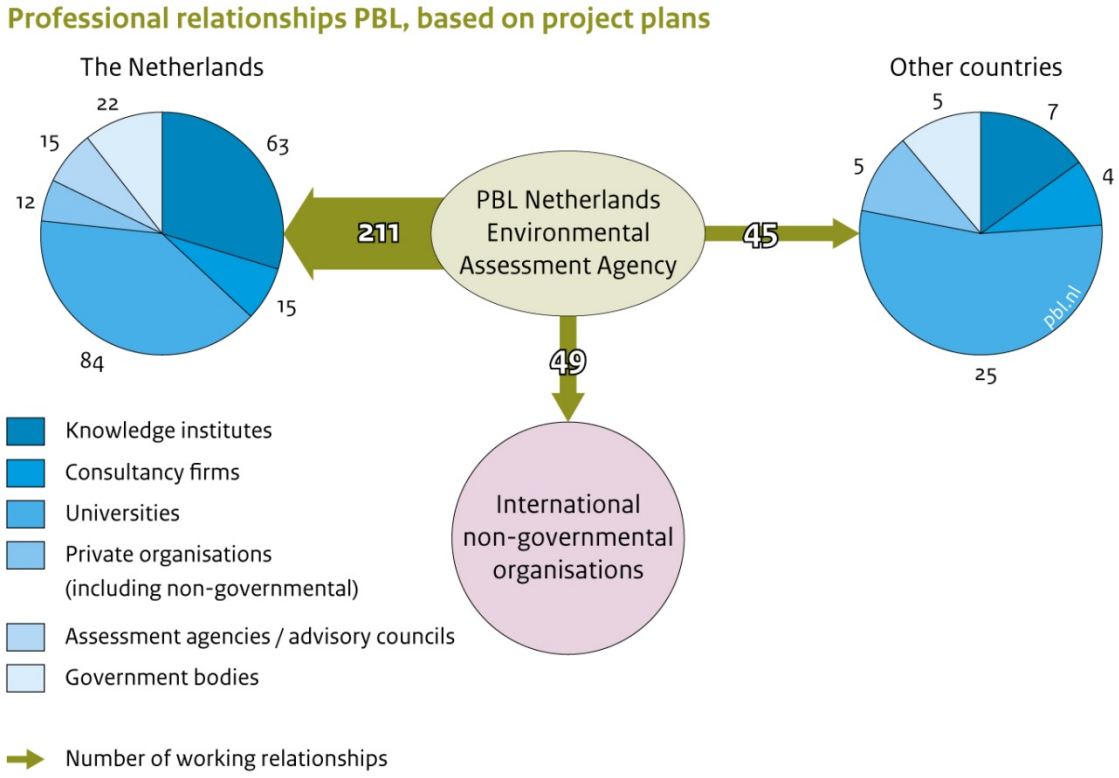

Figure 6.1

The relationships with Dutch institutes predominantly consist of public research institutes, consultancies and government institutes, while in other countries relationships are mainly with universities.

6.2 Target audiences

Target audiences of PBL activities and reports include:

- Dutch ministers and Cabinet;
- Ministry officials;
- Parliament (both the House of Representatives and the Dutch Senate, and the European Parliament);
- Dutch political parties;
- European Commission;
- OECD, UNEP;
- Various other international organisations (e.g. IPCC, EEA);
- Provincial and municipal authorities;

- Societal groups (businesses, trade unions, environmental groups);
- Consultants who use PBL reports;
- Scientists working at institutes with whom PBL collaborates;
- Advisory councils.

Appendix 2 highlights some of the encounters between PBL and Dutch ministers, members of parliament and international organisations, over the 2010–2012 period, to provide an impression of the kinds of interactions that have taken place with target audiences. It is clear that the ministries and parliament are the most important target audiences of PBL. The European Commission, European Parliament, and international organisations, such as OECD and UNEP, are also target audiences for specific subjects (in agreement with the above mentioned international strategy of PBL).

As the Dutch policy with regard to spatial planning, nature and the environment has been decentralised to provinces, municipalities and other regional boards, PBL has contacted provinces and municipalities to determine what role PBL could play for these authorities. As the ministries remain responsible for the policy system as a whole, PBL provides these ministries with information on the implementation of environmental policy. For PBL it would be interesting to observe any differentiation between policies as a result of this decentralisation.

As the PBL Advisory Board (Chapter 3) suggests, PBL also could provide particular information needed by various provincial, municipal and water board authorities. However, current budget cuts prevent PBL from making its knowledge readily available to these actors.

For the near future, PBL in its Provisional Strategic Plan (2012) emphasises that it will continue to work for the Ministry of Infrastructure and the Environment and for other ministries. Parliament may become more important as a client and target group. In the period from January to June 2012, PBL presented various reports in five sessions to Permanent Parliamentary Committees. The House of Representatives, in recent years, has directly requested PBL to make specific assessments; for example, on the effects of 59 Green Deals and the legal and ecological aspects of Natura-2000 legislation.

6.3 Stakeholders

Stakeholders, generally speaking, are parties interested in PBL products as these may be of use to them. Only certain stakeholders are included among the organisations that are mentioned in the government regulation for policy-analysis agencies (*Aanwijzingen voor de Planbureaus*) as the ones that may influence the PBL work programme. The ministry providing the main funding, the Ministry of Infrastructure and the Environment, has the largest stake in PBL, but other ministries[10], the Dutch Cabinet, the House of Representatives, the Dutch Senate, political parties, and provincial and municipal authorities are also considered as stakeholders which may put forward questions or suggestions for research. In the past years, PBL's strategy has been to increase interaction with policymakers and also to get closer to parliament. In Chapter 8, where the activities of PBL are discussed, several examples of closer involvement are mentioned.

In a broader sense, societal organisations, pressure and lobby groups, interested citizens and scientists are also stakeholders of PBL. First of all, because the results of PBL's research and advice may have a direct impact on their action perspectives. For example, the discussion about particulate matter and construction near motorways caused much turmoil in the 2000–2005 period. The report PBL published about this subject ('A closer look at particulate matter') was one of the reports that was downloaded most frequently from PBL's website. The recent contextual response

[10] For example, the Ministry of Economic Affairs, Agriculture and Innovation and the Ministry of Foreign Affairs

analysis (see Annex 2) also shows PBL reports are used by a wide public audience. PBL clearly has a societal function and fulfils this function, but not in a specific way, taking the perspective of system responsibility in the fields of the environment, nature and spatial development as its point of departure, in line with the perception of system responsibility of the Ministry of Infrastructure and the Environment.

6.4 Client satisfaction survey

PBL has also carried out a client satisfaction survey. The complete results of which will become available in November 2012.

7. PBL work programmes over the 2008–2012 period

7.1 Themes and products

As PBL's mission is to provide policy-relevant knowledge, PBL discusses drafts of its work programme each year with high-level officials of the ministries that are interested in its products. The Minister of Infrastructure and the Environment – after consultation of other ministers - puts forward important policy themes as guiding themes for PBL research. The Directors General and the PBL Advisory Board also give their opinion, after which the PBL director makes the final decisions on the content of the work programme.

Over recent years, Dutch coalition governments have come and gone after serving only around two years each. Thus, the PBL work programme has had to accommodate a more fickle political will and spend more time on question from ministers who wanted answers on a relatively short term. In these years, 20% to 30% of PBL's research capacity has been used to enable flexible responses to the Cabinet's needs, urgent policy questions and ad-hoc requests from ministries. In practice, this has led to a reprioritisation of projects in the work programme – causing delays for some projects and the cancellation, albeit only rarely, of others.

PBL is aware of the fact that it also has to focus on knowledge production for the long term; for example, for various kinds of scenarios, and that it has to keep its research instruments (models) up to date. The strategic programmes should fill the gap between present knowledge and future knowledge needs, as noted in Chapter 6. Some of the strategic projects are carried out by PBL itself, and some by the Wageningen University and Research Centre at PBL's request and financed by the Ministry of Economic Affairs, Agriculture and Innovation (EL&I). The second projects are all in the fields of nature, biodiversity and landscape.

PBL drew up its first work programme in 2009. Some projects feature in each of the PBL work programmes over the 2009–2012 period, as they belong to a group of projects that fall under PBL's legal obligation to carry out (see below).

In general, the PBL work programme distinguishes four product categories[11] to accommodate the different needs of its clients:

- structural, legally required products;
- multiannual strategic programmes;
- specials;
- external services.

Structural, legally required products
The products that PBL is legally required to produce are constant and recurring factors in the work programme. These products include policy assessment reports, such as the Environmental Assessment, Nature Assessment, and the Assessment of Spatial Developments. Also, the Compendium of the Environment and the Sustainability Assessment for the Netherlands belong to this category of reports. Furthermore, this category includes the outlook reports on spatial development, nature and the environment.

In the past, these reports were produced annually. In 2010 PBL decided, in consultation with the ministries, to lower the frequency of the policy assessment reports and outlooks to once every two years. And, instead of producing separate sectoral policy assessment reports, since 2010, an integrated version is being produced: the Assessment of the Human Environment (*Balans van de Leefomgeving*),

[11] In the past, focal points were identified in the work programme; today, a more integral approach is chosen

which provides an overview of the situation in the fields of nature, water, spatial planning, and the environment. This Assessment of the Human Environment not only evaluates the effectiveness of policies, but also considers how relevant trends within society may influence this effectiveness. The second Assessment of the Human Environment was published in September 2012.

Multiannual strategic programmes
PBL expects the research under its strategic multiannual programmes to produce results that can be used for underpinning policy discussions and enabling policy decisions in the coming years.
The themes that have been chosen for the multiannual strategic programmes 2009–2012 are presented in Table 7.1.

Table 7.1 Themes of the multiannual strategic programmes 2009–2012

2009	2010	2011	2012
Sustainable development and governance	Global scarcity and transitions	Global scarcity and transitions	
Urbanisation and mobility	Sustainable urban development	Sustainable urban development	Urbanisation, restructuring and mobility
Biodiversity, agriculture and water			Biodiversity, food supply and development issues
Energy, air and climate	Promising environmental policy	Promising environmental policy	Climate and energy as a transition agenda
	The Netherlands in European systems and networks	The Netherlands in European systems and networks	The importance of clusters and networks for the competitiveness of the Netherlands
	Restructuring and investment policy	Restructuring and investment policy	Spatial policy change
	Sustainable recovery	Sustainable recovery	

The themes are overarching, integrating environment, nature, water and spatial aspects and taking various processes (e.g. urbanisation, restructuring) and points of view (e.g. competitiveness, scarcity, transition) in consideration. PBL preferably analyses policy issues from an integral point of view, considering social, economic and ecological aspects, and studies the related connections between local, national and international scales.

The selection of concrete project proposals is based not only on their alignment with the strategic themes, but also on policy priorities, such as decentralisation of policy in the domains of spatial planning, nature and the environment, or reduction and simplification of regulations.

Specials
Specials are reports on specific themes and based on relatively short-term research. Often, these specials are at the request of a ministry; for example, evaluations of specific policy proposals, but they are also produced at PBL's own initiative.
Examples of such specials:

- Evaluation of the policy programme on biodiversity;
- Evaluation of the Natura 2000 policy in the Netherlands;
- Ex-ante evaluation of the Planning Vision for Infrastructure and Landscape;

- Knowledge and labour migration, the housing market and international competition;
- Infrastructure and urbanisation;
- Making trade chains more sustainable;
- Evaluation of the policy on sustainable crop protection;
- Greening of the economy;
- Ex-durante evaluation of the Planning Vision for Infrastructure and Landscape;
- Trends Report: The energetic society;
- Assessing an IPCC Assessment.

Some of these specials are quite different from what PBL normally produces. Two examples are the report Assessing an IPCC Assessment and the Trends Report: The energetic society. The Minister of Infrastructure and the Environment, at the request of the House of Representatives, asked PBL in 2010 to do a scientific evaluation of the Working Group II report of the IPCC. One of the errors in this report was attributed to PBL work. PBL decided to operate in a transparent way and invite critics to indicate possible other errors. For this purpose, a special website was constructed and several suggestions of possible errors came in through this website. PBL decided the evaluation should have a meta character, checking the reference material of the conclusions in the report. The findings were subsequently published in a report in 2011, which resonated throughout much of the scientific world (see Chapter 8).

'The energetic society' (2011) is a new type of product; a trends report. It points out trends in society and their relevance for the environment. 'The energetic society' took a governance point of view. In the coming years, similar reports will appear once every two years, alternating with the Assessment of the Human Environment (*Balans van de Leefomgeving*).

External services
External services include various ad-hoc activities for the Ministry of Infrastructure and the Environment, other ministries and for sub-councils of the Cabinet such as the Council for Infrastructure and the Environment and the Council for the Economy and Work and Innovation. These councils prepare Cabinet discussions and decisions.
The PBL external services include:

- supporting the Ministry of Infrastructure and the Environment in the preparation of strategic decisions on the EU Multiannual Financial Framework 2014–2020;
- analysing proposals of the European Commission and other international organisations in the fields of sustainable development, nature, water, spatial development and climate strategies;
- participating in advisory committees. PBL was requested by government to take part in Reconsideration committees to advise government on how to reduce expenses in the domains of energy and climate, environment and nature, and water and mobility. PBL evaluated several proposed packages of budget cut after the first economic crisis of 2008.

The process of creating work programmes
The process of creating new work programmes has been streamlined over the past years. Work programmes, in principle, are multiannual. They are based on proposals from ministers, directors general, PBL departments and the PBL Advisory Board. These proposals are combined into a draft programme. Draft programmes are discussed with the main clients, the directors general of several ministries and the PBL Advisory Board. Ultimately, it is the PBL director who decides on the definite content of the work programme.

7.2 Changes in the work programmes throughout the years

Comparing the work programmes over the years from 2009 to 2012, shows that there is a strong relationship between political agendas of ministries, the political agenda of the Cabinet in power and the PBL work programmes. This is unsurprising, as the mission of PBL is to deliver policy-relevant knowledge.

It is also a consequence of the PBL strategy to get closer to the policy-making process. PBL has a group of account managers who are in regular contacts with their policy counter parts and who gather information that is relevant for the work programme and for prioritisation. The PBL 'specials' are often the result of such close contact with policymakers.

Although the structural reports remain a recurring and important part of the PBL work programme, their frequency has been reduced. Another policy line of PBL is that governance aspects (e.g. steering, behaviour) will receive more attention in reports. PBL not only considers it appropriate to analyse the 'what' question with regard to policy issues, but also to give an indication of what may be promising policy options for dealing with these issues (the 'how' question).

PBL works more and more in a multilevel governance setting. National government is important on the knowledge demand side. However, in the policy domains of spatial planning, nature and the environment, Europeanisation and globalisation take place on the one hand, and 'localisation' on the other. PBL supports the Dutch Government also with regard to policy questions on a European level. In addition, PBL has contacted several provincial and municipal authorities to explore what it could do for these authorities.

7.3 Co-productions

To bring scientific knowledge together and translate it for policymakers, a close contact with other scientific institutes is needed. PBL collaborates with the other Dutch policy-analysis agencies, such as the CPB Netherlands Bureau for Economic Policy Analysis, and various other institutes, such as Netherlands Statistics (CBS), Wageningen University and Research Centre, and the Knowledge Institute for Mobility Policy (KiM). Some co-productions are:

- Assessment reports on Sustainable Development in the Netherlands;
- The Compendium of Nature and the Environment;
- Regional Population and Household Prognoses;
- Reports on the economic, social and environmental consequences of election manifestoes.

Furthermore, PBL takes part in international research programmes (e.g. of ESPON, EU FP, OECD, UNEP and EEA). For PBL, an important precondition for international collaboration is that the research must reinforce the choices made in the PBL work programme.

Examples of international collaboration are the PBL contributions to OECD Environmental Outlooks and IPCC Assessment reports. As PBL is one of several organisations in the Dutch knowledge system that work for the national government, PBL has to consider to what extent its activities are in line with or quite different from those of other knowledge producing organisations and what synergies would be possible. For example, with the Council for Infrastructure and the Environment, which also works for the Ministry of Infrastructure and the Environment, a work relationship exists to make sure that the activities of the Council and PBL are well attuned to each other. Sometimes, the Council asks PBL to produce a report on a particular subject on which the Council is producing an advice.

7.4 Strategic choices for the future

In 2012, PBL published a strategic document, the Provisional Strategic Plan. This document, elaborated below, is of great influence on future PBL work programmes, up to 2015 (see Appendix 4 for the main points). The document describes the changing context of the institute and relates these with changes in its interface function.

The main choices of PBL for the coming years are:

- *Calculating and describing the effects of policies is PBL's core business. Therefore, PBL will continue to produce policy assessments from an independent position. An independent position does not exclude close interaction with policymakers in the early stages of the policy-making process.*
    - *PBL will focus more on integrating studies. By making cross sector analyses, such as policy assessments, outlooks, societal cost-benefit analyses and exploratory studies, PBL demonstrates its added value. These analyses will increasingly also be carried out from a 'governance' perspective. More attention will be paid to the question at which level policy intervention might be most effective. PBL also will focus on integrated models (spatial models and global models). Internationally, PBL aspires to belong to the top-five institutes for integrated modelling (climate, energy, food, biodiversity in connection with development issues). Strategic alliances will be forged to connect PBL with new thinking on environmental governance.*

- *Reduction in the number of sector policy assessments, such as those of agriculture and air quality, and traditional environmental compartments such as noise, soil and local air quality. PBL is considering the extent to which it should carry out these sector analyses. and how much sectoral knowledge should be available at PBL. This issue will be addressed on a case-to-case basis. PBL's expertise may be used for sector analyses, but only if these fit in with the PBL work programme and additional funding is provided.*
    - *No more development of sectoral models. These should be placed with partner institutes within PBL's network, with PBL acting as coordinator. PBL will invest in quality control of models internally and externally, in cooperation with the Dutch national models and data centre (NMDC).*
    - *No more studies on a lower than regional level, such as those on urban districts and the design of urban quarters.*
- *No more contribution to monitoring. Monitoring is not seen as an activity primarily for PBL. For its research, PBL will obtain data from other organisations. If the required data are not readily available, PBL will try to coordinate and direct the collection of these data, and only if there is no other possibility will PBL collect data itself.*
- *Limiting European activities. The focus of PBL activities within the European framework will be limited to climate and energy, food and biodiversity and resource efficiency. Budget constraints, however, may force PBL to put more effort in targeted acquisition of EU research funds to develop new knowledge.*

- *PBL will prioritise the issues that are considered to be unstructured – new issues that form a challenge to policy-making. PBL will try to structure these issues and make them manageable for policymakers. Integrated assessments are of crucial importance for this purpose.*

- *With regard to the ongoing decentralisation of policy in the fields of the environment, nature and spatial planning, PBL will focus its attention on the responsibility for the whole system, serving the national government. PBL will see*

what it can do for local and regional government bodies, although its activities will be limited. The budget cuts make it impossible for PBL to play a greater role in the decentralisation of policy, such as by making its knowledge readily available to actors on local and regional levels.

- *PBL will pay more attention to governance issues. It will not only produce high quality analyses, but also increasingly try to identify new policy perspectives. Policy assessment and the identification of possible policy strategies are seen as a logical complement. New expertise is needed at PBL with regard to governance and social scientific knowledge of institutions and behaviour.*
- *PBL will more often work with models and assessments that involve stakeholder participation.*

Although PBL has made its position clear in the Provisional Strategic Plan, it cannot be ruled out that policymakers request PBL to do work that does not fit its strategy; for example, monitoring activities in a specific field. These incongruities will have to be discussed with policymakers as they emerge.

8. Activities and results

This chapter gives an impression of the main activities of PBL in the 2008–2012 period and their results. The following three activities are a logical consequence of the PBL mission:

- Supporting policy planning and evaluation, political debate, and political agenda setting
- Scientific research in the fields of spatial planning, nature and the environment
- Public communication about PBL activities and products

8.1 Supporting policy planning and evaluation, political debate and political agenda setting

PBL supports policy planning and evaluation in several ways. Of course, one of the concrete proofs of such support are the PBL reports. But PBL researchers interact with their policy counterparts in a variety of ways; not only by producing reports, but also by taking part in departmental deliberations, such as in certain task forces. PBL also advises officials who prepare Cabinet decisions and provides facts and figures for deliberations by advisory councils (see also under 'strategic advice', below).

Number of reports[12]
In general, reports and other publications by PBL researchers are published on the website; a hard copy is produced only for about 20 of the 'top' reports per year. Each year, PBL selects a number of reports that will be promoted as 'top' reports. Being awarded the 'top' status also means that much publicity is generated around these reports.

Table 8.1 Number of PBL reports, both in English and Dutch, 2008–2012

	2008	**2009**	**2010**	**2011**	**2012 (up to May)**
Dutch reports	86	87	76	45	42*
English reports**	38	50	43	20	10

* There is a certain overlap with the number of English reports, as some of the reports listed on the Dutch pages of the PBL website refer to English reports.
** Some of the English reports are in fact translated summaries of Dutch reports; for example, those of the Nature Outlook 2010–2040 and the Assessment of the Human Environment (2012).

There is a noticeable decline in the number of reports that have been published over the years, which also can be seen on the PBL website. This decline is partly explained by the fact that, since 2009, background reports are no longer published as separate products. However, it is also a consequence of a new way of working, as more capacity is reserved in the PBL work programme for advice solicited by government departments (20% to 30%). In addition, in the past years, more effort has been put in conveying the messages to the main target audiences (see also under 'parliament', below). This policy line of PBL has resulted in less effort spent on producing reports and more on conveying messages and working on the communication process around reports. Thus, the context within which reports are published receives a greater amount of attention.

Table 8.2 Three categories of PBL reports

NL reports	**2008**	**2009**	**2010**	**2011**	**2012 (up to May)**
Policy assessments	20	17	13	10	8

[12] See http://www.pbl.nl

Outlook studies	8	15	9	9	6
Specials[13]	58	55	54	26	6

Over the past years, several new types of products have appeared in the portfolio of PBL. First, there are the working papers. These working papers are scientific publications about specific subjects that have been subject to both internal and external peer review. The first working papers were published on the website in 2011. A second new product type is the 'trends report', 'The energetic society' published in 2011 being the first. A trends report points to trends in society and their possible relevance for the environment (see the PBL mission, Chapter 3). The report 'The energetic society' gave ample attention to social and governance aspects. It was well-received by several Cabinet ministers and it proved to have agenda-setting qualities, and not only for the ministries.

For the report 'Road from Rio+20, Pathways to achieve global sustainability goals by 2050', a number of videos – interviews with several people – were produced, which are available on the PBL website.

Most of the reports of PBL are requested by ministries, some by the national or European parliaments, and political parties, while others result collaborations with other organisations, the European Commission, UNEP and OECD, or are initiated by PBL itself.

Examples of those requested by political parties are the evaluation of the climate budget of GroenLinks and the alternative budget of D66 in 2010. Such specific requests do not occur frequently. An activity that is recurring, however, is the evaluation of the environmental effects of policies proposed in the political parties' election manifestoes. In 2010 and 2012, this were joint projects by CPB and PBL.

An example of a report that was initiated by PBL is the report 'The Protein Puzzle. The consumption and production of meat, dairy and fish in the European Union' (2011). See Appendix 2 for further information about the relationships with the Dutch Parliament, ministries, European Commission, UNEP and OECD, from September 2010 to April 2012.

Strategic advice
PBL representatives contribute to discussions in sub-Councils of the Cabinet, such as the Council for Infrastructure and the Environment and the Council for the Economy, Work and Innovation. On request, PBL advises the officials that prepare Cabinet discussions and decisions (see Chapter 3).

The strategic advisory role of PBL is not limited to these kinds of strategic discussions at Cabinet level. PBL regularly produces outlook studies and strategic studies on policy issues in the field of the environment in its broadest sense. Strategic studies are carried out at the request of a ministry or the OECD (e.g. OECD Environmental Outlook to 2050) or UNEP, or can be initiated by PBL itself.

An example of a strategic study at the request of a ministry is the PBL advice on nature policy in the Netherlands, presented for an interdepartmental group set up by the Ministry of Finance. The ministry regularly evaluates the financial aspects of policies in specific domains. For the interdepartmental group, three variants of nature policy for the long term were outlined and an indication of their consequences was provided (regarding finances, biodiversity and feasibility). This advice was produced in collaboration with Wageningen University and Research Centre (2010). Another example is the cost-benefit analysis of urbanisation alternatives and public transport projects for the city of Almere (2009). Strategic advice can also be in the form of a design. An example of such an advice is the PBL report, in interaction with the local

[13] This category includes reports on models, relationships, monitoring, and, since 2011, working papers.

authorities, on scenarios for regional air traffic for two regional airports in the Netherlands (2009).

Relationships with parliament
PBL strives for having closer contact with parliament. Currently PBL regularly attends meetings with parliamentary committees. Technical briefings on PBL reports are a very good way for PBL to present its findings to members of the House of Representative and the Dutch Senate, and to discuss the reports in direct interaction. In Appendix 2 more information is provided about the subjects of these technical briefings on various subjects, such as system change in environmental law, greening the EU Common Agricultural Policy (CAP), or the assessment of sustainable crop protection policy. The Registry Department of the Dutch Parliament is regularly informed by PBL on the reports and their subjects that be expected to be published in the near future, so that technical briefings may be set up.

Apart from these technical briefings, PBL also holds presentations for Permanent Parliamentary Committees, for example about the Ex-ante evaluation of the Planning Vision for Infrastructure and Landscape, and the legal and ecological aspects of Natura 2000. PBL also presents its views in parliament hearings, when requested; for example, during the hearing on climate science, on 19 April 2010, on the use of models, on 26 April 2012).

Dutch Parliament not only discusses PBL reports, but also commissions them. The House of Representatives, for example, commissioned the PBL report on Natura 2000 in the Netherlands. The report 'Assessing an IPCC Assessment' was commissioned by the former Minister of the Environment, when the House of Representative urged for an inquiry. Another request came from the Permanent Parliamentary Committee of the Ministry of Economic Affairs, Agriculture and Innovation, asking PBL to evaluate the effects of 59 so-called Green Deals.

In the European Parliament, PBL also has played a role in providing assessments for discussions. The report 'Scarcity in a Sea of Plenty', on global resource scarcities and policies, for example, was presented to the European Commission and to a commission of the European Parliament. A PBL report on EU resource efficiency perspectives was used by the European Parliament Rapporteur on resource efficiency policy, and a report on 'Climate Policy after Kyoto. Analytical insights into key issues in the climate negotiations' (2011) was used by the European Commission.
These examples of requests by both the Dutch and the European Parliament are indications of PBL's strategic line to increase its contacts with parliament bearing fruit.

Table 8.3 Number of Dutch parliamentary documents that mention PBL

2008	2009	2010	2011	2012
121	201	111	181	94 (up to June
249*	340	266	299	131 (up to June)

*Also includes so-called non-file documents and annexes
Source: www.ikregeer.nl

In the 2008–2011 period, PBL was mentioned in 102 parliament debates and meetings (both in the House of Representatives and in the Dutch Senate), by Cabinet members and members of parliament of all political parties. In most cases, no direct reference to a specific report was made, but in 14 cases there was such a direct relation with a PBL report.

Table 8.4 Number of questions from members of parliament and answers by ministers and state secretaries referring to PBL or PBL publications, 2008–2012[14]

2008	2009	2010	2011	2012
3	7	15	3	2 (up to June)

With regard to questions by members of parliament, in most cases, it was a minister or state secretary who referred to PBL reports in his or her answers. Only in some cases, PBL reports or PBL contributions to reports were subject of such questions; for example:

- the error with regard to the percentage of the Netherlands below sea level (PBL contribution to IPCC's Fourth Assessment Report);
- Acid rain. An analysis of thirty years of Dutch acidification policy;
- a report on the policy-oriented research programme on particulate matter;
  the report on the flow of the housing market

In 2010, 4 of 15 questions were related to the alleged errors and bias in the IPCC report.

In six cases, the general position and role of Dutch policy-analysis agencies (*planbureaus*) was discussed, and in one case, this referred to the position of PBL, in particular, in the debate on the alleged errors in the IPCC Fourth Assessment Report and PBL's role as a contributor to this report.
Recent motions (June 2011 to June 2012) by members of parliament, when based on PBL reports, were about the PBL evaluation of the 59 Green Deal initiatives, the 'Ex-ante evaluation of the Planning Vision for Infrastructure and Landscape', the 'Assessment of the Human Environment', the ex-ante evaluation of the EU Water Framework Directive and the report 'Environmentally harmful subsidies'.

Reactions from ministers
A few of the recent reactions, between June 2011 and June 2012, by ministers or state secretaries to PBL reports (parliamentary documentation) are presented below, to give an impression of the types of reports they reacted to.
For example, the Cabinet gave its opinion about two PBL reports on production rights in connection with the size of livestock. The State Secretary of Economic Affairs, Agriculture and Innovation (EL&I) gave his reaction to the report about meat, dairy and fish (The Protein Puzzle) and also to the report on the ecological effectiveness of nature conservation laws. Government also reacted to the report 'Exploration of pathways towards a clean economy by 2050' (a CPB–PBL co-production) and to the report 'Evaluation of the Dutch policy document on sustainable crop protection'.

From the data presented can be concluded that PBL reports are undeniably a factor in the political debate in the Netherlands. PBL is often referred to in parliamentary documents, both by ministers and parliamentarians. Reports of PBL are discussed in Permanent Parliamentary Committees, and in special technical briefings. In the past years, some PBL reports have been produced at the request of parliament.
PBL sees technical briefings as an excellent way to inform parliament in an interactive way. The Registry department of parliament and PBL are in close contact to see when newly released publications can be discussed in technical briefings.

8.2 Scientific research in the fields of spatial planning, nature and the environment

Scientific response to PBL reports
The scientific response to PBL reports has been analysed in various ways. The contextual response analysis, for a selection of 40 reports, used Google Scholar and gave the following results: 223 citations from 40 PBL reports; 59 from scientific

[14] Questions arising from discussions in Permanent Parliamentary Committees about PBL reports are not included

journals and 155 from books, conference papers and reports[15]. Reports in English are cited more often as are structural reports in Dutch, such as the 'Natuurbalans' (Nature Balance), 'Balans van de Leefomgeving' (Assessment of the Human Environment), 'Staat van de Ruimte' (Spatial Development) and the 'Monitor Duurzaam Nederland' (Sustainability Assessment for the Netherlands)[16].

Table 8.5 Scholarly citations from frequently cited PBL reports according to Google Scholar

	Citations found in academic journals	**Citations in scientific journals**	**Citations in books, traceable reports and conference papers[1]**	**Net Total of Scholarly Citations**
Nature Balance 2009 (*Natuurbalans 2009*)	49	3	42	45
Assessing an IPCC Assessment (2011)	34	20	10	30
OECD Environmental Outlook to 2050 (2012)	30	7	14	21
Environmental Balance 2009 (*Milieubalans 2009*)	21	10	10	20
Assessment of the Human Environment (*Balans van de Leefomgeving)* (2010)	19	1	16	17
The Protein Puzzle. The consumption and production of meat, dairy and fish in the European Union (2011)	15	3	9	12
Rethinking Global Biodiversity Strategies (2011)	13	4	4	8
Sustainability Assessment for the Netherlands (*Monitor Duurzaam Nederland*) (2011)	10	3	3	6
Spatial development 2010. Rearrangement of Dutch urban areas (*Staat van de Ruimte 2010*)	6	1	4	5

1) minus student theses and untraceable sources

[15] Student theses and untraceable reports excluded

[16] Citation takes time. Citations of recent reports in journals will not be found. A comparison with citations of SCP reports (contextual response analysis 2008) – although methodologically not correct - indicates that PBL reports are not cited less than SCP reports according to Google Scholar.

Publications by researchers in peer-reviewed journals
For the number of publications by PBL researchers in peer-reviewed journals over the past years the data from the Elsevier SCOPUS database were used.

Table 8.6 Number of publications by PBL researchers in peer-reviewed journals

2008	2009	2010	2011
80	85	91	88

Source: SCOPUS/Elsevier

See Appendix 5 for the list of publications. The Elsevier SCOPUS database, however, does not provide a complete overview of all publications by PBL researchers. Some of the peer-reviewed publications are not listed, either because they are in Dutch (and peer-reviewed) or for other reasons. On the PBL website, additional information on such publications by PBL researchers can be found under 'publications'.

A comparison of the number of publications in peer-reviewed journals by researchers working for PBL and SYKE, IIASA and EEA, based on SCOPUS data produces the following graphics, for the 2003–2011 period.

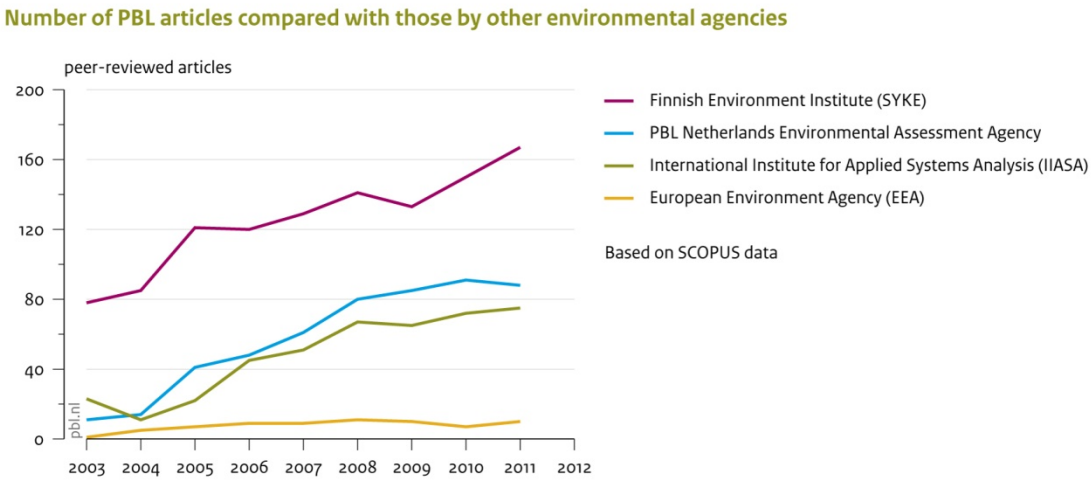

Figure 8.1
Source: based on SCOPUS data
The number of PBL publications compared to those of other environmental organisations (SYKE, IIASA, EEA).

Of course, the number of publications per institute should be correlated to the number of researchers working there and to the type of work they do. However, this was outside the scope of this report.

Articles were published in the following Journals (followed by the number of articles):
Climatic Change: 30
Global Biogeochemical Cycles: 19
Global Environmental Change: 17
Energy Policy: 16
Atmospheric Environment: 14
Environmental Science & Policy: 13
Environmental Modelling & Software: 11
Climate Policy: 11
Agriculture, Ecosystems & Environment: 8

Ecological Economics: 7
Tijdschrift voor Economische en Sociale Geografie (journal for economic and social geography): 6

It should be noted that this is only a selection of journals. Some journals in which PBL researchers publish articles, are not represented in this selection.

Publications published in collaboration with other scientific institutes (followed by the number of publications):[17]
Wageningen University and Research Centre: 106
Utrecht University: 87
National Institute for Public Health and the Environment (RIVM): 46
VU University Amsterdam: 27
International Institute for Applied Systems Analysis (IIASA): 27
Potsdam Institute for Climate Impact Research (PIK): 24
Delft University of Technology (TU Delft): 15
National Oceanic and Atmospheric Administration (NOAA): 14
Radboud University Nijmegen: 13
National Center for Atmospheric Research (NCAR): 13
Joint Research Centre (JRC) of the European Commission: 13
Pacific Northwest National Laboratory (PNNL): 12
National Institute for Environmental Studies (NIES): 12
Met Office: 11

Subject areas:
Environmental science: 302
Earth and planetary science: 119
Social science : 90
Agriculture and biological sciences: 58
Energy: 52
Economy: 37
Computer science: 16

Figure 8.2 shows the various areas covered by these PBL publications.

[17] This is not an exhaustive list.

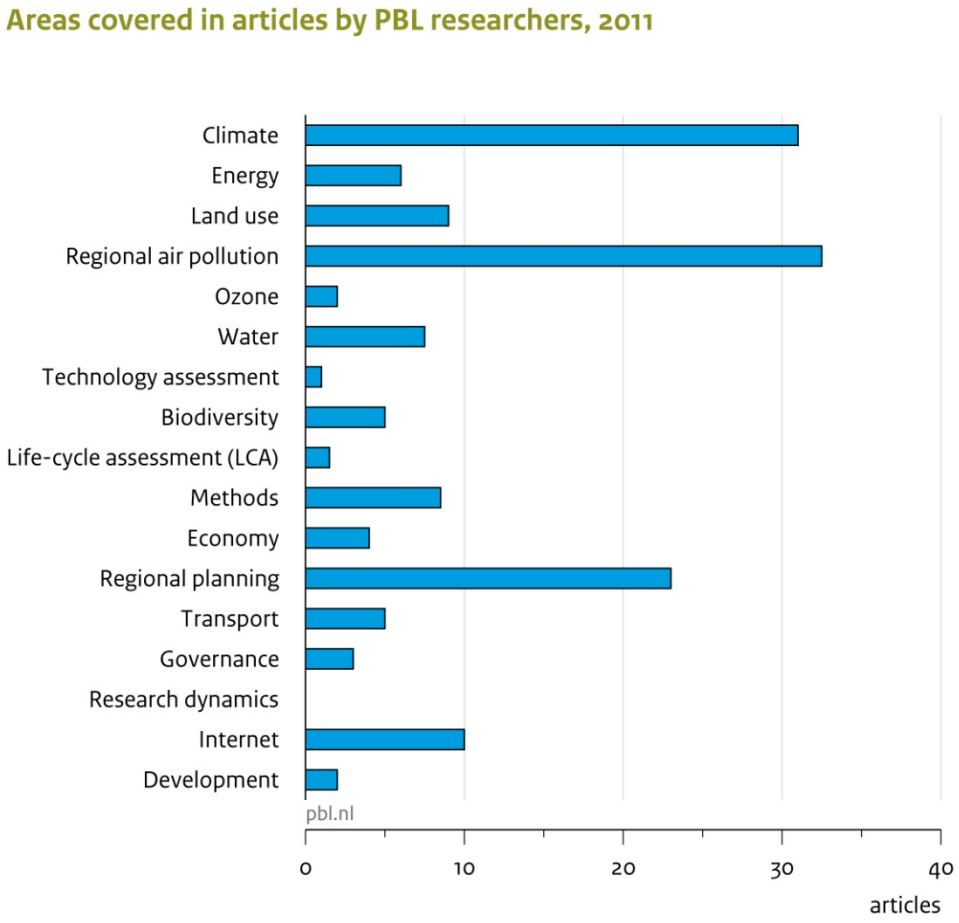

Figure 8.2.
Areas covered in publications by PBL researchers

Figure 8.2 shows that the fields of climate, regional air pollution and regional planning are strongly represented, compared to the other subject areas. This may be explained by the fact that some of the PBL departments generally contribute more than others to the knowledge base by publishing a large number of articles in peer-reviewed journals. Another explanation may be that part of PBL's international strategy is to focus on European dossiers in the fields of climate and energy, biodiversity, territorial cohesion and agriculture. In the recent KNAW report entitled 'Beyond the horizon of Rio+20. Science of sustainable development' (2012)[18], the Dutch expertise in the field of integrated modelling, monitoring and evaluation is characterised as 'strongly developed', and the PBL models TARGETS and IMAGE/TIMER are mentioned as examples. The report says: 'As one of the very few international models to do so, the IMAGE/TIMER model combines a detailed description of land, energy, emissions and climate. International organisations such as UNEP (for its Global Environment Outlook), the OECD (for its OECD Environmental Outlook) or the IEA (for its Energy Outlook) regularly draw on this Dutch capacity for their scientific assessments.'

Publication citations
The number of citations of publications by PBL researchers varies between 0 and 19 as indicated by SCOPUS. The most cited publications are those in the fields of climate, emissions, biodiversity, land-use change and water nutrient flows. These publications are the result of collaborations between PBL researchers and researchers from several other research institutes in other countries.

[18] KNAW, 2012. *Beyond the horizon of Rio+20, Science for sustainable development. P. 42.*

Table 8.7 Number of citations, 2009–2011.

	2009	2010	2011
Number of articles	85	91	88
Total number of article citations	102	159	120

Professors working for PBL
In 2012, the following PBL staff members also held professorships at various universities:

- Professor A.F. (Lex) Bouwman: PBL special Professor of transport of nutrients from land to sea at Utrecht University (senior researcher PBL);
- Professor H.J.M. (Bert) de Vries: PBL special Professor of global change and energy at Utrecht University (senior researcher PBL);
- Professor M.A. (Maarten) Hajer: Professor of public policy at the University of Amsterdam; Honorary Professor at the University of Copenhagen (PBL director);
- Professor D. (Dorien) Manting: PBL special Professor of demographic dynamics and spatial development at the University of Amsterdam (department head PBL);
- Professor A.C. (Arthur) Petersen: PBL special Professor of science and environmental public policy at VU University Amsterdam (Chief Scientist PBL); Professor F.G. (Frank) van Oort: Professor of urban economics at Utrecht University (guest researcher PBL);
- Professor D.P. (Detlef) van Vuuren: PBL special Professor of integrated assessment of global environmental change at Utrecht University (senior researcher PBL).

Number of PBL employees with a PhD (total and newly acquired)
The number of researchers with a PhD on 1 January 2012 was: 71 (of a total staff of 274). In 2011, 4 researchers of PBL newly acquired a PhD.

From the data presented can be concluded that the number of publications by PBL researchers (source: SCOPUS data base) has been quite stable at between 80 and 90 over the past four years, in spite of reductions in the number of employees. The output of PBL researchers in terms of publications cannot directly be compared to those of SYKE, IIASA and EEA. Publications by PBL researchers in the fields of climate, regional planning and regional air pollution are well-represented compared to those in other fields. The most cited publications relate to the fields of climate, emissions, biodiversity, land-use change and water nutrient flows. These publications are the result of collaboration between PBL researchers and those from several other research institutes in other countries.

8.3 Public reach of PBL activities and products

Communication strategy
The Communication and Management Support department is responsible for public communication on PBL activities and products. PBL is working on a new communication strategy, in which branding of PBL, communication about the top 10 products and improving the internal communication, are priorities.

Gradually, over the past years, communication has changed. Apart from reports and papers, other communication methods are increasingly being used to inform target audiences and stimulate participation of civil society (getting away from the idea of being a 'report factory'). Thus, various videos have been produced to promote the report 'Roads from Rio+20, Pathways to achieve global sustainability goals by 2050' and a special web application was developed: http://roadsfromrio.pbl.nl. The idea is to provide piecemeal information in an easy and accessible way. The number of page

views for this 'app' and the thematic Rio+20 website are comparable (4,400 from June to September 2012, representing about 1160 persons).

There has also been a noticeable change in communication strategy, in the sense that more often interactions with possible audiences take place before a report is being published. This strategy was followed, for example, for the trends report 'The energetic society'.

Furthermore, over the past years, several special websites for interaction with stakeholders were set up, such as the website of the Nature Outlook 2010–2040 and the website to collect suggestions for possible errors in the IPCC Working Group II Report.

PBL website: number of visitors and downloads[19]
For the 40 reports that were selected (among which 8 selected by the audit committee; see Appendix 1) and that were subjected to a contextual response analysis (see Annex 2), the number of visitors on the website[20] and number of downloads have been documented.

Some reports achieve a relatively large number of downloads, compared to the number of visitors to the website. A large number of website visitors (e.g. to the web pages of Assessing an IPCC Assessment) does not automatically lead to a large number of downloads of a report.

Table 8.8 The number of visitors to specific PBL report web pages and the number of report downloads, over the 2010–2012 period, per report

Report	**No. of visitors**	**No. of downloads**
Trends Report: The energetic society (*Signalenrapport De energieke samenleving*) (2011)	8,623	2,275 (epub 274)[21]
The Netherlands in 2040: An Outlook on Spatial Development (2011)	7,900	2,088
Assessing an IPCC Assessment (2010)	3,947	234
Ex-ante evaluation of the Planning Vision for Infrastructure and Landscape (*Ex-ante evaluatie Structuurvisie Infrastructuur en Ruimte*) (2011)	3,650	1,022
Spatial development 2010. Rearrangement of Dutch urban areas (*Staat van de Ruimte*) (2010)	3,520	No data available
Assessment of the Human Environment (*Balans van de Leefomgeving*) (2010)	3,454	606
The competitive position of Dutch regions / Policy on top sectors (*De concurrentiepositie van de Noordvleugel van de Randstad in Europa*) (2012)	3,445	830
The Protein Puzzle. The consumption and production of meat, dairy and fish in the European Union (2011)	2,536	917
From combating to managing; demographic decline in the Netherlands (2010)	2441	1254
Climate adaptation in the Dutch Delta (*Een*	2065	721

[19] For technical reasons, the number of visitors to the PBL website and the number of downloads cannot be compared over the whole 2008–2012 period. Information is only available from 2010 onwards.
[20] The Regional Population and Household Prognoses are a joint product by PBL and CBS. This product attracted more than 40,000 visitors to the CBS website.
[21] Also published as E-book

delta in beweging) (2011)		

Special thematic websites
PBL has several thematic websites. These web pages serve to inform the public about projects and models of PBL (such as IMAGE), or to provide information on a personal scale; for example, the website on regional population projections (www.regionalebevolkingsprognose.nl). Sometimes the websites are interactive, giving the public the opportunity to give their opinion and reaction (e.g. the temporary website to register errors in the IPCC Assessment, which was online from March to May 2010). For the first quarter of 2012, Table 8.9 gives an impression of the number of visits to some of the thematic websites.

Table 8.9 Visits to thematic web pages PBL website

Thematic site	**Page displays / Unique page views**	**Percentage of visits to PBL.nl**
Nature Outlook 2010–2040	16,863 / 12,568	6.79 / 6.86
Environmental Balance	7,003 / 5,428	2.82 / 2.96
IMAGE	1,443 / 1,118	0.58 / 0.61
HYDE	1,209 / 833	0.49 / 0.45
EDGAR	1,137 / 778	0.46 / 0.42

Reports mentioned in the printed news media
The contextual response analysis shows that, from the 40 reports that have been studied, 19 resulted in a total of 171 newspaper articles.

Table 8.10 PBL reports and the number of times they were mentioned in the printed news media

Sustainability Assessment for the Netherlands (*Monitor Duurzaam Nederland)* (2011)	29
Environmental Outlook to 2050 (OECD) (2012)	26
Environmental Balance 2009 (*Milieubalans 2009)*	21
Regional Population and Household Prognoses, 2011–2040 (*Regionale bevolkingsprognose* (2011))	20
Nature Outlook 2010–2040 (*Natuurverkenning 2010–2040)* (2012)	15
Spatial Development 2010. Rearrangement of Dutch urban areas (*De Staat van de Ruimte 2010)*	13
Quick scan variants National Ecological Network (*Quick Scan varianten EHS)* (2011)	7
Evaluation Spatial Planning Act (*Evaluatie wet ruimtelijke ordening* (2010)	6
Trends Report: The energetic society (*Signalenrapport De energieke samenleving* (2011)	5
Nature Balance 2009 (*Natuurbalans 2009*)	5
Assessment of the Human Environment (*Balans van de leefomgeving)* (2010)	5
Spatial Outlook 2011 (*Ruimtelijke verkenning 2011*)	4
Rethinking global biodiversity (2010)	3
The protein puzzle; the consumption and production of meat, dairy and fish in the European Union (2011)	3
Exploration of pathways towards a clean economy by 2050: How to realise a climate-neutral Netherlands (*Naar een schone economie in 2050)* (2011)	3
Roads from Rio+20, Pathways to achieve global sustainability goals by 2050 (2012)	2
Estimation of greenhouse gases and air polluting substances, 2011–2015 (*Raming van broeikasgassen)* (2011)	2
The competitive position of Dutch regions / Policy on top sectors (*Concurrentiepositie topsectoren*) (2012)	1

Climate policy after Kyoto. Analytical insights into key issues in the climate negotiations (2011)	1
Total	171

Number of interviews
To give an indication of the presence of PBL in the traditional news media, an overview of the number of radio and television items is given in Table 8.11 and plotted in Figure 8.3.

Table 8.11 Number of radio and television items paying attention to PBL publications (e.g. interviews, news items) from 2009 to 2011.

	Television	**Radio**	**Total**
2009	6	30	36
2010	12	31	43
2011	4	15	19

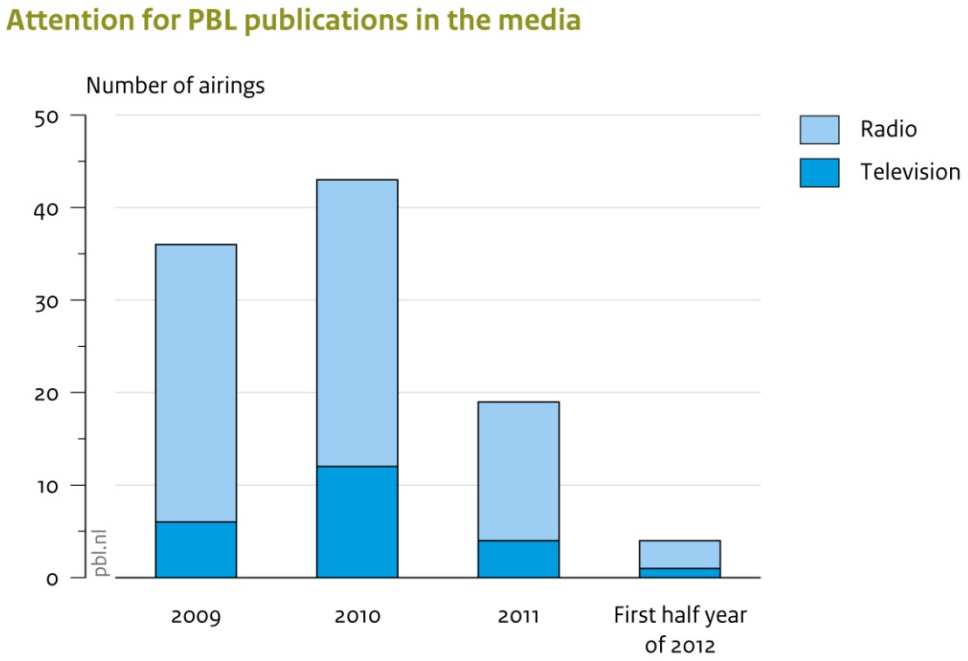

Figure 8.3
Number of radio and television items paying attention to PBL publications (e.g. interviews, news items), per year, from 2009 to 2011.

Impression of the impact of PBL reports
Impact can be defined in various ways. It can be defined according to the degree to which they are used or referred to by policymakers, public authorities and politicians. Impact of PBL publication can also be more broadly defined as their significance for society and societal groups. And, of course, impact may also be defined in a scientific sense, the degree of contributing to the scientific debate. For obtaining a quantitative impression of the use of PBL reports in science, politics, news media, and society at large, a contextual response analysis was found to be the most appropriate.

This contextual response analysis was carried out by Dr Ad A.M. Prins from Support in Research Management. He analysed 40 PBL reports, including 8 reports of projects that were selected by the audit committee for thorough review. These 40 reports are listed

in Appendix 1. Traces of use of these reports in various databases (Google, Yahoo, Google Scholar, Lexis Nexis, Officiëlebekendmakingen.nl) have been noted. First of all, a list of the 20 most frequently used PBL reports (from the selected 40) indicates that some recent reports received a relatively large total number of references and also of unique references (websites). The most referred to report was the 'Quick Scan variants National Ecological Network' followed by the report 'Roads from Rio+20, Pathways to achieve global sustainability goals by 2050'.

Table 8.12 Twenty publications most frequently cited, by unique references and total number of references

Title	**Total no. of references**	**Unique references (No. of websites)**	**Selected reports**
Quick scan variants National Ecological Network (*Quick scan varianten EHS) (2011*)	858	412	
Roads from Rio+20, Pathways to achieve global sustainability goals by 2050 (2012)	344	237	*
Environmental Balance 2009 (*Milieubalans 2009*)	383	212	
Environmentally harmful subsidies (Milieuschadelijke subsidies) (2011)	323	160	*
Nature Balance 2009 (*Natuurbalans 2009*)	318	157	
Spatial Outlook 2011 (*Ruimtelijke verkenning 2011*)	247	144	
Trends Report: The energetic society (*Signalenrapport De energieke samenleving) (2011*)	258	144	*
Sustainability Assessment for the Netherlands (*Monitor Duurzaam Nederland) (2011)*	251	139	
Ex-ante evaluation of the Planning Vision for Infrastructure and Landscape (*Ex-ante evaluatie Structuurvisie Infrastructuur en Ruimte) (2011)*	199	131	
Regional Population and Household Prognoses, 2011–2040 (*Regionale bevolkingsprognose (2011)*)	175	128	*
OECD Environmental Outlook to 2050 (2012)	195	123	
The competitive position within Europe of the northern wing of the Randstad (*De concurrentiepositie van de Noordvleugel van de Randstad in Europa) (2011*)	216	115	
Assessment of the Human Environment 2010 (*Balans van de Leefomgeving 2010*)	165	111	
Nature Agreement review (*Beoordeling Natuurakkoord) (2011*)	228	110	
Climate adaptation in the Dutch Delta (*Een delta in beweging) (2011*)	202	107	*
Assessing an IPCC Assessment (2011)	149	103	*
Rethinking Global Biodiversity Strategies (2010)	150	98	
Environmental law and the process of area development (*Omgevingsrecht en het*	191	97	

proces van Gebiedsontwikkeling) (2011)			
Nature Outlook 2010–2040 (2012)	162	90	*
From combating to managing; Demographic decline in the Netherlands (*Van bestrijden naar begeleiden; Demografische krimp in Nederland) (2010*)	156	86	

*report selected by the audit committee for thorough review

Not only special reports on politically hot items (such as the 'Quick Scan variants National Ecological Network' and the report on 'Environmentally damaging subsidies') are often referred to, but also structural reports, such as the Environmental Balance 2009 (*Milieubalans 2009*) and Nature Balance 2009 (*Natuurbalans 2009*) receive many references. Outlook studies (such as the one on 'Spatial Developments 2011', and the 'OECD Environmental Outlook to 2050') and strategic documents (such as 'Rethinking Global Biodiversity Strategies') also belong to the top 20. So, it cannot be concluded that users on the internet have a specific interest in a specific type of report.
It should be noted that all reports that have been selected by the audit committee belong to the most frequently used reports, except for the Ex-durante evaluation of the Spatial Planning Act.

PBL reports have a rather high percentage of so-called infrequent users[22]. This holds especially for the reports published in English.
An analysis of the use of reports by the various audiences (target groups) of PBL reveals a wide diversity of audiences (see Annex 2 for more information):

Table 8.13 Number of frequent users per type of audience and user

Function	Environment and nature	Sustainable development	Housing, urban issues and spatial planning	Mobility and infrastructure use	Other frequent users	Grand total
News media	8	1	1	1	24	35
Knowledge bases	11	4	7	2	3	27
Governments other than national	1	1	1	1	12	16
Libraries or repositories	4	1			11	16
General/internet org.					16	16
Interest groups, pressure groups	12		1		3	16
Universities, scientific org.	6	2	1	1	5	15
Social media					11	11
Advisory councils, government agencies	4	2		1	4	11
Political parties/groups	2				6	8
National Government	2		1		4	7
Publishers					5	5
Consultancy firms	1	1				2
Blogs	1				1	2
Total	52	12	12	6	105	187

Organisations working in the fields of environment and nature are by far the largest group (52) among frequent users of PBL reports.
With respect to the function of the frequent users (e.g. news provider, scientific institute, government, political party, pressure group) the audience to some extent seems to follow the subject matter of the report, but none of the reports is uniquely or specifically used by a single audience group. The reports are used by other audience groups as well.

[22] compared with a similar analysis of SCP reports in 2008

Table 8.14 Number of users of 20 frequently used reports, according to groups of functions

Titles	Science, incl. libraries	Political parties, interest groups, pressure groups, blogs	News	Knowledge bases	Governments	Other frequent users	Infrequent users	Grand total
Quick scan variants National Ecological Network (*Quick scan varianten EHS)* (2011)	22	53	38	15	27	9	242	412
Roads from Rio+20, Pathways to achieve global sustainability goals by 2050 (2012)	5	11	10	2	7	3	195	237
Environmental Balance 2009 (*Milieubalans 2009*)	19	20	26	12	17	5	106	212
Environmentally harmful subsidies (Milieuschadelijke subsidies) (2011)	7	22	24	6	7	7	83	160
Nature Balance 2009 (*Natuurbalans 2009*)	19	22	14	9	16	7	64	157
Trends Report: The energetic society (*Signalenrapport De energieke samenleving)* (2011)	7	23	12	8	8	9	70	144
Spatial Outlook 2011 (*Ruimtelijke verkenning 2011*)	13	12	12	8	11	8	74	144
Sustainability Assessment for the Netherlands (*Monitor Duurzaam Nederland)* (2011)	9	15	13	8	9	3	77	139
Ex-ante evaluation of the Planning Vision for Infrastructure and Landscape (*Ex-ante evaluatie Structuurvisie Infrastructuur)* (2011)	12	10	14	10	16	10	57	131
Regional Population and Household Prognoses, 2011–2040 (*Regionale bevolkingsprognose)* (2011)	8	8	4	5	10	4	82	128
OECD Environmental Outlook to 2050 (2012)	4	4	7	3	2	3	96	123
The competitive position within Europe of the northern wing of the Randstad (*De concurrentiepositie van de Noordvleugel van de Randstad in Europa)* (2011)	12	13	12	9	16	2	48	115
Assessment of the Human Environment 2010 (*Balans van de Leefomgeving 2010*)	13	14	13	7	10	7	42	111
Nature Agreement review (*Beoordeling Natuurakkoord* (2011)	10	20	17	9	11	5	35	110

Climate adaptation in the Dutch Delta (*Een delta in beweging)* (2011)	12	8	21	10	6	2	42	107
Assessing an IPCC Assessment (2011)	5	3	6	1	2	4	79	103
Rethinking Global Biodiversity Strategies (2010)	10	13	7	4	7	3	48	98
Environmental law and the process of area development (*Omgevingsrecht en het proces van gebiedsontwikkeling*) (2011)	8	9	9	8	14	3	42	97
Nature Outlook 2010–2040 (*Natuurverkenning 2010–2040*) (2012)	7	11	13	5	6	5	42	90
From combating to managing; Demographic decline in the Netherlands (*Van bestrijden naar begeleiden; Demografische krimp in Nederland*) (2010)	1	13	4	2	5	3	54	86

A large share of the users of PBL reports is active in political or social opinion making. When comparing these results with results from an earlier analysis of the Netherlands Institute for Social Research (SCP) in 2008, PBL appears to have relatively more institutional users (e.g. councils, institutes).

It is interesting that the ranking of the attention in newspapers (mentioned before) is different from the ranking of website references. Reports that are closely related to political discussions, such as the report 'Assessing an IPCC Assessment' and the report on 'Environmentally damaging subsidies' receive less attention in printed news media. That could be an indication of specialised information channels in these cases playing an important role in the dissemination of findings of PBL reports.

The conclusion from the data available seems that the impact of PBL reports cannot be straightforwardly deduced from one parameter (either website, newspaper article, interview, or internet reference). There seems to be no direct link between the number of articles in the printed media, the number of website visitors, the number of downloads and the number of references on the internet. Reports with a politically topical subject matter receive considerable attention on the internet, on various websites, whereas the number of downloads or newspaper articles may be relatively low. One cannot say that users on the internet have a specific interest in a specific type of PBL product. A large share of users of PBL reports is active in political or social opinion making. This illustrates the political context in which PBL operates.

Appendices

Appendix 1. List of the 40 reports that were selected for analysis of the contextual response

The publications listed here are all in Dutch unless otherwise indicated. A translation of the title has been provided [*between brackets*] for information purposes.

Afschaffen van de productierechten in de veehouderij in 2015: gevolgen voor veehouderijen en leefomgeving [*Abolition of production rights in livestock farming in 2015: consequences for livestock farmers and the local environment*] (2012)
Assessing an IPCC Assessment. An analysis of statements on projected regional impacts in the 2007 report (2010)
Balans van de Leefomgeving [*Assessment of the Human Environment*] (2010)
Beoordeling Natuurakkoord [Assessment Nature Agreement] (2011)
Climate policy after Kyoto. Analytical insights into key issues in the climate negotiations (2011)
De concurrentiepositie van Nederlandse regio's/Topsectorenbeleid [*The competitive position of Dutch regions / Policy on top sectors*] (2012)
De concurrentiepositie van de Noordvleugel van de Randstad in Europa [*The competitive position of the Randstad's northern wing in Europe*] (2011)
De staat van de Ruimte 2010. De herschikking van stedelijk Nederland [*Spatial development 2010. Rearrangement of Dutch urban areas*] (2010)
Doorrekening motie Halsema [*Assessment of the motion Halsema*] (2011)
Een delta in beweging. Bouwstenen voor een klimaatbestendige ontwikkeling van Nederland [*Climate Adaptation in the Dutch Delta – Strategic options for a climate-proof development of the Netherlands*] (2011)
EU resource efficiency perspectives in a global context (2011)
Ex-ante evaluatie Structuurvisie Infrastructuur en Ruimte [*Ex-ante evaluation of the Planning Vision for Infrastructure and Landscape*] (2011)
Ex-durante Evaluatie Wet op de Ruimtelijke Ordening [*Ex-durante evaluation of the Dutch Spatial Planning Act*] (2010)
Forks in the road. Alternative Routes for International Climate Policies and their implications for the Netherlands (2011)
Greening the Common Agricultural Policy: impacts on farmland biodiversity on an EU scale. (Included also the follow-up PBL Note: Greening the CAP: An analysis of the effects of the European Commission's proposals for the Common Agricultural Policy 2014-2020) (2012)
Herziening geluidbeleid: actualisatierapport 2011 [*Revision of noise policy: Actualisation report 2011*]
Milieubalans 2009 [*Environmental Balance 2009*] (2009)
Monitor Duurzaam Nederland [*Sustainability Assessment for the Netherlands*] (2011)
Naar een schone economie in 2050: routes verkend. Hoe Nederland klimaatneutraal kan worden [*Towards a clean economy by 2050: pathways explored. How to achieve climate neutrality for the Netherlands*] (2011)
Natura 2000 in Nederland [*Natura 2000 in the Netherlands*] (2011)
Natuurbalans 2009 [*Nature Balance 2009*] (2009)
Natuurverkenning 2010–2040 [*Nature Outlook, 2010–2040*] (2012)
Nederland in 2040: een land van regio's. Ruimtelijke verkenning 2011 [*The Netherlands in 2040; a country of regions. Spatial Outlook 2011*]
Notitie milieuschadelijke subsidies [*PBL Note on environmentally harmful subsidies*] (2011)
OECD Environmental outlook to 2050. The consequences of inaction (2012)
Omgevingsrecht en het proces van gebiedsontwikkeling [*Environmental Licensing and the process of area development*] (2011)
Quick scan varianten EHS [*Quick scan of variants of the national ecological network (EHS)*] (2011)

Raming van broeikasgassen en luchtverontreinigende stoffen 2011-2015 [*Estimation of greenhouse gases and air polluting substances, 2011–2015*]

Rethinking Global Biodiversity Strategies (2010)

Roads from Rio+20: paden naar mondiale duurzaamheidsdoelen voor 2050 [*Roads from Rio+20: Pathways to achieve global sustainability goals by 2050*] (2012)

Scarcity in a sea of plenty? Global resource scarcities and policies in the European Union and the Netherlands (2011)

Second opinion bij: Verkassen? Maatschappelijke kosten en baten van het verplaatsen van tuinbouw ten behoeve van woningbouw (samen met CPB) [*Second opinion on: Rehousing? Social costs and benefits of relocating horticulture to make way for new housing development (in collaboration with CPB)*] (2011)

Second opinion bij: Verkenning Maatschappelijke Kosten en Baten van de Olympische Spelen (samen met CPB) [*Second opinion on: Assessment of the costs and benefits of the Olympic Games (in collaboration with CPB*)] (2011)

Signalenrapport De energieke samenleving [*Trends Report: The energetic society*] (2011)

The European landscape of knowledge-intensive foreign-owned firms and the attractiveness of Dutch regions (2011)

The Protein Puzzle. The consumption and production of meat, dairy and fish in the European Union (2011)

The roles of government in multiactor sustainable supply chain governance systems and the effectiveness of their interventions. An exploratory study (2010)

Van bestrijden naar begeleiden: demografische krimp in Nederland [*From combating to managing demographic decline in the Netherlands*] (2010)

Verbetering van communicatie en presentatie rond de MKBA bij Verstedelijkingsprojecten [*Improving communications and presentations regarding the Social cost–benefit analysis of urbanisation projects*] (2011)

Welke veestapel past in Nederland? Verkenning van mogelijke uitgangspunten en gevolgen voor milieu en economie [*Which livestock would be best suited to the Netherlands? Assessment of possibilities and possible starting points, and of the consequences for the environment and the economy*] (2011)

Appendix 2. Highlights from PBL interactions with the Dutch Parliament, ministers, the European Commission and international organisations

Time frame: September 2010 to April 2012
(source: PBL External Status Reports[23] 2010 to 2012 [*Externe Voortgangsrapportages PBL*])

A2.1 Interactions with the Dutch Parliament

In the autumn of 2010, the Dutch House of Representatives requested and received information from the Minister of VROM (the former Dutch Ministry of Housing, Spatial Planning and the Environment, which later became part of the Ministry of Infrastructure and the Environment) about the effects of policy measures by the Rutte Cabinet with regard to the EU environmental policy goals as well as the increase in the maximum speed limit on motorways.

On 9 February 2011, PBL took part in round-table talks in the House of Representatives about the EU Common Agricultural Policy. During these talks, PBL presented the main points from its report on the contribution of the CAP reform to policy goals on environment, nature and landscape.

In March 2011, during a discussion by the Dutch Permanent Parliamentary Committee on the revision of the regulations concerning noise from motorways, several references were made to the PBL report on this subject.

The Dutch Senate, on 14 March 2011, organised an expert meeting on Nature Policy. During this meeting, PBL presented ideas as these were worked out in its Nature Outlook.

At the request of the House of Representatives, PBL produced a report on the legal and ecological aspects of Natura 2000 legislation. The report was published on 11 April 2011 and produced in collaboration with the Wageningen University and Research Centre, Utrecht University and Maastricht University. It was the first time since the merger of MNP and RPB in 2008 that PBL received such a direct request from the House of Representatives.

On 18 May 2011, PBL and representatives of Utrecht University presented their report on the legal aspects of Natura 2000, the nature goals and conservation plans during a technical briefing of the Permanent Parliamentary Committee on Economic Affairs, Agriculture and Innovation.

The House of Representatives asked State Secretary Bleker to give his reaction to the European Nitrogen Assessment published on 11 April 2011. PBL was one of the contributors to this European project.

On 14 September 2011, PBL presented its ex-ante evaluation of the government's Planning Vision for Infrastructure and Landscape to the Permanent Parliamentary Committee on Infrastructure and the Environment. At that time, PBL also presented its Spatial Outlook 2011, as well as its report on the long-term trends in CO_2 emissions which was produced in collaboration with the Joint Research Centre of the European Commission.

On 10 November 2011, PBL presented its assessment report on the Motion Halsema (*Doorrekening motie Halsema*, calling for an assessment of the effects of government policy measures on the environment). At this time, PBL also presented its Sustainability Assessment for the Netherlands. These presentations were to the Permanent Parliamentary Committee on Infrastructure and the Environment.

At the request of the House of Representatives and the State Secretary for Nature, PBL analysed the consequences of the governance agreement on nature (*Bestuursakkoord natuur*, an agreement between national government and provinces with regard to decentralisation of nature policy). The PBL report was presented to the House of

[23] External Status Reports are primarily intended to inform the ministries that are clients of PBL

Representatives and the State Secretary on 18 November 2011. On 24 November 2011, in the House of Representatives, PBL held a technical briefing during which members of parliament discussed the report with PBL representatives.

On 25 November 2011, PBL representatives presented their ideas during a round table discussion on making food production more sustainable, which was organised by the Permanent Parliamentary Committee on Economic Affairs, Agriculture and Innovation.

The State Secretary for nature, at the request of parliament, gave his reaction to PBL reports on the reduction in Dutch livestock numbers (16 December 2011).

On 19 January 2012, PBL published a report on the ecological effectiveness of nature legislation. This report was a reaction to several motions by members of parliament (from 2008; Jacobi & Jager and Van der Ham). The State Secretary for nature presented the PBL findings in a letter to the House of Representatives.

On 26 January 2012, the Nature Outlook was presented to the State Secretary for nature during a symposium, and in a closed meeting to the Permanent Parliamentary Committee for Economic Affairs, Agriculture and Innovation.

The Research Bureau of Parliament (BOR) asked PBL to produce a report on the factors that influence house prices in the Netherlands. The report will be used for a parliamentary inquiry.

The House of Representatives asked the Cabinet for a reaction to the PBL report on a more sustainable heating supply to the built environment of 2050 (*Naar een duurzamere warmtevoorziening van de gebouwde omgeving in 2050*), which was published in April 2012.

Furthermore, there were technical briefings of the House of Representatives, on:

- 5 April 2012, on system change in environmental law;
- 18 April 2012, on the international competitive position of de Dutch top sectors;
- 31 May 2012, on Greening of the Common Agricultural Policy and on sustainable crop protection.

A2.2 Contacts with Dutch ministers (or state secretaries)

Time frame from September 2010 to April 2012

On several occasions in the past, PBL reports of PBL have been presented to Dutch ministers or state secretaries:

- On 14 September 2010, the *Balans van de Leefomgeving 2010* (assessment of the human environment) was presented to Ministers Huizinga (VROM) and Verburg (LNV).
- On 16 February 2011, the report *Herijking van de Ecologische Hoofdstructuur, Quick Scan van varianten* (quick scan report about policy options with regard to the National Ecological Network) was presented to the State Secretary for Nature, Mr Bleker.
- On 26 January 2012, the report *Natuurverkenning 2010-2040* (Nature Outlook 2010–2040) was presented to Mr Bleker.
- On 7 March 2011, the report *De internationale concurrentiepositie van de topsectoren* (the international competititve position of Dutch top sectors) was presented to Mr Buijink, the Secretary General of the Ministry of Economic Affairs, Agriculture and Innovation.
- On 7 September 2011, Ms. Schultz van Haegen, Minister for Infrastructure and the Environment, was presented with the report *Nederland in 2040, een land van regio's, Ruimtelijke verkenning 2011* (The Netherlands in 2040; a country of regions. Spatial Outlook 2011).

Presentations were held for departmental and interdepartmental groups on several PBL reports, such as:

- Scarcity in a Sea of Plenty? Global resource scarcities and policies in the European Union and the Netherlands.
- EU Resource Efficiency Perspectives in a Global Context
- The energetic society. In search of a governance philosophy for a clean economy.

- PBL Symposium on the internationally competitive position of Dutch top sectors and top regions (*De internationale concurrentiepositie van Nederlandse topsectoren en topregio's*)

Together with the OECD, the Ministry of Infrastructure and the Environment and the Rio+20 platform, PBL organised a meeting on 3 April 2012, during which the OECD Environmental Outlook to 2050 was presented. PBL was one of the contributors to this Outlook.

A2.3 Contacts with the European Commission and international organisations

Time Frame from September 2010 to April 2012

In 2010, during the tenth Conference of the Parties to the Convention on Biological Diversity (COP 10), which was held in Nagoya, two PBL reports were presented to Mr Achim Steiner, Executive Director of UNEP.

- The first report, Rethinking Global Biodiversity Strategies: Exploring structural changes in production and consumption to reduce biodiversity loss, was produced at the request of UNEP. This report was produced in collaboration with the Dutch Agricultural Economics Research Institute (LEI-WUR) of the Wageningen University and Research Centre and the Canadian University of British Columbia.
- For the second report, Bridging the Emissions Gap, which was also produced for UNEP, within the framework of the UNFCCC Cancun Climate Change Conference of December 2010, PBL provided contributing authors.

PBL produced several reports for the European Commission and the European Parliament; see the examples below:

On 2 March 2011, the report 'Scarcity in a sea of plenty? Global resource scarcities and policies in the European Union and the Netherlands' was presented to the European Commission, BEPA and DG Environment.
On 14 and 15 June 2011, the report *'The Protein Puzzle. The consumption and production of meat, dairy and fish in the European Union'* was presented not only to DG Agriculture, but also to an audience of researchers from the Animal Change Research Programme and a group of agricultural experts and lobbyists.
A tool for the evaluation of climate mitigation options, presented in Brussels in August 2011, was produced in collaboration with IIASA within the framework of the CLIMA project Mitigation of Climate Change of the European Commission.
At the request of DG CLIMA, PBL also made several analyses of proposals for the climate negotiations of the Durban Climate Change Conference.
At the request of DG CLIMA and the Dutch Ministry of Infrastructure and the Environment, PBL calculated the possible consequences for international climate negotiations of the new prognoses on greenhouse gas emissions from third-world countries, which have become available following the Caucún Conference. The results were published in the 2012 report ‘Analysing the emission gap between pledged emission reductions under the Cancún Agreements and the 2° C climate target’.
On 18 August 2011, PBL presented its report 'Greening the Common Agricultural Policy: impacts on farmland biodiversity on an EU scale', for an audience consisting of representatives from DG Agriculture, the European Parliament and NGOs. The novel way of analysing the effects of the CAP on biodiversity was especially appreciated by the head of the Agricultural Policy Analysis Section.
On 28 November 2011, the report 'Resource efficiency perspectives in a global context', which was produced at the request of DG Environment, was presented in Brussels. The EC used this report for its Roadmap towards a resource efficient Europe.
In March 2012, the OECD published its 'Environmental Outlook to 2050' in Paris during a meeting of ministers. PBL also contributed to this report, and later in the year organised a presentation in the Netherlands, in collaboration with the Dutch Ministry of Infrastructure and the Environment.

Appendix 3. Previous audits and the responses

The PBL Netherlands Environmental Assessment Agency as a whole was not audited during the 2008–2012 period, but its predecessors (the Netherlands Institute for Spatial Research (RPB) and the Netherlands Environmental Assessment Agency (MNP)) were audited in 2007 and 2008. The last general audit of MNP (actually its precursor part in RIVM) took place in 2000 (see chapter 5 of the self-evaluation report).
The following sections provide information about these former audits; a general audit of RPB, and audits of MNP land-use models, environmental quality models and monitoring networks.

A3.1 The 2007 general audit of RPB

In 2007, a general audit of the Netherlands Institute for Spatial Research (RPB) took place. In audit committee stated in its report that although research by the RPB was thorough and the published reports were interesting, the connection with policy and policymakers was insufficient. The audit committee found large differences in perception about the functioning of RPB between the RPB and policymakers. The contribution to policy-making was much less than expected. Interaction with policymakers was hampered by the tendency of the RPB to profile itself by publishing reports that were often not considered useful for policy-making, according to the audit report. It seemed that the RPB at the time had insufficient knowledge of policy processes and policy sectors. The audit committee recommended a strategic change.
When the Dutch Government decided on a merger between RPB and MNP, forming the PBL Netherlands Environmental Assessment Agency, the responsibility for the response was transferred to PBL. In its mission statement and in the governance structure of PBL, as well as in the work programmes, attention has been paid to the points made by the audit committee.

A3.2 The 2007 scientific audit of MNP land-use models

In January 2007, MNP land-use models, which were primarily used at the national level, were audited. The audit panel considered the Land Use Scanner (*Ruimte Scanner*) and Environment Explorer (*Leefomgevingsverkenner*) among the best in the field. However, the audit panel noted that MNP was increasingly confronted with questions about the regional and even the local scale and with different societal perspectives. The models would need to be sensitive to a wider spectrum of policies and truly embrace the socio-economic perspective. The audit panel recommended substantial redesign or the development of a new (activity-based) model. Intensifying collaboration with other institutes in the Netherlands and elsewhere in terms of promoting the models and educating them on the use of these models was also recommended.
In its response in May 2007, MNP acknowledged that the models could not deal with the mobility of people and households in a satisfactory way and were insufficiently integrated. As a consequence, an integrated land-use model was developed. This model has been coupled with the TIGRIS-XL model from other institutes. For this integration and coupling, the cooperation with these institutes has been intensified.

A3.3 The 2008 audits of environmental quality models and monitoring networks

The audits of environmental quality models and monitoring networks were not confined to PBL, but also concerned the Dutch National Institute for Public Health and the Environment (RIVM). At the time, both institutes had a shared responsibility for the monitoring network

on environmental quality. Nowadays, the responsibility for monitoring networks is assigned entirely to the RIVM.

On 5 and 6 June 2008 an audit on the model instruments on environmental quality (*leefomgevingsinstrumentarium*) was conducted as part of the multiannual audit programme of the former MNP. The audit committee was satisfied with the scientific quality of PBL's work and made recommendations with regard to stakeholder participation, dealing with uncertainties and publications in international peer-reviewed journals. The audit panel recommended that the PBL Netherlands Environmental Assessment Agency should develop a phased plan to implement the recommendations over the years up to 2012.

The audit on monitoring networks took place from 10 to 12 September 2008 in Bilthoven. The audit panel evaluated whether the monitoring networks were 'fit-for-purpose' and whether the monitoring and associated modelling activities were being performed according to best practice. RIVM and MNP were both in part responsible for these activities. In general, the audit panel found the models adequate, but attention had to be paid to the updating of the modelling tools and the introduction of new models to follow new scientific developments. The panel considered it also necessary that further efforts were made to analyse model uncertainty in order to reduce uncertainties over the long term. In November 2009, the RIVM published its response to the observations and recommendations by the Scientific Audit on Monitoring and Modelling of Environmental Quality. The RIVM reached an agreement with PBL and the former Dutch Ministry of Housing, Spatial Planning and the Environment (VROM) according to which the complete emission inventory task was transferred to the RIVM.

Appendix 4. Provisional Strategic Plan. The main points.

In 2008, the Netherlands Institute for Spatial Research (RPB) and the Netherlands Environmental Assessment Agency (MNP) were merged to form the current PBL Netherlands Environmental Assessment Agency.
The integration of the two former institutes has taken quite some time, partly due to substantial cultural differences, as well as to the fact that there are two separate locations: The Hague and Bilthoven. In 2010 it was decided that the PBL head office would be located in The Hague. In addition, the Dutch Government indicated that it wants to house the three Dutch policy analysis agencies (PBL, CPB and SCP) in the same building in The Hague by 2015. This implies a move for PBL from both its current locations, within the foreseeable future. The government's motivation for such a combined housing is both to reduce overall costs and to create opportunities for synergy.
In its Provisional Strategic Plan (*Houtskoolschets [charcoal sketch])* which contains strategic choices for the future, PBL takes these facts into consideration, together with, and more importantly, some general trends within society, policy and politics that influence these strategic choices.

A4.1 Trends in politics, science and society

The political landscape is much more dynamic and complex than it has been over the past decades. In the last ten years, governments have not been in power for longer than two years on average. Political will has become much more volatile and political configurations have changed drastically. As a scientific policy analysis agency working for the government, *PBL has to be aware of these dynamics and be sure its reports will be usable for a broad audience.*

Ministries have merged since the Rutte Cabinet came into power in 2010 and several policy domains are now subsumed under the same ministry. The Ministry of Infrastructure and the Environment is now the Ministry responsible for PBL. Within the ministry various knowledge institutes and traditions of political advice co-exist.

In the typical PBL domains of spatial planning, the environment and nature, national government has transferred part of its sovereignty to the European Union (in the field of agriculture, air quality, nature, climate and energy), but policy in these domains has already been or will be decentralised to a large extent. Responsibilities have been or will be transferred to provinces and municipalities, which is important for PBL as a knowledge institute working primarily at the national level. PBL contributes to what has been called 'the system responsibility' of the national government. *PBL explicitly directs its mission to other decentralised governments too from this point of view of system responsibility.*
At the same time, ministry departments are confronted with budget cuts and the expertise within departments and their strategic units is diminishing. *PBL pro-actively wants to think with policy makers, without taking part in the political negotiations.*
PBL makes the regional, European or global dimensions of environmental problems explicit for the national government, but also for other audiences: the European Commission and other supranational organisations such as the OECD, FAO, WHO and UNEP. *PBL, using its prestige in international circles, is willing to cooperate with these supranational organisations.*

It seems that nowadays science has lost some of its authority. This is partly because of fraud that has been exposed, but also because of other reasons, for example, because of skeptics' attacks. In the climate debate there has remained quite a lot of turmoil over the past years.
Many lay people try to match the expertise of experts by searching the internet, where one can find a wealth of competing and non-validated knowledge.
In the political arena, experience and 'common sense' sometimes seem to receive more credibility than facts based on research.

PBL thinks an appropriate reaction to this trend is to explicitly deal with various value orientations in society and – when appropriate – to take these differences as a point of departure for scientific analysis. An example is the Nature Outlook (2012), which is constructed on the basis of various visions on nature. Clear assessment frameworks are important for this purpose. PBL wants to be an independent and reliable beacon in the unstructured internet universe. PBL may thus get more authority.

The media and the internet also increasingly determine the political agenda. Media attention and societal fragmentation might make the clients of PBL less tolerant for critical voices or negative assessments about the effectiveness of policy measures.
PBL is not an institute that follows the fads. It wants to be a reliable, consistent and imaginative support and mainstay for government and society in environmental matters. PBL invests in a business relationship with the media.

The awareness is growing that government cannot, or cannot alone, solve the problems we are facing today. PBL realises that government is not the only actor that can bring about change. Societal groups clearly have a role to play in bringing about a more sustainable society. The energy, creativity and innovative capacity of society can be better put to use. So, action perspectives have to be considered from a broad analysis of societal actors.

One of the effects of the present economic crisis and shrinking state budgets is that more and more institutes want a slice of cake from the market of policy relevant research.
PBL positions itself clearly at the top of the knowledge pyramid: the research is scientific, strategic and integrative, quantitative (integrated models) and policy relevant.
It is evident that cooperation and agreements with other agencies, councils and institutes are a necessary condition for occupying that position. PBL has to act as a stage master in a network of top institutes, nationally and internationally.

Considering all these developments in the context in which PBL operates, one thing it has to do is to make strategic choices for the future, but the other thing is that PBL should have a vision, an overall picture of what it wants to be and where it wants to position itself in 2015. This overall picture is described below.

A4.2 PBL in 2015: the overall picture

In 2015, the Ministry of Infrastructure and the Environment, the ministry chiefly responsible for PBL, sees PBL as an authoritative institute, with an international reputation, independent, but also ready to help the ministry whenever necessary. The Ministry is convinced of the fact that PBL efficiently contributes to nation-wide integrated policy development, policy evaluation and decision making in the field of the environment. Whenever necessary, the Ministry defends PBL.

The clients and users see that PBL, more than before, combines policy analyses with the identification of policy options. PBL puts more effort in analysing action perspectives. The ‘open mind’ of PBL also guarantees that various views of a problem are taken into account. By forging alliances, PBL’s influence has grown.
Departments appreciate the problem oriented approach of PBL. The formation of hybrid task forces is paying off. There is more mutual understanding as a result of exchange of employees between the ministry and PBL. Parliament knows that PBL analyses can be used to perform its constitutional role.

The PBL Management Team sees a lot has changed in the course of four years (2011–2015). In spite of the budget cuts, the professional expertise has increased and the motivation of PBL workers is still high. PBL has become much better known in the past years. PBL does the right things, to be judged from the reactions to its products. Both nationally and internationally, the products of PBL are widely appreciated. PBL is a learning organisation. An active HRM policy gives the employees the feeling that quality pays and

that mobility is really occurring. PBL still is an attractive organisation for young academics to work for.

The PBL employees note that quite a lot of colleagues have left in the past years, but have seen that the reduction of staff has been completed in a diligent manner. They have been involved in organisational plans and listened to when the consequences of budget cuts were discussed. The flexible way of working, the internal mobility and the possibilities for training and development for employees give them satisfaction.

The other policy-analysis agencies, CPB and SCP, see PBL as a valued colleague agency and like to cooperate with PBL. Together the policy-analysis agencies can present a more complete picture of the situation in The Netherlands. Exchange of employees on a regular basis is happening. Bringing the three policy-analysis agencies together in one building makes it even easier. The agencies succeeded in combining support processes and making savings in that field.

The network of PBL with knowledge institutes is functioning well. Institutes like to cooperate with PBL and do not see it as a competitor, but as a partner. They have understood PBL's role as a boundary organisation between science and policy and appreciate it. PBL contributes to 'selling' their products but can also be a partner in generating research funds.
Because of this considerable network in The Netherlands and abroad, PBL can work with less employees and less money than in 2011, but will nevertheless do its job in an effective way.

A4.3 Which choices have been made?

The budget cuts by government (25% over the period of 2011–2019, most of it should be implemented before 2015) and the limited possibility to complement these cuts by additional income, prompted PBL to think over the future strategy and to decide what PBL should still do in future and what activities PBL will reduce or even stop. A draft of a strategic plan, the Provisional Plan (Houtskoolschets, 'charcoal sketch') was discussed with the Ministry of Infrastructure and the Environment (under which PBL formally resides), with the Advisory Board of PBL and with the Ministry of Economic Affairs, Agriculture and Innovation, for whom PBL carries out quite a lot of research (especially with regard to Nature Policy). On two subsequent meetings with all the employees of PBL in The Hague and Bilthoven draft versions of the strategic plan were discussed and suggestions and criticisms taken up.
Reactions from stakeholders and from the employees of PBL have been picked up and used for producing the final version of the document in November 2011. Subsequently, during a strategic conference on December 5, 2011, the implications of the new strategy have been discussed with the employees. A covenant with the works council was agreed upon also in December 2011.

The uniqueness of PBL is expressed in its mission and this mission forms a guidance for the strategic plan.

A4.4 Programmes for the coming years

The work of PBL will be concentrated on five multiannual strategic programs. These programs are expected to be able to underpin policy choices in the coming years:

1. Spatial development beyond the system crisis;
2. The importance of clusters and networks for the competitive capacity of the Netherlands;
3. Urbanisation, restructuring and mobility;
4. Climate and energy as a transition agenda;
5. Biodiversity, food supply and development issues.

For prioritising issues that come up in the 2011–2015 period, PBL uses the following criteria:

a. policy relevance;
b. societal urgency;
c. the value of an integrated perspective;
d. the demonstrable added value of a PBL analysis.

PBL will look for possibilities of cooperation and try to avoid 'doubling' of research. Possible partners of PBL are the other policy-analysis agencies CPB and SCP, the Court of Audit (Algemene Rekenkamer), the Scientific Council for Government Policy (WRR) (which produces strategic advice, but without the characteristic effect calculations of policy-analysis agencies), the Rli Advisory Council (interface with society), RIVM (The National Institute for Public Health and the Environment), Wageningen University and Research Centre and Deltares (an independent, institute for applied research in the field of water, subsurface and infrastructure), and various university institutes (Utrecht University, VU University Amsterdam).
PBL has the legal obligation to produce reports on the state of the environment and outlooks. A limited number of these legal obligations will be carried out, such as the production of:

- The State of the Environment,
- Trends from the Environment,
- Compendium of the Environment,
- The Sustainability Assessment of the Netherlands
- Outlooks in the fields of the environment, nature and spatial planning.

The research necessary to feed into these products will be programmed in PBL's multiannual strategic programs.

A4.5 What PBL will and will not do (anymore): the 'more' and the 'less'

Calculating the effects of policy measures is PBL's core business. So, PBL will go on doing policy evaluations from an independent position.

An independent position does not exclude intensive interaction with policy makers in the early stages of policy making. Thus, the scientific knowledge of PBL researchers can be put to use. Interaction in an early stage of policy making can be of help in structuring problems. Task forces that have been formed on strategic themes and in which policy makers and PBL researchers participate are a new and promising form of working together. PBL researchers can bring in their knowledge, but they will never be policy planners. PBL might also play a greater role in the demand articulation with regard to strategic research of ministries.

As policies in the fields of spatial planning, the environment and nature, will become more and more decentralised, PBL will focus its attention on the national responsibility for the whole system. This means PBL has to monitor the way regional authorities make and implement policies. PBL could make it easier to understand who operates in an effective way and why. The budget cuts however make it impossible for PBL to play a greater role in the decentralisation of policy, for example by making its knowledge readily available for decentralised actors. As benchmarking and international comparisons become more important, so will comparative policy analysis in various countries.

PBL will focus more on integrative studies. By doing supra-sector analyses, like policy evaluations, outlooks, societal cost benefit analysis and exploratory design, PBL shows its added value. More and more, these analyses will also be carried out from a 'governance' perspective. More attention will be paid to the question at which level policy intervention might be most effective.

PBL will focus on integrated models (spatial models and global models). Internationally, PBL wants to belong to the top-five institutes for integrated modelling (climate, energy, food, biodiversity in connection with development issues). Strategic alliances will be forged to connect PBL with the renewal of thinking on environmental governance.

PBL will pay more attention to governance issues. PBL will not only produce good analyses, but will also more and more try to identify new policy perspectives. Policy evaluation and the identification of possible policy strategies are seen as a logical complement. New expertise is needed in PBL with regard to governance and social scientific knowledge of institutions and behaviour. An agenda based on The report 'The energetic society' can considerably increase the added value of PBL. PBL cannot put quite a lot of energy in elaborating the ideas of 'The energetic society'. PBL will discuss this point with the ministry of Infrastructure and the Environment and also the point how it might increase governance expertise within the institute.

PBL will reduce sectoral policy evaluations, such as those for agriculture, air quality, traditional environmental compartments such as noise, soil, local air quality. The question is to what extent PBL should carry out these sectoral analyses and to what extent sectoral knowledge should be available in PBL. This question will be answered from case to case. PBL's expertise may be used for sectoral analyses, but only if it fits in the work programme and additional finances are provided.

Development of sectoral models will be contracted out to partner institutes in the network of PBL, with PBL acting as a coordinator. PBL will invest in quality control of models internally and externally, in cooperation with the National Models and Data Center.

No more studies on a lower than regional level. For example studies on urban districts and design of urban quarters.

No more contributions to monitoring. Monitoring is not seen as an activity primarily for PBL. PBL will see whether there are data available from other organisations. If the data are not readily available, PBL will try to coordinate and direct the collection of data, and only if there is no other possibility, PBL will collect data itself.

Limiting European activities. The focus of PBL activities in the European framework will be on climate/energy, food/biodiversity and resource efficiency. On the other hand PBL could also put more effort in targeted acquisition of EU research funds to develop new knowledge.

PBL will prioritise those issues that are considered to be unstructured problems, new problems that are a challenge for policy making. PBL will try to structure these problems and make them manageable for policy makers. Integrated assessments are of crucial importance for this purpose.

PBL will more and more work with models and evaluations in which stakeholder participation can get a place. This holds for example for the State of the Environment which will not only be an analytical instrument, but can also increase learning in policy circles. New models like HOUDINI can be used – in a dialogue – to model the behaviour of stakeholders in the housing market and in regional development.

The internal organisation of PBL will remain unchanged: seven departments and two staff departments. Internal processes will be regularly evaluated on planning and price/quality aspects. The entrepreneurial way of working will be further stimulated.

A4.6 Human resources

In 2015, the work load will be equivalent to approximately 165 FTEs. Dependent on occasional revenues, there is a flexible surplus of employees.
PBL thinks it is possible to attain the 165 FTEs by terminating temporary contracts, by retirement of people and by a stimulated outflow of employees (about 30 FTEs). The number of new temporary contracts will be limited. This will also reduce costs by 7.5 million euros. PBL thinks a reduction in operating costs will be possible of 2.5 million euros. A total of 0.5 million euros will be put aside as a reserve for contracting young talents. The implementation will take place gradually and dynamically, year by year.
In 2011 and 2012 a mobility coordinator has helped some employees of PBL to find a suitable next step in their career elsewhere.

Appendix 5. List of peer reviewed publications by PBL researchers published in the 2008–2011 period, according to Elsevier's SCOPUS database. Note: this list is not exhaustive. Additional information on articles by PBL researchers (partly in Dutch) can be obtained from the PBL website under 'publications'.

Authors	Title	Year	Source title	Volume	Issue	Art. No.	Pages	Cited by	Link
Adam, M., Van Bussel, L.G.J., Leffelaar, P.A., Van Keulen, H., Ewert, F.	Effects of modelling detail on simulated potential crop yields under a wide range of climatic conditions	2011	Ecological Modelling	222	1		131–143	11	http://www.scopus.com/inward/record.url?eid=2-s2.0-78049469154&partnerID=40&md5=b656b57bbfe03013a25f62e63abbc116
Aherne, J., Posch, M., Forsius, M., Lehtonen, A., Hárkönen, K.	Impacts of forest biomass removal on soil nutrient status under climate change: a catchment-based modelling study for Finland	2011	Biogeochemistry				1–18	?	http://www.scopus.com/inward/record.url?eid=2-s2.0-78650741410&partnerID=40&md5=487052be559167e2cc436d2a5f4af1e2
Alkemade, R., Bakkenes, M., Eickhout, B.	Towards a general relationship between climate change and biodiversity: An example for plant species in Europe	2011	Regional Environmental Change	11	SUPPL. 1		143–150	0	http://www.scopus.com/inward/record.url?eid=2-s2.0-79952106572&partnerID=40&md5=f626f79f2052899487a50a6af1c4fccd
Amann, M., Bertok, I., Borken-Kleefeld, J., Cofala, J., Heyes, C., Höglund-Isaksson, L., Klimont, Z., Nguyen, B., Posch, M., Rafaj, P., Sandler, R., Schöpp, W., Wagner, F., Winiwarter, W.	Cost-effective control of air quality and greenhouse gases in Europe: Modeling and policy applications	2011	Environmental Modelling and Software					?	http://www.scopus.com/inward/record.url?eid=2-s2.0-80052683170&partnerID=40&md5=53f3b769789d00b26fd29cc2c3999c23
Arnell, N.W., van Vuuren, D.P., Isaac, M.	The implications of climate policy for the impacts of climate change on global water resources	2011	Global Environmental Change	21	2		592–603	7	http://www.scopus.com/inward/record.url?eid=2-s2.0-79251524682&partnerID=40&md5=dc8ff82e70f4da310850a0d043d7db97
Bannink, A., van Schijndel, M.W., Dijkstra, J.	A model of enteric fermentation in dairy cows to estimate methane emission for the Dutch National Inventory Report using the IPCC Tier 3 approach	2011	Animal Feed Science and Technology	166–167			603–618	6	http://www.scopus.com/inward/record.url?eid=2-s2.0-79958769518&partnerID=40&md5=474b046716d39ec2e0883518ef641005
Belyazid, S., Kurz, D., Braun, S., Sverdrup, H., Rihm, B., Hettelingh, J.-P.	A dynamic modelling approach for estimating critical loads of nitrogen based on plant community changes under a changing climate	2011	Environmental Pollution	159	3		789–801	4	http://www.scopus.com/inward/record.url?eid=2-s2.0-78751584991&partnerID=40&md5=ae06e8cc636aacb473361c538310c64e
Beusen, A.H.W., de Vink, P.J.F., Petersen, A.C.	The dynamic simulation and visualization software MyM	2011	Environmental Modelling and Software	26	2		238–240	1	http://www.scopus.com/inward/record.url?eid=2-s2.0-78049251751&partnerID=40&md5=dcfcbe8cc6db5df402f113e5e5d

Authors	Title	Year	Source title	Volume	Issue	Art. No.	Pages	Cited by	Link
									2bfaa
Biemans, H., Haddeland, I., Kabat, P., Ludwig, F., Hutjes, R.W.A., Heinke, J., Von Bloh, W., Gerten, D.	Impact of reservoirs on river discharge and irrigation water supply during the 20th century	2011	Water Resources Research	47	3	W03509		11	http://www.scopus.com/inward/record.url?eid=2-s2.0-79952465284&partnerID=40&md5=9a80f337e103cba939d3c0bdfe4da842
Buitelaar, E., Galle, M., Sorel, N.	Plan-led planning systems in development-led practices: An empirical analysis into the (lack of) institutionalisation of planning law	2011	Environment and Planning A	43	4		928–941	1	http://www.scopus.com/inward/record.url?eid=2-s2.0-79958030393&partnerID=40&md5=f7fa2639e06ec0bc871e984dd51e8f85
Buitelaar, E., Segeren, A.	Urban structures and land. The Morphological effects of dealing with property Rights	2011	Housing Studies	26	5		661–679	0	http://www.scopus.com/inward/record.url?eid=2-s2.0-79960317323&partnerID=40&md5=a5415c77f0b68dd743b5657fb23f747f
Daioglou, V., van Ruijven, B.J., van Vuuren, D.P.	Model projections for household energy use in developing countries	2011	Energy					?	http://www.scopus.com/inward/record.url?eid=2-s2.0-83455242879&partnerID=40&md5=b9ffc553a14f0b690c28b8b75d3ec4c6
de Groot, C., Daalhuizen, F.B.C., van Dam, F., Mulder, C.H.	Once an outsider, always an outsider? The accessibility of the Dutch rural housing market among locals and non-locals	2011	Journal of Rural Studies						http://www.scopus.com/inward/record.url?eid=2-s2.0-84055212346&partnerID=40&md5=245175249cd93067faab8a74c1d790a5
de Groot, C., Mulder, C.H., Das, M., Manting, D.	Life events and the gap between intention to move and actual mobility	2011	Environment and Planning A	43	1		48–66	4	http://www.scopus.com/inward/record.url?eid=2-s2.0-79551716801&partnerID=40&md5=3f92ef942d5d09a453bf63791c98aef4
de Groot, C., Mulder, C.H., Manting, D.	Intentions to move and actual moving behaviour in The Netherlands	2011	Housing Studies	26	3		307–328	1	http://www.scopus.com/inward/record.url?eid=2-s2.0-79952978178&partnerID=40&md5=9b490c3ad603d83e955fbf9e7b0762e9
de Hartog, J.J., Boogaard, H., Hoek, G., Nijland, H.	Cycling: De Hartog et al. respond	2011	Environmental Health Perspectives	119	3		A114–A115	0	http://www.scopus.com/inward/record.url?eid=2-s2.0-79952329663&partnerID=40&md5=d793a0c73e205d92ae514ceae54bf4ff
de Hartog, J.J., Boogaard, H., Nijland, H., Hoek, G.	Do the health benefits of cycling outweigh the risks? [Os benefÃcios Ã saÃºde em andar de bicicleta superam os riscos?]	2011	Ciencia e Saude Coletiva	16	12		4731–4744	2	http://www.scopus.com/inward/record.url?eid=2-s2.0-82755195800&partnerID=40&md5=801192f628473ac25d6f243cadcd1d99
De Vries, W., Leip, A., Reinds, G.J., Kros, J., Lesschen, J.P., Bouwman, A.F.	Comparison of land nitrogen budgets for European agriculture by various modeling approaches	2011	Environmental Pollution	159	11		3254–3268	7	http://www.scopus.com/inward/record.url?eid=2-s2.0-80052963572&partnerID=40&md5=b1cde54d6765f8af3d8df4374d

Authors	Title	Year	Source title	Volume	Issue	Art. No.	Pages	Cited by	Link
									a8ec94
De Vries, W., Posch, M.	Modelling the impact of nitrogen deposition, climate change and nutrient limitations on tree carbon sequestration in Europe for the period 1900-2050	2011	Environmental Pollution	159	10		2289–2299	3	http://www.scopus.com/inward/record.url?eid=2-s2.0-80052322527&partnerID=40&md5=d75eb865fdc49664b42ec4c60c232897
Den Elzen, M.G.J., Hof, A.F., Mendoza Beltran, A., Grassi, G., Roelfsema, M., van Ruijven, B., van Vliet, J., van Vuuren, D.P.	The Copenhagen Accord: Abatement costs and carbon prices resulting from the submissions	2011	Environmental Science and Policy	14	1		28–39	10	http://www.scopus.com/inward/record.url?eid=2-s2.0-78650628651&partnerID=40&md5=214424f6fe0b7e1e46c6521ae4330795
den Elzen, M.G.J., Hof, A.F., Roelfsema, M.	The emissions gap between the Copenhagen pledges and the 2°C climate goal: Options for closing and risks that could widen the gap	2011	Global Environmental Change	21	2		733–743	8	http://www.scopus.com/inward/record.url?eid=2-s2.0-79956288253&partnerID=40&md5=d0cda7ec23bfa04abba46337ea844beb
Denby, B., Cassiani, M., de Smet, P., de Leeuw, F., Horálek, J.	Sub-grid variability and its impact on European wide air quality exposure assessment	2011	Atmospheric Environment	45	25		4220–4229	3	http://www.scopus.com/inward/record.url?eid=2-s2.0-79959510072&partnerID=40&md5=2ce66e42549cb62f4d8233423b309c5d
Dogaru, T., van Oort, F., Thissen, M.	Agglomeration economies in European regions: Perspectives for objective 1 regions	2011	Tijdschrift voor Economische en Sociale Geografie	102	4		486–494	0	http://www.scopus.com/inward/record.url?eid=2-s2.0-80051703594&partnerID=40&md5=3c0b198eb21483cc18f0fea8d219dfd5
Fragoso, C.R., Motta Marques, D.M.L., Ferreira, T.F., Janse, J.H., Van Nes, E.H.	Potential effects of climate change and eutrophication on a large subtropical shallow lake	2011	Environmental Modelling and Software	26	11		1337–1348	2	http://www.scopus.com/inward/record.url?eid=2-s2.0-79960148067&partnerID=40&md5=385deb29432c1376f27cb21c4f4b86f7
Granier, C., Bessagnet, B., Bond, T., D'Angiola, A., van der Gon, H.D., Frost, G.J., Heil, A., Kaiser, J.W., Kinne, S., Klimont, Z., Kloster, S., Lamarque, J.-F., Liousse, C., Masui, T., Meleux, F., Mieville, A., Ohara, T., Raut, J.-C., Riahi, K., Schultz, M.G., Smith, S.J., Thompson, A., van Aardenne, J., van der Werf, G.R., van Vuuren, D.P.	Evolution of anthropogenic and biomass burning emissions of air pollutants at global and regional scales during the 1980-2010 period	2011	Climatic Change	109	16		163–190	16	http://www.scopus.com/inward/record.url?eid=2-s2.0-80053912410&partnerID=40&md5=d19811fe084190bda9d1e1d4684054b8
Herrero, M., Gerber, P., Vellinga, T., Garnett, T., Leip, A., Opio, C.,	Livestock and greenhouse gas emissions: The importance of getting the	2011	Animal Feed Science and Technology	166–167			779–782	2	http://www.scopus.com/inward/record.url?eid=2-s2.0-79958702263&partnerID=40&md

Authors	Title	Year	Source title	Volume	Issue	Art. No.	Pages	Cited by	Link
Westhoek, H.J., Thornton, P.K., Olesen, J., Hutchings, N., Montgomery, H., Soussana, J.-F., Steinfeld, H., McAllister, T.A.	numbers right								5=884f3c5e92c309345419cfc0e00d4546
Hoen, A., Geurs, K.T.	The influence of positionality in car-purchasing behaviour on the downsizing of new cars	2011	Transportation Research Part D: Transport and Environment	16	5		402–408	0	http://www.scopus.com/inward/record.url?eid=2-s2.0-79955476506&partnerID=40&md5=05d986aaa22e1b37639c5b3a0e6fdc80
Hof, A.F., den Elzen, M.G.J., Mendoza Beltran, A.	Predictability, equitability and adequacy of post-2012 international climate financing proposals	2011	Environmental Science and Policy	14	6		615–627	4	http://www.scopus.com/inward/record.url?eid=2-s2.0-79959944592&partnerID=40&md5=e29378039869e0fec20f2e5f84bfad17
Hof, A.F., Hope, C.W., Lowe, J., Mastrandrea, M.D., Meinshausen, M., van Vuuren, D.P.	The benefits of climate change mitigation in integrated assessment models: the role of the carbon cycle and climate component	2011	Climatic Change				1–21	?	http://www.scopus.com/inward/record.url?eid=2-s2.0-83455235025&partnerID=40&md5=e37eb033350248a19b1fde72ff3062e5
Hurtt, G.C., Chini, L.P., Frolking, S., Betts, R.A., Feddema, J., Fischer, G., Fisk, J.P., Hibbard, K., Houghton, R.A., Janetos, A., Jones, C.D., Kindermann, G., Kinoshita, T., Klein Goldewijk, K., Riahi, K., Shevliakova, E., Smith, S., Stehfest, E., Thomson, A., Thornton, P., van Vuuren, D.P., Wang, Y.P.	Harmonization of land-use scenarios for the period 1500-2100: 600 years of global gridded annual land-use transitions, wood harvest, and resulting secondary lands	2011	Climatic Change	109	1		117–161	14	http://www.scopus.com/inward/record.url?eid=2-s2.0-80053899253&partnerID=40&md5=d265be798aee4d2254875724c3df3160
Janssen, N.A.H., Hoek, G., Simic-Lawson, M., Fischer, P., van Bree, L., Brink, H.T., Keuken, M., Atkinson, R.W., Ross Anderson, H., Brunekreef, B., Cassee, F.R.	Black carbon as an additional indicator of the adverse health effects of airborne particles compared with pm10 and pm2.5	2011	Environmental Health Perspectives	119	12		1691–1699	20	http://www.scopus.com/inward/record.url?eid=2-s2.0-82755192189&partnerID=40&md5=524e1fcda6c78e3cd2d227efe7ec90f0
Johns, T.C., Royer, J.-F., Höschel, I., Huebener, H., Roeckner, E., Manzini, E., May, W., Dufresne, J.-L., Otterå, O.H., van	Climate change under aggressive mitigation: The ENSEMBLES multi-model experiment	2011	Climate Dynamics	37	9 Oct.		1975–2003	11	http://www.scopus.com/inward/record.url?eid=2-s2.0-80355147185&partnerID=40&md5=cdb121f547dbffe22797cd7838372b0b

Authors	Title	Year	Source title	Volume	Issue	Art. No.	Pages	Cited by	Link
Vuuren, D.P., Salas y Melia, D., Giorgetta, M.A., Denvil, S., Yang, S., Fogli, P.G., Körper, J., Tjiputra, J.F., Stehfest, E., Hewitt, C.D.									
Johns, T.C., Royer, J.-F., Höschel, I., Huebener, H., Roeckner, E., Manzini, E., May, W., Dufresne, J.-L., Otterå, O.H., van Vuuren, D.P., Salas y Melia, D., Giorgetta, M.A., Denvil, S., Yang, S., Fogli, P.G., Körper, J., Tjiputra, J.F., Stehfest, E., Hewitt, C.D.	Erratum to: Climate change under aggressive mitigation: The ENSEMBLES multi-model experiment (Clim Dyn, (2011), 10.1007/s00382-011-1005-5)	2011	Climate Dynamics	37	5		1269–1270	0	http://www.scopus.com/inward/record.url?eid=2-s2.0-80052259536&partnerID=40&md5=359cb96d57213707cafc8e59f53c211c
Kaplan, J.O., Krumhardt, K.M., Ellis, E.C., Ruddiman, W.F., Lemmen, C., Goldewijk, K.K.	Holocene carbon emissions as a result of anthropogenic land cover change	2011	Holocene	21	5		775–791	13	http://www.scopus.com/inward/record.url?eid=2-s2.0-79952319834&partnerID=40&md5=634f8af152fde45120d9b2ea4b6ff672
Klein Goldewijk, K., Beusen, A., Van Drecht, G., De Vos, M.	The HYDE 3.1 spatially explicit database of human-induced global land-use change over the past 12,000 years	2011	Global Ecology and Biogeography	20	1		73–86	37	http://www.scopus.com/inward/record.url?eid=2-s2.0-78650072884&partnerID=40&md5=44ee5309ff83fd99e288989606b507c8
Kloprogge, P., Van der Sluijs, J.P., Petersen, A.C.	A method for the analysis of assumptions in model-based environmental assessments	2011	Environmental Modelling and Software	26	3		289–301	5	http://www.scopus.com/inward/record.url?eid=2-s2.0-78649890686&partnerID=40&md5=6361d7497228522d6341dd3c712cf08d
Knoben, J., Ponds, R., van Oort, F.	Employment from new firm formation in the Netherlands: Agglomeration economies and the knowledge spillover theory of entrepreneurship	2011	Entrepreneurship and Regional Development	23	3 April		135–157	0	http://www.scopus.com/inward/record.url?eid=2-s2.0-79952374816&partnerID=40&md5=48493463ae40ba67506701b22a75e179
Kroeze, C., Bouwman, L.	The role of nitrogen in climate change	2011	Current Opinion in Environmental Sustainability	3	5		279–280	0	http://www.scopus.com/inward/record.url?eid=2-s2.0-80053257080&partnerID=40&md5=e38bebf7a18a737788e10d6d3576b174
Lamarque, J.-F., Kyle, G.P., Meinshausen, M., Riahi, K., Smith, S.J., van Vuuren, D.P., Conley, A.J., Vitt, F.	Global and regional evolution of short-lived radiatively-active gases and aerosols in the Representative	2011	Climatic Change	109	1		191–212	11	http://www.scopus.com/inward/record.url?eid=2-s2.0-80053894828&partnerID=40&md5=954cf48ab14d2616d039c4baa18fdb86

Authors	Title	Year	Source title	Volume	Issue	Art. No.	Pages	Cited by	Link
	Concentration Pathways								
Lesschen, J.P., van den Berg, M., Westhoek, H.J., Witzke, H.P., Oenema, O.	Greenhouse gas emission profiles of European livestock sectors	2011	Animal Feed Science and Technology	166–167			16–28	10	http://www.scopus.com/inward/record.url?eid=2-s2.0-79958773039&partnerID=40&md5=e2d0093be87114ab633695dfce26a8ae
Meinshausen, M., Smith, S.J., Calvin, K., Daniel, J.S., Kainuma, M.L.T., Lamarque, J., Matsumoto, K., Montzka, S.A., Raper, S.C.B., Riahi, K., Thomson, A., Velders, G.J.M., van Vuuren, D.P.P.	The RCP greenhouse gas concentrations and their extensions from 1765 to 2300	2011	Climatic Change	109	1		213–241	35	http://www.scopus.com/inward/record.url?eid=2-s2.0-80053904283&partnerID=40&md5=23b86fdaf26a2abae0313847ad7569ec
Mendoza Beltran, A., den Elzen, M.G.J., Hof, A.F., van Vuuren, D.P., van Vliet, J.	Exploring the bargaining space within international climate negotiations based on political, economic and environmental considerations	2011	Energy Policy	39	11		7361–7371	0	http://www.scopus.com/inward/record.url?eid=2-s2.0-80054872989&partnerID=40&md5=e8328b0a9e2f7e4b48789003c5577a46
Needham, B., Segeren, A., Buitelaar, E.	Institutions in theories of land markets: Illustrated by the Dutch market for agricultural land	2011	Urban Studies	48	1		161–176	3	http://www.scopus.com/inward/record.url?eid=2-s2.0-78650372166&partnerID=40&md5=a5ad7ff1058ab6d20064c9b10a377c1f
Neumann, K., Stehfest, E., Verburg, P.H., Siebert, S., Müller, C., Veldkamp, T.	Exploring global irrigation patterns: A multilevel modelling approach	2011	Agricultural Systems	104	9		703–713	3	http://www.scopus.com/inward/record.url?eid=2-s2.0-80053172880&partnerID=40&md5=6f1a95c51a70ffb51d1847bf98d0394c
Neumann, K., Verburg, P.H., Elbersen, B., Stehfest, E., Woltjer, G.B.	Multi-scale scenarios of spatial-temporal dynamics in the European livestock sector	2011	Agriculture, Ecosystems and Environment	140	1 Feb.		88–101	2	http://www.scopus.com/inward/record.url?eid=2-s2.0-79151479875&partnerID=40&md5=c2c7f1fd4b658ee35c20e24f0d7eade8
Overmars, K.P., Stehfest, E., Ros, J.P.M., Prins, A.G.	Indirect land use change emissions related to EU biofuel consumption: an analysis based on historical data	2011	Environmental Science and Policy					?	http://www.scopus.com/inward/record.url?eid=2-s2.0-78651523737&partnerID=40&md5=3442a8167dbd26150a2c5c2943d53dd8
Petersen, A.C., Cath, A., Hage, M., Kunseler, E., van der Sluijs, J.P.	Post-normal science in practice at the Netherlands environmental assessment agency	2011	Science Technology and Human Values	36	3		362–388	5	http://www.scopus.com/inward/record.url?eid=2-s2.0-79953682833&partnerID=40&md5=6946ef6e9d7c0cb32d9d0c5b8781acc4
Pielke, R.A., Pitman, A., Niyogi, D., Mahmood, R., McAlpine, C., Hossain, F., Goldewijk,	Land use/land cover changes and climate: Modeling analysis and observational evidence	2011	Wiley Interdisciplinary Reviews: Climate Change	2	6		828–850	4	http://www.scopus.com/inward/record.url?eid=2-s2.0-80855130992&partnerID=40&md5=595b58e830f5594b99c9d3e4d

Authors	Title	Year	Source title	Volume	Issue	Art. No.	Pages	Cited by	Link
K.K., Nair, U., Betts, R., Fall, S., Reichstein, M., Kabat, P., de Noblet, N.									26df170
Posch, M., Aherne, J., Hettelingh, J.-P.	Nitrogen critical loads using biodiversity-related critical limits	2011	Environmental Pollution	159	10		2223–2227	1	http://www.scopus.com/inward/record.url?eid=2-s2.0-80052309493&partnerID=40&md5=64148367be0083ce7f9bf5e79611f770
Prins, A.G., Eickhout, B., Banse, M., van Meijl, H., Rienks, W., Woltjer, G.	Global impacts of European Agricultural and biofuel policies	2011	Ecology and Society	16	1			4	http://www.scopus.com/inward/record.url?eid=2-s2.0-79954563564&partnerID=40&md5=db32cb94b8a7263a661acb904a2fdfec
Raspe, O., van Oort, F.G.	Firm heterogeneity, productivity and spatially bounded knowledge externalities	2011	Socio-Economic Planning Sciences	45	1		38–47	0	http://www.scopus.com/inward/record.url?eid=2-s2.0-78649904994&partnerID=40&md5=691236f70d8c8dedd446c92bd1d18f46
Rose, S.K., Ahammad, H., Eickhout, B., Fisher, B., Kurosawa, A., Rao, S., Riahi, K., van Vuuren, D.P.	Land-based mitigation in climate stabilization	2011	Energy Economics					?	http://www.scopus.com/inward/record.url?eid=2-s2.0-79960478162&partnerID=40&md5=11a627ff8dca86ebefd8398ec05af982
Schulp, C.J.E., Alkemade, R.	Consequences of uncertainty in global-scale land cover maps for mapping ecosystem functions: An analysis of pollination efficiency	2011	Remote Sensing	3	9		2057–2075	1	http://www.scopus.com/inward/record.url?eid=2-s2.0-80755182325&partnerID=40&md5=3596210fa1a284e57c37ad6b0b731d18
Struijs, J., Beusen, A., De Zwart, D., Huijbregts, M.	Characterization factors for inland water eutrophication at the damage level in life cycle impact assessment	2011	International Journal of Life Cycle Assessment	16	1		59–64	3	http://www.scopus.com/inward/record.url?eid=2-s2.0-79951680847&partnerID=40&md5=f932f61d182adaea9e465b89a52e045e
Sutton, M.A., Oenema, O., Erisman, J.W., Leip, A., Van Grinsven, H., Winiwarter, W.	Too much of a good thing	2011	Nature	472	7342		159–161	22	http://www.scopus.com/inward/record.url?eid=2-s2.0-79954598125&partnerID=40&md5=20da8fd6d9d3f7f61ed10fe354de5f06
Tiktak, A., Hendriks, R.F., Boesten, J.J.	Simulation of movement of pesticides towards drains with a preferential flow version of PEARL	2011	Pest Management Science	55	12			?	http://www.scopus.com/inward/record.url?eid=2-s2.0-80052128421&partnerID=40&md5=eb2a576a168ec84eb4f639c31d34f8ff
Trolle, D., Hamilton, D.P., Hipsey, M.R., Bolding, K., Bruggeman, J., Mooij, W.M., Janse, J.H., Nielsen, A., Jeppesen, E., Elliott, J.A., Makler-Pick, V.,	A community-based framework for aquatic ecosystem models	2011	Hydrobiologia				1–10	?	http://www.scopus.com/inward/record.url?eid=2-s2.0-81555232966&partnerID=40&md5=90e6c7d30629942cdc7ab6619009d472

Authors	Title	Year	Source title	Volume	Issue	Art. No.	Pages	Cited by	Link
Petzoldt, T., Rinke, K., Flindt, M.R., Arhonditsis, G.B., Gal, G., Bjerring, R., Tominaga, K., Hoen, J., Downing, A.S., Marques, D.M., Fragoso Jr., C.R., Søndergaard, M., Hanson, P.C.									
Vačkář, D., ten Brink, B., Loh, J., Baillie, J.E.M., Reyers, B.	Review of multispecies indices for monitoring human impacts on biodiversity	2011	Ecological Indicators					?	http://www.scopus.com/inward/record.url?eid=2-s2.0-79955981382&partnerID=40&md5=0b8c0e297c720ba4de2cfb9e762914b1
Van Asselt, M.B.A., Van Bree, L.	Uncertainty, precaution and risk governance	2011	Journal of Risk Research	14	4		401–408	1	http://www.scopus.com/inward/record.url?eid=2-s2.0-79953781995&partnerID=40&md5=f43f12e3c114331a646aa2bdf6118f92
Van Bussel, L.G.J., Ewert, F., Leffelaar, P.A.	Effects of data aggregation on simulations of crop phenology	2011	Agriculture, Ecosystems and Environment	142	1 Feb.		75	4	http://www.scopus.com/inward/record.url?eid=2-s2.0-79960372143&partnerID=40&md5=88eac1a3eb7f98cbeb13d9cb4a8871e1
van Bussel, L.G.J., Müller, C., van Keulen, H., Ewert, F., Leffelaar, P.A.	The effect of temporal aggregation of weather input data on crop growth models' results	2011	Agricultural and Forest Meteorology	151	5		607–619	3	http://www.scopus.com/inward/record.url?eid=2-s2.0-79952040566&partnerID=40&md5=aaa66983c5125029db4ad93b39d54c37
Van der Swaluw, E., Asman, W.A.H., van Jaarsveld, H., Hoogerbrugge, R.	Wet deposition of ammonium, nitrate and sulfate in the Netherlands over the period 1992-2008	2011	Atmospheric Environment	45	23		3819–3826	2	http://www.scopus.com/inward/record.url?eid=2-s2.0-79957780720&partnerID=40&md5=486b2ce504637398381bac4675fad5e0
Van Jaarsveld, J.A., Klimov, D.	Modelling the impact of sea-salt particles on the exceedances of daily PM10 air quality standards in the Netherlands	2011	International Journal of Environment and Pollution	44	1 April		217–225	0	http://www.scopus.com/inward/record.url?eid=2-s2.0-79751493575&partnerID=40&md5=c987f64caf86690dc089bb4103e329e0
van Oort, F.	Of economics and geography: Unity in diversity?	2011	Regional Studies	45	5		707–710	1	http://www.scopus.com/inward/record.url?eid=2-s2.0-79957882854&partnerID=40&md5=d4796ad252d8cd70c694942ecfdd878a
Van Ruijven, B., Lamarque, J.-F., Van Vuuren, D.P., Kram, T., Eerens, H.	Emission scenarios for a global hydrogen economy and the consequences for global air pollution	2011	Global Environmental Change	21	3		983–994	1	http://www.scopus.com/inward/record.url?eid=2-s2.0-79960050561&partnerID=40&md5=91e4c759724424781671c6d096cc5dac
van Ruijven, B.J., van Vuuren, D.P., de Vries,	Model projections for household energy use in	2011	Energy Policy	39	12		7747–7761	7	http://www.scopus.com/inward/record.url?eid=2-s2.0-

Authors	Title	Year	Source title	Volume	Issue	Art. No.	Pages	Cited by	Link
B.J.M., Isaac, M., van der Sluijs, J.P., Lucas, P.L., Balachandra, P.	India								80855132648&partnerID=40&md5=9aff5c51ed88238934c8e899dae46194
van Vuuren, D.P., Edmonds, J., Kainuma, M., Riahi, K., Thomson, A., Hibbard, K., Hurtt, G.C., Kram, T., Krey, V., Lamarque, J.-F., Masui, T., Meinshausen, M., Nakicenovic, N., Smith, S.J., Rose, S.K.	The representative concentration pathways: An overview	2011	Climatic Change	109	1		5–31	43	http://www.scopus.com/inward/record.url?eid=2-s2.0-80053903024&partnerID=40&md5=c3dd4f4dda4f04e0ccb47bd2a44d20a8
van Vuuren, D.P., Edmonds, J.A., Kainuma, M., Riahi, K., Weyant, J.	A special issue on the RCPs	2011	Climatic Change	109	1		1–4	1	http://www.scopus.com/inward/record.url?eid=2-s2.0-79960993203&partnerID=40&md5=1654d89b4f5b7786b7ce136467af34d8
van Vuuren, D.P., Isaac, M., Kundzewicz, Z.W., Arnell, N., Barker, T., Criqui, P., Berkhout, F., Hilderink, H., Hinkel, J., Hof, A., Kitous, A., Kram, T., Mechler, R., Scrieciu, S.	The use of scenarios as the basis for combined assessment of climate change mitigation and adaptation	2011	Global Environmental Change	21	2		575–591	6	http://www.scopus.com/inward/record.url?eid=2-s2.0-79956279788&partnerID=40&md5=e3af2235447a417eea41eead28943cf3
van Vuuren, D.P., Kram, T.	Comment	2011	Energy Economics	33	4		644–647	1	http://www.scopus.com/inward/record.url?eid=2-s2.0-79956316635&partnerID=40&md5=ac761ac4048ab25c551f6612101e9588
van Vuuren, D.P., Lowe, J., Stehfest, E., Gohar, L., Hof, A.F., Hope, C., Warren, R., Meinshausen, M., Plattner, G.-K.	How well do integrated assessment models simulate climate change?	2011	Climatic Change	104	2		255–285	5	http://www.scopus.com/inward/record.url?eid=2-s2.0-78651241083&partnerID=40&md5=5cd1b9e7d352fc7cb7bf279a9f50987d
van Vuuren, D.P., Riahi, K.	The relationship between short-term emissions and long-term concentration targets	2011	Climatic Change	104	4 March		793–801	12	http://www.scopus.com/inward/record.url?eid=2-s2.0-78651429876&partnerID=40&md5=3f6c299957940d0f393f6e7c1727d497
van Vuuren, D.P., Riahi, K., Moss, R., Edmonds, J., Thomson, A., Nakicenovic, N., Kram, T., Berkhout, F., Swart, R., Janetos, A., Rose, S.K., Arnell, N.	A proposal for a new scenario framework to support research and assessment in different climate research communities	2011	Global Environmental Change					?	http://www.scopus.com/inward/record.url?eid=2-s2.0-80052706042&partnerID=40&md5=428660594d70c32652a541dd1e8bec84
van Vuuren, D.P., Stehfest, E., den Elzen, M.G.J., Kram, T., van	RCP2.6: Exploring the possibility to keep global mean temperature increase	2011	Climatic Change	109	1		95–116	17	http://www.scopus.com/inward/record.url?eid=2-s2.0-80053892659&partnerID=40&md

Authors	Title	Year	Source title	Volume	Issue	Art. No.	Pages	Cited by	Link
Vliet, J., Deetman, S., Isaac, M., Goldewijk, K.K., Hof, A., Beltran, A.M., Oostenrijk, R., van Ruijven, B.	below 2Â°C								5=93de45d76dfc3242f58710fba5abf07d
van Wee, B., de Jong, G., Nijland, H.	Accelerating car scrappage: A review of research into the environmental impacts	2011	Transport Reviews	31	5		549–569	0	http://www.scopus.com/inward/record.url?eid=2-s2.0-80052986673&partnerID=40&md5=c09b2182d95ea5bae9d58a7874c8b0e9
Vanderborght, J., Tiktak, A., Boesten, J.J., Vereecken, H.	Effect of pesticide fate parameters and their uncertainty on the selection of 'worst-case' scenarios of pesticide leaching to groundwater	2011	Pest Management Science	67	3		294–306	3	http://www.scopus.com/inward/record.url?eid=2-s2.0-79551693735&partnerID=40&md5=054b7cd45a530734a60f572fe8586a42
Vasileiadou, E., Heimeriks, G., Petersen, A.C.	Exploring the impact of the IPCC Assessment Reports on science	2011	Environmental Science and Policy	14	8		1052–1061	0	http://www.scopus.com/inward/record.url?eid=2-s2.0-82655172478&partnerID=40&md5=b8ae3f0cd52d449560e71f0ceda04a90
Velders, G.J.M., Geilenkirchen, G.P., de Lange, R.	Higher than expected NOx emission from trucks may affect attainability of NO2 limit values in the Netherlands	2011	Atmospheric Environment	45	18		3025–3033	6	http://www.scopus.com/inward/record.url?eid=2-s2.0-79955046597&partnerID=40&md5=3896ec0714291cb975de1af95a0e74f9
Verburg, P.H., Neumann, K., Nol, L.	Challenges in using land use and land cover data for global change studies	2011	Global Change Biology	17	2		974–989	20	http://www.scopus.com/inward/record.url?eid=2-s2.0-78650783264&partnerID=40&md5=a752d6b0c24909bcdd337b676a0dd7f7
Verhulst, J., Kleijn, D., Loonen, W., Berendse, F., Smit, C.	Seasonal distribution of meadow birds in relation to in-field heterogeneity and management	2011	Agriculture, Ecosystems and Environment	142	3 April		161–166	2	http://www.scopus.com/inward/record.url?eid=2-s2.0-80051595864&partnerID=40&md5=880bf7aa7bf18e373e5b758e6beca44a
Vinciguerra, S., Frenken, K., Hoekman, J., van Oort, F.	European infrastructure networks and regional innovation in science-based technologies	2011	Economics of Innovation and New Technology	20	5		517–537	0	http://www.scopus.com/inward/record.url?eid=2-s2.0-79960378641&partnerID=40&md5=a22faa0ec7a61b666a971dd3fe8e32de
Visconti, P., Pressey, R.L., Giorgini, D., Maiorano, L., Bakkenes, M., Boitani, L., Alkemade, R., Falcucci, A., Chiozza, F., Rondinini, C.	Future hotspots of terrestrial mammal loss	2011	Philosophical Transactions of the Royal Society B: Biological Sciences	366	1578		2693–2702	11	http://www.scopus.com/inward/record.url?eid=2-s2.0-80051613426&partnerID=40&md5=598f4126ebcd759f72bb05184e12752c
Visser, H., Petersen, A.C.	Inferences on weather extremes and weather-related disasters: A review	2011	Climate of the Past Discussions	7	5		2893–2935	?	http://www.scopus.com/inward/record.url?eid=2-s2.0-80052950574&partnerID=40&md

Authors	Title	Year	Source title	Volume	Issue	Art. No.	Pages	Cited by	Link
	of statistical methods								5=a4db3102e083dbe6656d954f39d6a7e2
Vuuren, D.P.V., Bouwman, L.F., Smith, S.J., Dentener, F.	Global projections for anthropogenic reactive nitrogen emissions to the atmosphere: An assessment of scenarios in the scientific literature	2011	Current Opinion in Environmental Sustainability	3	5		359–369	1	http://www.scopus.com/inward/record.url?eid=2-s2.0-80053238848&partnerID=40&md5=3a3d110872854de61b08e86712075b41
Waha, K., Van Bussel, L.G.J., Müller, C., Bondeau, A.	Climate-driven simulation of global crop sowing dates	2011	Global Ecology and Biogeography					?	http://www.scopus.com/inward/record.url?eid=2-s2.0-79956215103&partnerID=40&md5=035ce618ffb90c5992572c3f54787a9d
Weijers, E.P., Schaap, M., Nguyen, L., Matthijsen, J., Denier Van Der Gon, H.A.C., Ten Brink, H.M., Hoogerbrugge, R.	Anthropogenic and natural constituents in particulate matter in the Netherlands	2011	Atmospheric Chemistry and Physics	11	5		2281–2294	5	http://www.scopus.com/inward/record.url?eid=2-s2.0-79952612336&partnerID=40&md5=28d20fa1dbe2f3043632de4ecf438285
Wiedmann, T., Wilting, H.C., Lenzen, M., Lutter, S., Palm, V.	Quo Vadis MRIO? Methodological, data and institutional requirements for multi-region input-output analysis	2011	Ecological Economics	70	11		1937–1945	10	http://www.scopus.com/inward/record.url?eid=2-s2.0-80052038051&partnerID=40&md5=f064759ffcdd332a9de54924a23286a7
Zondag, B., de Jong, G.	The development of the TIGRIS XL model: A bottom-up approach to transport, land-use and the economy	2011	Research in Transportation Economics	31	1		55–62	1	http://www.scopus.com/inward/record.url?eid=2-s2.0-79952316829&partnerID=40&md5=b7340138ece802204856b4a9c34f6c8e
Azar, C., Lindgren, K., Obersteiner, M., Riahi, K., van Vuuren, D.P., den Elzen, K.M.G.J., Möllersten, K., Larson, E.D.	The feasibility of low CO2 concentration targets and the role of bio-energy with carbon capture and storage (BECCS)	2010	Climatic Change	100	1		195–202	17	http://www.scopus.com/inward/record.url?eid=2-s2.0-77952603941&partnerID=40&md5=57ce73163a397c89bcc0a6a462c4efb1
Benítez-López, A., Alkemade, R., Verweij, P.A.	The impacts of roads and other infrastructure on mammal and bird populations: A meta-analysis	2010	Biological Conservation	143	6		1307–1316	38	http://www.scopus.com/inward/record.url?eid=2-s2.0-77954819367&partnerID=40&md5=54de390e7af9730bc0421ae677cf91d6
Billen, G., Beusen, A., Bouwman, L., Garnier, J.	Anthropogenic nitrogen autotrophy and heterotrophy of the world's watersheds: Past, present, and future trends	2010	Global Biogeochemical Cycles	24	2	GB0A11		7	http://www.scopus.com/inward/record.url?eid=2-s2.0-77954324671&partnerID=40&md5=cd0137686b8faacb30314e9a6b6aeb97
Bobbink, R., Hicks, K., Galloway, J., Spranger, T., Alkemade, R., Ashmore, M., Bustamante, M., Cinderby, S., Davidson,	Global assessment of nitrogen deposition effects on terrestrial plant diversity: A synthesis	2010	Ecological Applications	20	1		30–59	144	http://www.scopus.com/inward/record.url?eid=2-s2.0-77649158893&partnerID=40&md5=2423d844ffde31368c6cd292e727d9c2

Authors	Title	Year	Source title	Volume	Issue	Art. No.	Pages	Cited by	Link
E., Dentener, F., Emmett, B., Erisman, J.-W., Fenn, M., Gilliam, F., Nordin, A., Pardo, L., De Vries, W.									
Boezeman, D., Leroy, P., Maas, R., Kruitwagen, S.	The (limited) political influence of ecological economics: A case study on Dutch environmental policies	2010	Ecological Economics	69	9		1756–1764	2	http://www.scopus.com/inward/record.url?eid=2-s2.0-77955555194&partnerID=40&md5=586ec26e9e32018d06478a48ba7e5668
Boons, F., Mendoza, A.	Constructing sustainable palm oil: How actors define sustainability	2010	Journal of Cleaner Production	18	16–17		1686–1695	4	http://www.scopus.com/inward/record.url?eid=2-s2.0-77956454836&partnerID=40&md5=ff5250bbbbe4079ffc545bfdab7b8e9c
Bouwman, A.F., Van Grinsven, J.J.M., Eickhout, B.	Consequences of the cultivation of energy crops for the global nitrogen cycle	2010	Ecological Applications	20	1		101–109	3	http://www.scopus.com/inward/record.url?eid=2-s2.0-77649085122&partnerID=40&md5=f975e127a62ce26783bf431ada089d7c
Brede, M., De Vries, H.J.M.	Harvesting heterogeneous renewable resources: Uncoordinated, selfish, team-, and community-oriented strategies	2010	Environmental Modelling and Software	25	1		117–128	3	http://www.scopus.com/inward/record.url?eid=2-s2.0-69949095695&partnerID=40&md5=fc93ccd486ebaed89085c68ce9fad369
Buitelaar, E.	Cracks in the myth: Challenges to land policy in the Netherlands	2010	Tijdschrift voor Economische en Sociale Geografie	101	3		349–356	3	http://www.scopus.com/inward/record.url?eid=2-s2.0-77954583243&partnerID=40&md5=ed90f7fd1fc464b1a0ed241fa6420fe4
Buitelaar, E., Sorel, N.	Between the rule of law and the quest for control: Legal certainty in the Dutch planning system	2010	Land Use Policy	27	3		983–989	6	http://www.scopus.com/inward/record.url?eid=2-s2.0-77649338051&partnerID=40&md5=0e2b5b4879922d96955f3acfa69b4aef
Daniel, J.S., Fleming, E.L., Portmann, R.W., Velders, G.J.M., Jackman, C.H., Ravishankara, A.R.	Options to accelerate ozone recovery: Ozone and climate benefits	2010	Atmospheric Chemistry and Physics	10	16		7697–7707	5	http://www.scopus.com/inward/record.url?eid=2-s2.0-77955833353&partnerID=40&md5=8b1b033c53b0181e915b4f7b058215df
de Bruin, Y.B., de Knecht, J., Hollander, A., Bakker, J., van Jaarsveld, H., Hogendoorn, E.	Risk assessment using EUSES; refinement options to estimate atmospheric transportation by its operational priority substances model (OPS)	2010	Human and Ecological Risk Assessment	16	5		945–961	1	http://www.scopus.com/inward/record.url?eid=2-s2.0-77957957214&partnerID=40&md5=40c83eb9ad267ca3ed55f7671d7b2da6
de Groot, R.S., Alkemade, R., Braat, L., Hein, L., Willemen, L.	Challenges in integrating the concept of ecosystem services and values in landscape planning, management and decision	2010	Ecological Complexity	7	3		260–272	99	http://www.scopus.com/inward/record.url?eid=2-s2.0-77955403991&partnerID=40&md5=19a269f8431a1a7ddbe0e42dee25914d

Authors	Title	Year	Source title	Volume	Issue	Art. No.	Pages	Cited by	Link
	making								
de Hartog, J.J., Boogaard, H., Nijland, H., Hoek, G.	Do the health benefits of cycling outweigh the risks?	2010	Environmental Health Perspectives	118	8		1109–1116	45	http://www.scopus.com/inward/record.url?eid=2-s2.0-77956091064&partnerID=40&md5=4467982ee4a16c797428035834a32fb4
De Vries, W., Wamelink, G.W.W., Van Dobben, H., Kros, J., Reinds, G.J., Mol-Dijkstra, J.P., Smart, S.M., Evans, C.D., Rowe, E.C., Belyazid, S., Sverdrup, H.U., Van Hinsberg, A., Posch, M., Hettelingh, J.-P., Spranger, T., Bobbink, R.	Use of dynamic soil - Vegetation models to assess impacts of nitrogen deposition on plant species composition: An overview	2010	Ecological Applications	20	1		60–79	11	http://www.scopus.com/inward/record.url?eid=2-s2.0-77649164875&partnerID=40&md5=76d02deda141800473279f94a42e069c
Degermendzhy, A.G., Zadereev, E.S., Rogozin, D.Y., Prokopkin, I.G., Barkhatov, Y.V., Tolomeev, A.P., Khromechek, E.B., Janse, J.H., Mooij, W.M., Gulati, R.D.	Vertical stratification of physical, chemical and biological components in two saline lakes Shira and Shunet (South Siberia, Russia)	2010	Aquatic Ecology	44	3		619–632	1	http://www.scopus.com/inward/record.url?eid=2-s2.0-77956267630&partnerID=40&md5=376d40d1a87b0bad60f930da44814c97
den Elzen, M., Höhne, N.	Sharing the reduction effort to limit global warming to 2°C	2010	Climate Policy	10	3		247–260	9	http://www.scopus.com/inward/record.url?eid=2-s2.0-77957705807&partnerID=40&md5=e4cd757fd08cc25df9bd20b9250a0715
den Elzen, M., Roelfsema, M., Slingerland, S.	Dealing with surplus emissions in the climate negotiations after Copenhagen: What are the options for compromise?	2010	Energy Policy	38	11		6615–6628	6	http://www.scopus.com/inward/record.url?eid=2-s2.0-77957786460&partnerID=40&md5=0126a5f517526aa542643926999a56f75
den Elzen, M.G.J., Höhne, N., Hagemann, M.M., van Vliet, J., van Vuuren, D.P.	Sharing developed countries' post-2012 greenhouse gas emission reductions based on comparable efforts	2010	Mitigation and Adaptation Strategies for Global Change	15	5		433–465	0	http://www.scopus.com/inward/record.url?eid=2-s2.0-77952321232&partnerID=40&md5=cd66eae571841f2b80ac527a92b56707
den Elzen, M.G.J., van Vuuren, D.P., van Vliet, J.	Postponing emission reductions from 2020 to 2030 increases climate risks and long-term costs	2010	Climatic Change	99	1		313–320	8	http://www.scopus.com/inward/record.url?eid=2-s2.0-77149169401&partnerID=40&md5=cd507ae74110fc7d14d5a26a66ae6f8c
Denby, B., Sundvor, I., Cassiani, M., de Smet, P., de Leeuw, F., Horálek, J.	Spatial Mapping of Ozone and SO2 Trends in Europe	2010	Science of the Total Environment	408	20		4795–4806	3	http://www.scopus.com/inward/record.url?eid=2-s2.0-77955923478&partnerID=40&md5=33216e3f6e7e292a14a1e2c157c9559a

Authors	Title	Year	Source title	Volume	Issue	Art. No.	Pages	Cited by	Link
Dolman, A.J., Van Der Werf, G.R., Van Der Molen, M.K., Ganssen, G., Erisman, J.-W., Strengers, B.	A carbon cycle science update since IPCC AR-4	2010	Ambio	39	6		402–412	?	http://www.scopus.com/inward/record.url?eid=2-s2.0-77955744040&partnerID=40&md5=9173f8b2c3648704a66de1992d720c63
Dornburg, V., Van Vuuren, D., Van De Ven, G., Langeveld, H., Meeusen, M., Banse, M., Van Oorschot, M., Ros, J., Jan Van Den Born, G., Aiking, H., Londo, M., Mozaffarian, H., Verweij, P., Lysen, E., Faaij, A.	Bioenergy revisited: Key factors in global potentials of bioenergy	2010	Energy and Environmental Science	3	3		258–267	36	http://www.scopus.com/inward/record.url?eid=2-s2.0-77951495177&partnerID=40&md5=cc920815de006e561b0b9acb54ddab52
Edenhofer, O., Knopf, B., Barker, T., Baumstark, L., Bellevrat, E., Chateau, B., Criqui, P., Isaac, M., Kitous, A., Kypreos, S., Leimbach, M., Lessmann, K., Magné, B., Scrieciu, S ., Turton, H., Van Vuuren, D.P.	The economics of low stabilization: Model comparison of mitigation strategies and costs	2010	Energy Journal	31	Special Issue		11–48	54	http://www.scopus.com/inward/record.url?eid=2-s2.0-77749319301&partnerID=40&md5=1c9fbf6c22a4c08398b659af280fb2ff
Erisman, J.W., van Grinsven, H., Leip, A., Mosier, A., Bleeker, A.	Nitrogen and biofuels; an overview of the current state of knowledge	2010	Nutrient Cycling in Agroecosystems	86	2		211–223	15	http://www.scopus.com/inward/record.url?eid=2-s2.0-77952673734&partnerID=40&md5=b08123bb2110d7de4eb37d4328baa67a
Evers, D.	Scenarios on the spatial and economic development of Europe	2010	Futures	42	8		804–816	0	http://www.scopus.com/inward/record.url?eid=2-s2.0-77956009718&partnerID=40&md5=604ca5a961b29ecd2ad65724d3e64c88
Faber, A., Valente, M., Janssen, P.	Exploring domestic micro-cogeneration in the Netherlands: An agent-based demand model for technology diffusion	2010	Energy Policy	38	6		2763–2775	3	http://www.scopus.com/inward/record.url?eid=2-s2.0-77951253475&partnerID=40&md5=941e8f08dcca9792c7e63528bb5a1f50
Forsius, M., Posch, M., Aherne, J., Reinds, G.J., Christensen, J., Hole, L.	Assessing the impacts of long-range sulfur and nitrogen deposition on arctic and sub-arctic ecosystems	2010	Ambio	39	2		136–147	4	http://www.scopus.com/inward/record.url?eid=2-s2.0-77954622020&partnerID=40&md5=bae80d5bdb25db9303af6f104a968272
Frenken, K., Ponds, R., van Oort, F.	The citation impact of research collaboration in science-based industries: A spatial-institutional analysis	2010	Papers in Regional Science	89	2		351–271	4	http://www.scopus.com/inward/record.url?eid=2-s2.0-77954646643&partnerID=40&md5=dc1e4e99b4286ae59fa6b16e30475bf1
Fuglestvedt, J.S., Shine,	Transport impacts on	2010	Atmospheric	44	37		4648–	43	http://www.scopus.com/inward/r

Authors	Title	Year	Source title	Volume	Issue	Art. No.	Pages	Cited by	Link
K.P., Berntsen, T., Cook, J., Lee, D.S., Stenke, A., Skeie, R.B., Velders, G.J.M., Waitz, I.A.	atmosphere and climate: Metrics		Environment				4677		ecord.url?eid=2-s2.0-77957885036&partnerID=40&md5=0aebc181b275dc4a066c02be805eafea
Ganzeveld, L., Bouwman, L., Stehfest, E., Van Vuuren, D.P., Eickhout, B., Lelieveld, J.	Impact of future land use and land cover changes on atmospheric chemistry-climate interactions	2010	Journal of Geophysical Research D: Atmospheres	115	23	D23301		5	http://www.scopus.com/inward/record.url?eid=2-s2.0-78650020085&partnerID=40&md5=5f0b5068b0bfd5243fb51597be582c23
Garnier, J., Beusen, A., Thieu, V., Billen, G., Bouwman, L.	N:P:Si nutrient export ratios and ecological consequences in coastal seas evaluated by the ICEP approach	2010	Global Biogeochemical Cycles	24	2	GB0A05		14	http://www.scopus.com/inward/record.url?eid=2-s2.0-77954322321&partnerID=40&md5=007e6ccfcbba43dbc8db96424792a6a0
Geurs, K., Zondag, B., de Jong, G., de Bok, M.	Accessibility appraisal of land-use/transport policy strategies: More than just adding up travel-time savings	2010	Transportation Research Part D: Transport and Environment	15	7		382–393	9	http://www.scopus.com/inward/record.url?eid=2-s2.0-77955053758&partnerID=40&md5=b78cbfb443e92a2b4d98a9e875fa4f16
Glibert, P.M., Allen, J.I., Bouwman, A.F., Brown, C.W., Flynn, K.J., Lewitus, A.J., Madden, C.J.	Modeling of HABs and eutrophication: Status, advances, challenges	2010	Journal of Marine Systems	83	4 March		262–275	20	http://www.scopus.com/inward/record.url?eid=2-s2.0-77957360059&partnerID=40&md5=995101f68960773666c3b5dbd7db2da1
Hage, M., Leroy, P., Petersen, A.C.	Stakeholder participation in environmental knowledge production	2010	Futures	42	3		254–264	8	http://www.scopus.com/inward/record.url?eid=2-s2.0-77950864579&partnerID=40&md5=3303bf6a966e017289b11825f12b9a67
Heuvelink, G.B.M., Burgers, S.L.G.E., Tiktak, A., Den Berg, F.V.	Uncertainty and stochastic sensitivity analysis of the GeoPEARL pesticide leaching model	2010	Geoderma	155	4 March		186–192	8	http://www.scopus.com/inward/record.url?eid=2-s2.0-76449088304&partnerID=40&md5=ac0caa96681ccbb1ac7251b4e7381216
Hibbard, K., Janetos, A., Van Vuuren, D.P., Pongratz, J., Rose, S.K., Betts, R., Herold, M., Feddema, J.J.	Research priorities in land use and land-cover change for the Earth system and integrated assessment modelling	2010	International Journal of Climatology	30	13		2118–2128	5	http://www.scopus.com/inward/record.url?eid=2-s2.0-77958538627&partnerID=40&md5=e47d65a7e656c3ee3cf08d24005e5996
Hof, A.F., Den Elzen, M.G.J.	The effect of different historical emissions datasets on emission targets of the sectoral mitigation approach Triptych	2010	Climate Policy	10	6		684–704	1	http://www.scopus.com/inward/record.url?eid=2-s2.0-78149491575&partnerID=40&md5=894b7d63caed421aac29ff40419a30df
Hof, A.F., den Elzen, M.G.J., van Vuuren, D.P.	Including adaptation costs and climate change damages in evaluating post-2012 burden-sharing regimes	2010	Mitigation and Adaptation Strategies for Global Change	15	1		19–40	2	http://www.scopus.com/inward/record.url?eid=2-s2.0-73649102376&partnerID=40&md5=8fcf8df56d914a3dd81bad33b7f2d31b
Hof, A.F., van Vuuren,	A quantitative minimax	2010	Ecological Economics	70	1		43–51	0	http://www.scopus.com/inward/r

Authors	Title	Year	Source title	Volume	Issue	Art. No.	Pages	Cited by	Link
D.P., den Elzen, M.G.J.	regret approach to climate change: Does discounting still matter?								ecord.url?eid=2-s2.0-77957756122&partnerID=40&md5=3465266edd03dbed1d119798d464e135
Janse, J.H., Scheffer, M., Lijklema, L., Van Liere, L., Sloot, J.S., Mooij, W.M.	Estimating the critical phosphorus loading of shallow lakes with the ecosystem model PCLake: Sensitivity, calibration and uncertainty	2010	Ecological Modelling	221	4		654–665	5	http://www.scopus.com/inward/record.url?eid=2-s2.0-73949109317&partnerID=40&md5=15ecbe75c81e70e5877a4c1f641e2ac0
Kelly, A., Lumbreras, J., Maas, R., Pignatelli, T., Ferreira, F., Engleryd, A.	Setting national emission ceilings for air pollutants: policy lessons from an ex-post evaluation of the Gothenburg Protocol	2010	Environmental Science and Policy	13	1		28–41	5	http://www.scopus.com/inward/record.url?eid=2-s2.0-73649142367&partnerID=40&md5=6ed75ed527c28f3c3d8017bbe8f181a8
Klein Goldewijk, K., Beusen, A., Janssen, P.	Long-term dynamic modeling of global population and built-up area in a spatially explicit way: HYDE 3.1	2010	Holocene	20	4		565–573	25	http://www.scopus.com/inward/record.url?eid=2-s2.0-77953375083&partnerID=40&md5=946610fb40cf1adaf5a6d790cdeeb0ea
Knoben, J., Weterings, A.	Employment dynamics on business estates	2010	European Planning Studies	18	7		1077–1095	0	http://www.scopus.com/inward/record.url?eid=2-s2.0-77953525375&partnerID=40&md5=178fd4676e9640ad8569c3544c2ceb1e
Knopf, B., Edenhofer, O., Flachsland, C., Kok, M.T.J., Lotze-Campen, H., Luderer, G., Popp, A., Van Vuuren, D.P.	Managing the low-carbon transition - From model results to policies	2010	Energy Journal	31	Special Issue		223–245	15	http://www.scopus.com/inward/record.url?eid=2-s2.0-77749249595&partnerID=40&md5=0f0f6f7b5f952fa8ccc098e533578c8f
Kok, M.T.J., Tyler, S., Prins, A.G., Pintér, L., Baumüller, H., Bernstein, J., Tsioumani, E., Venema, H.D., Grosshans, R.	Prospects for mainstreaming ecosystem goods and services in international policies	2010	Biodiversity	11	2 Jan.		49–54	0	http://www.scopus.com/inward/record.url?eid=2-s2.0-77958450558&partnerID=40&md5=79c7be282202b521d7f24744ae156ee3
Lagas, P.	Odour policy in the Netherlands and consequences for spatial planning	2010	Chemical Engineering Transactions	23			7–12	0	http://www.scopus.com/inward/record.url?eid=2-s2.0-78650322177&partnerID=40&md5=58f5a77b9ec550c4b69d85cebdd7646c
Lamarque, J.-F., Bond, T.C., Eyring, V., Granier, C., Heil, A., Klimont, Z., Lee, D., Liousse, C., Mieville, A., Owen, B., Schultz, M.G., Shindell, D., Smith, S.J., Stehfest, E., Van Aardenne, J., Cooper, O.R., Kainuma,	Historical (1850-2000) gridded anthropogenic and biomass burning emissions of reactive gases and aerosols: Methodology and application	2010	Atmospheric Chemistry and Physics Discussions	10	2		4963–5019	?	http://www.scopus.com/inward/record.url?eid=2-s2.0-77249132340&partnerID=40&md5=1ce931ddcaf220e55e266067eed2599a

Authors	Title	Year	Source title	Volume	Issue	Art. No.	Pages	Cited by	Link
M., Mahowald, N., McConnell, J.R., Naik, V., Riahi, K., Van Vuuren, D.P.									
Louette, G., Maes, D., Alkemade, J.R.M., Boitani, L., de Knegt, B., Eggers, J., Falcucci, A., Framstad, E., Hagemeijer, W., Hennekens, S.M., Maiorano, L., Nagy, S., Serradilla, A.N., Ozinga, W.A., Schaminée, J.H.J., Tsiaousi, V., van Tol, S., Delbaere, B.	BioScore-Cost-effective assessment of policy impact on biodiversity using species sensitivity scores	2010	Journal for Nature Conservation	18	2		142–148	3	http://www.scopus.com/inward/record.url?eid=2-s2.0-77950689038&partnerID=40&md5=3f42462aa2e3a574e67ca3035a165141
Ludwig, W., Bouwman, A.F., Dumont, E., Lespinas, F.	Water and nutrient fluxes from major Mediterranean and Black Sea rivers: Past and future trends and their implications for the basin-scale budgets	2010	Global Biogeochemical Cycles	24	4	GB0A13		6	http://www.scopus.com/inward/record.url?eid=2-s2.0-78049343122&partnerID=40&md5=cac010acdd06fb4a0285820e59eb32c9
Lugnér, A.K., Mylius, S.D., Wallinga, J.	Dynamic versus static models in cost-effectiveness analyses of anti-viral drug therapy to mitigate an influenza pandemic	2010	Health Economics	19	5		518–531	7	http://www.scopus.com/inward/record.url?eid=2-s2.0-77951727815&partnerID=40&md5=94bc07fcaf668f83dadc9b0babe9f323
Manning, M.R., Edmonds, J., Emori, S., Grubler, A., Hibbard, K., Joos, F., Kainuma, M., Keeling, R.F., Kram, T., Manning, A.C., Meinshausen, M., Moss, R., Nakicenovic, N., Riahi, K., Rose, S.K., Smith, S., Swart, R., Van Vuuren, D.P.	Misrepresentation of the IPCC CO2 emission scenarios	2010	Nature Geoscience	3	6		376–377	16	http://www.scopus.com/inward/record.url?eid=2-s2.0-77954847431&partnerID=40&md5=b02832fab4a8e1b1c7f723d8f43ec8ba
Mayorga, E., Seitzinger, S.P., Harrison, J.A., Dumont, E., Beusen, A.H.W., Bouwman, A.F., Fekete, B.M., Kroeze, C., Van Drecht, G.	Global Nutrient Export from WaterSheds 2 (NEWS 2): Model development and implementation	2010	Environmental Modelling and Software	25	7		837–853	25	http://www.scopus.com/inward/record.url?eid=2-s2.0-77949567484&partnerID=40&md5=ae05e40d096eae844d9a6a4aeb055673
McCray, L.E., Oye, K.A., Petersen, A.C.	Planned adaptation in risk regulation: An initial survey of US environmental, health, and safety regulation	2010	Technological Forecasting and Social Change	77	6		951–959	4	http://www.scopus.com/inward/record.url?eid=2-s2.0-77953807394&partnerID=40&md5=8654c55166c137b8a4d6ca013de99b3c
Metzger, M.J., Rounsevell, M.D.A., van	How personal judgment influences scenario	2010	Ecology and Society	15	2		27	5	http://www.scopus.com/inward/record.url?eid=2-s2.0-

Authors	Title	Year	Source title	Volume	Issue	Art. No.	Pages	Cited by	Link
den Heiligenberg, H.A.R.M., Pérez-Soba, M., Hardiman, P.S.	development: An example for future rural development in Europe								77954470104&partnerID=40&md5=65f4ebad2c087ec962e2d931a5b86445
Mooij, W.M., Trolle, D., Jeppesen, E., Arhonditsis, G., Belolipetsky, P.V., Chitamwebwa, D.B.R., Degermendzhy, A.G., DeAngelis, D.L., De Senerpont Domis, L.N., Downing, A.S., Elliott, J.A., Fragoso Jr., C.R., Gaedke, U., Genova, S.N., Gulati, R.D., Håkanson, L., Hamilton, D.P., Hipsey, M.R., 't Hoen, J., Hülsmann, S., Los, F.H., Makler-Pick, V., Petzoldt, T., Prokopkin, I.G., Rinke, K., Schep, S.A., Tominaga, K., van Dam, A.A., van Nes, E.H., Wells, S.A., Janse, J.H.	Challenges and opportunities for integrating lake ecosystem modelling approaches	2010	Aquatic Ecology	44	3		633–667	16	http://www.scopus.com/inward/record.url?eid=2-s2.0-77956268654&partnerID=40&md5=a2ed8f8e6259c803b6385f67f4b35d09
Moss, R.H., Edmonds, J.A., Hibbard, K.A., Manning, M.R., Rose, S.K., Van Vuuren, D.P., Carter, T.R., Emori, S., Kainuma, M., Kram, T., Meehl, G.A., Mitchell, J.F.B., Nakicenovic, N., Riahi, K., Smith, S.J., Stouffer, R.J., Thomson, A.M., Weyant, J.P., Wilbanks, T.J.	The next generation of scenarios for climate change research and assessment	2010	Nature	463	7282		747–756	200	http://www.scopus.com/inward/record.url?eid=2-s2.0-76749096338&partnerID=40&md5=1ddc81492ef8d3aff6bd6c2875d82e4f
Neumann, K., Verburg, P.H., Stehfest, E., Müller, C.	The yield gap of global grain production: A spatial analysis	2010	Agricultural Systems	103	5		316–326	23	http://www.scopus.com/inward/record.url?eid=2-s2.0-77951296386&partnerID=40&md5=89983f64ffd6b7280bd863be384d5466
Patt, A.G., van Vuuren, D.P., Berkhout, F., Aaheim, A., Hof, A.F., Isaac, M., Mechler, R.	Adaptation in integrated assessment modeling: Where do we stand?	2010	Climatic Change	99	3		383–402	9	http://www.scopus.com/inward/record.url?eid=2-s2.0-77950457855&partnerID=40&md5=94392a214d2571a004b7974876292c12
Pereira, H.M., Leadley, P.W., Proença, V., Alkemade, R., Scharlemann, J.P.W.,	Scenarios for global biodiversity in the 21st century	2010	Science	330	6010		1496–1501	86	http://www.scopus.com/inward/record.url?eid=2-s2.0-78650171292&partnerID=40&md5=8a1d8b47f1b5a2475116be907

Authors	Title	Year	Source title	Volume	Issue	Art. No.	Pages	Cited by	Link
Fernandez-Manjarrés, J.F., Araújo, M.B., Balvanera, P., Biggs, R., Cheung, W.W.L., Chini, L., Cooper, H.D., Gilman, E.L., Guénette, S., Hurtt, G.C., Huntington, H.P., Mace, G.M., Oberdorff, T., Revenga, C., Rodrigues, P., Scholes, R.J., Sumaila, U.R., Walpole, M.									04f1712
Prokopkin, I.G., Mooij, W.M., Janse, J.H., Degermendzhy, A.G.	A general one-dimensional vertical ecosystem model of Lake Shira (Russia, Khakasia): Description, parametrization and analysis	2010	Aquatic Ecology	44	3		585–618	1	http://www.scopus.com/inward/record.url?eid=2-s2.0-77956262072&partnerID=40&md5=7938b4575ed611051b32d2ce7520cef2
Rigby, M., Mühle, J., Miller, B.R., Prinn, R.G., Krummel, P.B., Steele, L.P., Fraser, P.J., Salameh, P.K., Harth, C.M., Weiss, R.F., Greally, B.R., O'Doherty, S., Simmonds, P.G., Vollmer, M.K., Reimann, S., Kim, J., Kim, K.-R., Wang, H.J., Olivier, J.G.J., Dlugokencky, E.J., Dutton, G.S., Hall, B.D., Elkins, J.W.	History of atmospheric SF6 from 1973 to 2008	2010	Atmospheric Chemistry and Physics	10	21		10305–10320	14	http://www.scopus.com/inward/record.url?eid=2-s2.0-78149238116&partnerID=40&md5=dca525ca581547cffdf81d07a835d321
Runhaar, H.A.C., Driessen, P.P.J., Van Bree, L., Van Der Sluijs, J.P.	A meta-level analysis of major trends in environmental health risk governance	2010	Journal of Risk Research	13	3		319–335	2	http://www.scopus.com/inward/record.url?eid=2-s2.0-77951158623&partnerID=40&md5=8ed879b50bbbbc6116e9dce2e993d6ce
Seitzinger, S.P., Bouwman, A.F., Kroeze, C.	Preface to special section on past and future trends in nutrient export from global watersheds and impacts on water quality and eutrophication	2010	Global Biogeochemical Cycles	24	4	GB0A01		1	http://www.scopus.com/inward/record.url?eid=2-s2.0-78149256612&partnerID=40&md5=93214e01fabfc56b5a1f3ea715513351
Seitzinger, S.P., Mayorga, E., Bouwman, A.F., Kroeze, C., Beusen, A.H.W., Billen, G., Van Drecht, G., Dumont, E., Fekete, B.M., Garnier, J.,	Global river nutrient export: A scenario analysis of past and future trends	2010	Global Biogeochemical Cycles	24	2	GB0A08		34	http://www.scopus.com/inward/record.url?eid=2-s2.0-77954324316&partnerID=40&md5=6a1816a63adaa4c51eaefc1bbed051d8

Authors	Title	Year	Source title	Volume	Issue	Art. No.	Pages	Cited by	Link
Harrison, J.A.									
Smeets, E.M.W., Bouwman, L.F., Stehfest, E., Van Vuuren, D.P., Posthuma, A.	Erratum to The contribution of N2O to the greenhouse gas balance of first-generation biofuels, [Global Change Biology (2010) 16, 2400, doi: 10.1111/j.1365-2486.2010.02271.x]	2010	Global Change Biology	16	8		2400	0	http://www.scopus.com/inward/record.url?eid=2-s2.0-77955064243&partnerID=40&md5=01e12f1a17455fb54fa73bd60de3f05b
Smith, P., Gregory, P.J., Van Vuuren, D., Obersteiner, M., Havlík, P., Rounsevell, M., Woods, J., Stehfest, E., Bellarby, J.	Competition for land	2010	Philosophical Transactions of the Royal Society B: Biological Sciences	365	1554		2941–2957	31	http://www.scopus.com/inward/record.url?eid=2-s2.0-77957314291&partnerID=40&md5=b3730d59ef975afcbf2b3c0ee3041a85
Strengers, B.J., Müller, C., Schaeffer, M., Haarsma, R.J., Severijns, C., Gerten, D., Schaphoff, S., Van Den Houdt, R., Oostenrijk, R.	Assessing 20th century climate-vegetation feedbacks of land-use change and natural vegetation dynamics in a fully coupled vegetation-climate model	2010	International Journal of Climatology	30	13		2055–2065	7	http://www.scopus.com/inward/record.url?eid=2-s2.0-77958545011&partnerID=40&md5=2b0ce4c55aa6fd11a41494c7dfa2fa01
Struijs, J., Van Dijk, A., Slaper, H., Van Wijnen, H.J., Velders, G.J.M., Chaplin, G., Huijbregts, M.A.J.	Spatial- and time-explicit human damage modeling of ozone depleting substances in life cycle impact assessment	2010	Environmental Science and Technology	44	1		204–209	1	http://www.scopus.com/inward/record.url?eid=2-s2.0-75349107092&partnerID=40&md5=27aca44825fa00e1b2eec6b4a19a12f2
Thissen, M., Van Oort, F.	European place-based development policy and sustainable economic agglomeration	2010	Tijdschrift voor Economische en Sociale Geografie	101	4		473–480	2	http://www.scopus.com/inward/record.url?eid=2-s2.0-77955741707&partnerID=40&md5=79e676970aab06fd1e3382138a723929
Tomassini, L., Knutti, R., Plattner, G.-K., van Vuuren, D.P., Stocker, T.F., Howarth, R.B., Borsuk, M.E.	Uncertainty and risk in climate projections for the 21st century: Comparing mitigation to non-intervention scenarios	2010	Climatic Change	103	3		399–422	1	http://www.scopus.com/inward/record.url?eid=2-s2.0-78149500286&partnerID=40&md5=fd2d1c725be419b5245cc26257c7a96a
Tominaga, K., Aherne, J., Watmough, S.A., Alveteg, M., Cosby, B.J., Driscoll, C.T., Posch, M., Pourmokhtarian, A.	Predicting acidification recovery at the hubbard brook experimental forest, New Hampshire: Evaluation of four models	2010	Environmental Science and Technology	44	23		9003–9009	1	http://www.scopus.com/inward/record.url?eid=2-s2.0-78650291124&partnerID=40&md5=8b7d7cff899363b448fa24d8c01e14df
Trisurat, Y., Alkemade, R., Verburg, P.H.	Projecting land-use change and its consequences for biodiversity in northern thailand	2010	Environmental Management	45	3		626–639	7	http://www.scopus.com/inward/record.url?eid=2-s2.0-77952089730&partnerID=40&md5=a8c4951656943369e186fa9798666ff4
van der Knaap, M., Ligtvoet, W.	Is western consumption of nile perch from Lake Victoria sustainable?	2010	Aquatic Ecosystem Health and Management	13	4		429–436	0	http://www.scopus.com/inward/record.url?eid=2-s2.0-78650132473&partnerID=40&md5=614aea37cc2ad29d71d459bc9a3008ef

Authors	Title	Year	Source title	Volume	Issue	Art. No.	Pages	Cited by	Link
Van Grinsven, H.J., Rabl, A., De Kok, T.M.	Estimation of incidence and social cost of colon cancer due to nitrate in drinking water in the EU: A tentative cost-benefit assessment	2010	Environmental Health: A Global Access Science Source	9	1	58		5	http://www.scopus.com/inward/record.url?eid=2-s2.0-77957299673&partnerID=40&md5=882dcf0b4954884ef31878efeb3ae7db
van Oort, F., Burger, M., Raspe, O.	On the economic foundation of the Urban network paradigm: Spatial integration, functional integration and economic complementarities within the Dutch Randstad	2010	Urban Studies	47	4		725–748	5	http://www.scopus.com/inward/record.url?eid=2-s2.0-77949545532&partnerID=40&md5=bfe56c8dcf5f3ae58915cede4622bab0
van Ruijven, B., de Vries, B., van Vuuren, D.P., van der Sluijs, J.P.	A global model for residential energy use: Uncertainty in calibration to regional data	2010	Energy	35	1		269–282	7	http://www.scopus.com/inward/record.url?eid=2-s2.0-70949098947&partnerID=40&md5=75553571a19e8f77e4388c7c63f72ec0
van Ruijven, B., van der Sluijs, J.P., van Vuuren, D.P., Janssen, P., Heuberger, P.S.C., de Vries, B.	Uncertainty from model calibration: Applying a new method to transport energy demand modelling	2010	Environmental Modeling and Assessment	15	3		175–188	3	http://www.scopus.com/inward/record.url?eid=2-s2.0-77952011370&partnerID=40&md5=f6c524e132a70d10cb8974d7be225b44
Van Vuuren, D.P., Bellevrat, E., Kitous, A., Isaac, M.	Bio-energy use and low stabilization scenarios	2010	Energy Journal	31	Special Issue		193–222	10	http://www.scopus.com/inward/record.url?eid=2-s2.0-77749317500&partnerID=40&md5=57601f4c5be345cdd88394113fee3efe
Van Vuuren, D.P., Bouwman, A.F., Beusen, A.H.W.	Phosphorus demand for the 1970-2100 period: A scenario analysis of resource depletion	2010	Global Environmental Change	20	3		428–439	23	http://www.scopus.com/inward/record.url?eid=2-s2.0-77954659482&partnerID=40&md5=cfe34843645acd0900256c114642aacc
van Vuuren, D.P., Edmonds, J., Smith, S.J., Calvin, K.V., Karas, J., Kainuma, M., Nakicenovic, N., Riahi, K., van Ruijven, B.J., Swart, R., Thomson, A.	What do near-term observations tell us about long-term developments in greenhouse gas emissions?	2010	Climatic Change	103	3		635–642	2	http://www.scopus.com/inward/record.url?eid=2-s2.0-78149496120&partnerID=40&md5=229303b59cc0d9a770fef64ee3bb6cfc
Van Vuuren, D.P., Isaac, M., Den Elzen, M.G.J., Stehfest, E., Van Vliet, J.	Low stabilization scenarios and implications for major world regions from an integrated assessment perspective	2010	Energy Journal	31	Special Issue		165–192	7	http://www.scopus.com/inward/record.url?eid=2-s2.0-77749317512&partnerID=40&md5=798889063ae204ff057ca313fa3cb0e5
van Vuuren, D.P., Stehfest, E., den Elzen, M.G.J., van Vliet, J., Isaac, M.	Exploring IMAGE model scenarios that keep greenhouse gas radiative forcing below 3W/m2 in 2100	2010	Energy Economics	32	5		1105–1120	13	http://www.scopus.com/inward/record.url?eid=2-s2.0-77952323213&partnerID=40&md5=586e4c1a7d782e06f4ef714d0184559e

Authors	Title	Year	Source title	Volume	Issue	Art. No.	Pages	Cited by	Link
Verburg, P.H., van Berkel, D.B., van Doorn, A.M., van Eupen, M., van den Heiligenberg, H.A.R.M.	Trajectories of land use change in Europe: A model-based exploration of rural futures	2010	Landscape Ecology	25	2		217–232	28	http://www.scopus.com/inward/record.url?eid=2-s2.0-77952745528&partnerID=40&md5=729c9cd270c648351f1d0301be5a8018
Visser, H., Büntgen, U., D'Arrigo, R., Petersen, A.C.	Detecting instabilities in tree-ring proxy calibration	2010	Climate of the Past	6	3		367–377	5	http://www.scopus.com/inward/record.url?eid=2-s2.0-77953659995&partnerID=40&md5=1e15a3aeca6d394785b6ee4b50974bd4
Vos, C.C., van der Hoek, D.C.J., Vonk, M.	Spatial planning of a climate adaptation zone for wetland ecosystems	2010	Landscape Ecology	25	10		1465–1477		http://www.scopus.com/inward/record.url?eid=2-s2.0-78049258721&partnerID=40&md5=a682fe9a655491cc3bc0a99eb99158f6
Vringer, K., Benders, R., Wilting, H., Brink, C., Drissen, E., Nijdam, D., Hoogervorst, N.	A hybrid multi-region method (HMR) for assessing the environmental impact of private consumption	2010	Ecological Economics	69	12		2510–2516	2	http://www.scopus.com/inward/record.url?eid=2-s2.0-77956986295&partnerID=40&md5=d1784c0c1327abb3bcb4812910d636a5
Wardekker, J.A., de Jong, A., Knoop, J.M., van der Sluijs, J.P.	Operationalising a resilience approach to adapting an urban delta to uncertain climate changes	2010	Technological Forecasting and Social Change	77	6		987–998	12	http://www.scopus.com/inward/record.url?eid=2-s2.0-77953808686&partnerID=40&md5=ede0639546c01d037bb740d17d628d0f
Warren, R., Mastrandrea, M.D., Hope, C., Hof, A.F.	Variation in the climatic response to SRES emissions scenarios in integrated assessment models	2010	Climatic Change	102	3		671–685	3	http://www.scopus.com/inward/record.url?eid=2-s2.0-77957123637&partnerID=40&md5=0d49228639a4c3be195456f08a2b8409
Yan, W., Mayorga, E., Li, X., Seitzinger, S.P., Bouwman, A.F.	Increasing anthropogenic nitrogen inputs and riverine DIN exports from the Changjiang River basin under changing human pressures	2010	Global Biogeochemical Cycles	24	2	GB0A06		16	http://www.scopus.com/inward/record.url?eid=2-s2.0-77954339882&partnerID=40&md5=5ca817823a45606daa53bcd8c825f306
Aalbers, R., van der Heijden, E., Potters, J., van Soest, D., Vollebergh, H.	Technology adoption subsidies: An experiment with managers	2009	Energy Economics	31	3		431–442	3	http://www.scopus.com/inward/record.url?eid=2-s2.0-62949208665&partnerID=40&md5=2a52228bc8921befa7d8702e18008990
Alkemade, R., Van Oorschot, M., Miles, L., Nellemann, C., Bakkenes, M., Ten Brink, B.	GLOBIO3: A framework to investigate options for reducing global terrestrial biodiversity loss	2009	Ecosystems	12	3		374–390	34	http://www.scopus.com/inward/record.url?eid=2-s2.0-63149121102&partnerID=40&md5=ff702733fe01ad7a839cd504357c3cce
Bärlund, I., Tattari, S., Puustinen, M., Koskiaho, J., Markku, Y.-H., Posch, M.	Soil parameter variability affecting simulated field-scale water balance, erosion and phosphorus losses	2009	Agricultural and Food Science	18	4 March		402–416	3	http://www.scopus.com/inward/record.url?eid=2-s2.0-73349092450&partnerID=40&md5=2c6983110acdc6c7627e7fba88447d6b

Authors	Title	Year	Source title	Volume	Issue	Art. No.	Pages	Cited by	Link
Bellekom, S., Hettelingh, J.-P., Aben, J.	Spatial aspects affecting acidification factors in European acidification modelling	2009	Environmental Modelling and Software	24	4		463–472	2	http://www.scopus.com/inward/record.url?eid=2-s2.0-57849151540&partnerID=40&md5=6e226e6a75b98e983e59e61c3628710f
Bollen, J., van der Zwaan, B., Brink, C., Eerens, H.	Local air pollution and global climate change: A combined cost-benefit analysis	2009	Resource and Energy Economics	31	3		161–181	10	http://www.scopus.com/inward/record.url?eid=2-s2.0-67349137538&partnerID=40&md5=9ea865fcbd1ab2507bfd970edd6b9b0a
Brede, M., de Vries, B.J.M.	Networks that optimize a trade-off between efficiency and dynamical resilience	2009	Physics Letters, Section A: General, Atomic and Solid State Physics	373	43		3910–3914	3	http://www.scopus.com/inward/record.url?eid=2-s2.0-70349338623&partnerID=40&md5=6dc57647d27d94fd89ebe10a793e7117
Buitelaar, E.	Zoning, more than just a tool: Explaining Houston's regulatory practice	2009	European Planning Studies	17	7		1049–1065	5	http://www.scopus.com/inward/record.url?eid=2-s2.0-70449348464&partnerID=40&md5=9101010c98297561315b40fd9c91a1a1
Buitelaar, E., de Kam, G.	Steering local housing production: Evaluating the performance of governance structures	2009	Journal of Housing and the Built Environment	24	2		185–201	0	http://www.scopus.com/inward/record.url?eid=2-s2.0-67349085172&partnerID=40&md5=1cba953fb8296e0096d45d671c74e749
Burger, M., van Oort, F., Linders, G.-J.	On the specification of the gravity model of trade: Zeros, excess zeros and zero-inflated estimation	2009	Spatial Economic Analysis	4	2		167–190	26	http://www.scopus.com/inward/record.url?eid=2-s2.0-68249153294&partnerID=40&md5=7d936d3c0205122f1f062bb39e1004f1
Burger, M.J., Van Oort, F.G., Frenken, K., Van Der Knaap, B.	Networks and economic agglomerations: Introduction to the special issue	2009	Tijdschrift voor Economische en Sociale Geografie	100	2		139–144	5	http://www.scopus.com/inward/record.url?eid=2-s2.0-62349132702&partnerID=40&md5=ebedc55fbf1a9ef5941e2f1893acec14
Curtis, C.J., Juggins, S., Clarke, G., Battarbee, R.W., Kernan, M., Catalan, J., Thompson, R., Posch, M.	Regional influence of acid deposition and climate change in European mountain lakes assessed using diatom transfer functions	2009	Freshwater Biology	54	12		2555–2572	12	http://www.scopus.com/inward/record.url?eid=2-s2.0-70449580525&partnerID=40&md5=4e96d7c5d6dd6b0c12554bf8e23d2f05
de Vries, B.J.M., Petersen, A.C.	Conceptualizing sustainable development. An assessment methodology connecting values, knowledge, worldviews and scenarios	2009	Ecological Economics	68	4		1006–1019	19	http://www.scopus.com/inward/record.url?eid=2-s2.0-58749103476&partnerID=40&md5=fa84b4291c530361a9efc29cf778c930
de Vries, J.J., Nijkamp, P., Rietveld, P.	Exponential or power distance-decay for commuting? An alternative specification	2009	Environment and Planning A	41	2		461–480	13	http://www.scopus.com/inward/record.url?eid=2-s2.0-65649110159&partnerID=40&md5=63a0b14d0c09739082c69f5f0f

Authors	Title	Year	Source title	Volume	Issue	Art. No.	Pages	Cited by	Link
									c1f102
Del Grosso, S.J., Ojima, D.S., Parton, W.J., Stehfest, E., Heistemann, M., DeAngelo, B., Rose, S.	Global scale DAYCENT model analysis of greenhouse gas emissions and mitigation strategies for cropped soils	2009	Global and Planetary Change	67	2 Jan.		44–50	15	http://www.scopus.com/inward/record.url?eid=2-s2.0-67349090626&partnerID=40&md5=93bd62e7f24f64c81105ad1c2d9f71fe
Dellink, R., Elzen, M.d., Aiking, H., Bergsma, E., Berkhout, F., Dekker, T., Gupta, J.	Sharing the burden of financing adaptation to climate change	2009	Global Environmental Change	19	4		411–421	8	http://www.scopus.com/inward/record.url?eid=2-s2.0-70349766704&partnerID=40&md5=868c8a7799a7491523e4a43cb3958493
den Elzen, M., Höhne, N., van Vliet, J.	Analysing comparable greenhouse gas mitigation efforts for Annex I countries	2009	Energy Policy	37	10		4114–4131	8	http://www.scopus.com/inward/record.url?eid=2-s2.0-69949132039&partnerID=40&md5=5d2812241866590b01d7e2996f98e5c9
Faber, A., Frenken, K.	Models in evolutionary economics and environmental policy: Towards an evolutionary environmental economics	2009	Technological Forecasting and Social Change	76	4		462–470	20	http://www.scopus.com/inward/record.url?eid=2-s2.0-62849117143&partnerID=40&md5=96d4f0d4e8fada7e2c4847507a3701e6
Fragoso Jr., C.R., van Nes, E.H., Janse, J.H., da Motta Marques, D.	IPH-TRIM3D-PCLake: A three-dimensional complex dynamic model for subtropical aquatic ecosystems	2009	Environmental Modelling and Software	24	11		1347–1348	2	http://www.scopus.com/inward/record.url?eid=2-s2.0-67650713592&partnerID=40&md5=9bcff4c8f22d48a2658a6d340caf5048
Fredriksson, P.G., Vollebergh, H.R.J.	Corruption, federalism, and policy formation in the OECD: The case of energy policy	2009	Public Choice	140	2 Jan.		205–221	1	http://www.scopus.com/inward/record.url?eid=2-s2.0-70349904765&partnerID=40&md5=c12c938bf0e11b177dfc180fce7ce2ad
Frenken, K., Faber, A.	Introduction: Evolutionary methodologies for analyzing environmental innovations and the implications for environmental policy	2009	Technological Forecasting and Social Change	76	4		449–452	5	http://www.scopus.com/inward/record.url?eid=2-s2.0-62849099973&partnerID=40&md5=1c1251c907eb791bfe5f90cbe04faba1
Frenken, K., Hoekman, J., Kok, S., Ponds, R., van Oort, F., van Vliet, J.	Death of distance in science? A gravity approach to research collaboration	2009	Understanding Complex Systems	2009			43–57	0	http://www.scopus.com/inward/record.url?eid=2-s2.0-67649675473&partnerID=40&md5=b97193645042b051dcc0b925735d63cc
Geelen, L.M.J., Huijbregts, M.A.J., den Hollander, H., Ragas, A.M.J., van Jaarsveld, Hans.A., de Zwart, D.	Confronting environmental pressure, environmental quality and human health impact indicators of priority air emissions	2009	Atmospheric Environment	43	9		1613–1621	3	http://www.scopus.com/inward/record.url?eid=2-s2.0-59649121510&partnerID=40&md5=f920d5dabbd228fc934bd7ed2da55e1b
Geurs, K.T., Boon, W., Van Wee, B.	Social impacts of transport: Literature review and the State of the practice of transport appraisal in the Netherlands and the United	2009	Transport Reviews	29	1		69–90	15	http://www.scopus.com/inward/record.url?eid=2-s2.0-57149113159&partnerID=40&md5=57e0f937685d391549ce775f30b6b6c0

Authors	Title	Year	Source title	Volume	Issue	Art. No.	Pages	Cited by	Link
	Kingdom								
Hoekman, J., Frenken, K., van Oort, F.	The geography of collaborative knowledge production in Europe	2009	Annals of Regional Science	43	3 Spec. Issues		721–738	19	http://www.scopus.com/inward/record.url?eid=2-s2.0-67349222703&partnerID=40&md5=1e4b8cbe43f6e8412385c7e53ffe9c72
Hof, A.F., de Bruin, K.C., Dellink, R.B., den Elzen, M.G.J., van Vuuren, D.P.	The effect of different mitigation strategies on international financing of adaptation	2009	Environmental Science and Policy	12	7		832–843	8	http://www.scopus.com/inward/record.url?eid=2-s2.0-70350536772&partnerID=40&md5=041e0f26acf088e7b22833b86a9870e2
Hof, A.F., Den Elzen, M.G.J., Van Vuuren, D.P.	Environmental effectiveness and economic consequences of fragmented versus universal regimes: What can we learn from model studies?	2009	International Environmental Agreements: Politics, Law and Economics	9	1		39–62	16	http://www.scopus.com/inward/record.url?eid=2-s2.0-59549083318&partnerID=40&md5=7f431969a6c89eba041f37f764c064c6
Hoogwijk, M., Faaij, A., de Vries, B., Turkenburg, W.	Exploration of regional and global cost-supply curves of biomass energy from short-rotation crops at abandoned cropland and rest land under four IPCC SRES land-use scenarios	2009	Biomass and Bioenergy	33	1		26–43	35	http://www.scopus.com/inward/record.url?eid=2-s2.0-57249090389&partnerID=40&md5=f44ed515e4888426c181b05e80135c4e
Houtkamp, J.M., Colijn, S., Bouwman, A.	Attractive visualization influences the perceived quality of the living environment	2009	Proceedings - 2009 2nd Int.Conf. on Visualisation, VIZ 2009			5230727	127–131	1	http://www.scopus.com/inward/record.url?eid=2-s2.0-70350540910&partnerID=40&md5=77d93d74b4d8711e9a2c7c69a709074c
Isaac, M., van Vuuren, D.P.	Modeling global residential sector energy demand for heating and air conditioning in the context of climate change	2009	Energy Policy	37	2		507–521	30	http://www.scopus.com/inward/record.url?eid=2-s2.0-58149122875&partnerID=40&md5=9549f8345264110b319fa5eade48aca3
Kalognomou, E.-A., Mellios, G., Moussiopoulos, N., Larssen, S., Samaras, Z., van den Hout, D., de Leeuw, F., Kukkonen, J., Fiala, J.	The study of traffic hotspot air quality and street scale modelling in the Street Emission Ceilings (SEC) Project	2009	International Journal of Environment and Waste Management	4	2 Jan.		156–178	1	http://www.scopus.com/inward/record.url?eid=2-s2.0-67650321085&partnerID=40&md5=c27c61350a8dfea86b779b531e70d971
Knoben, J.	Localized inter-organizational linkages, agglomeration effects, and the innovative performance of firms	2009	Annals of Regional Science	43	3 Special Issues		757–779	8	http://www.scopus.com/inward/record.url?eid=2-s2.0-62349097652&partnerID=40&md5=45fd55dbabd6f53b17953628c7afb343
Knol, A.B., Petersen, A.C., Van Der Sluijs, J.P., Lebret, E.	Dealing with uncertainties in environmental burden of disease assessment	2009	Environmental Health: A Global Access Science Source	8	1	21		6	http://www.scopus.com/inward/record.url?eid=2-s2.0-67449149862&partnerID=40&md5=d13960507663275cc71bed1d9ab22029

Authors	Title	Year	Source title	Volume	Issue	Art. No.	Pages	Cited by	Link
Kruitwagen, S., Reudink, M., Faber, A.	Pragmatics of policy: The compliance of dutch environmental policy instruments to European Union Standards	2009	Environmental Management	43	4		673–681	2	http://www.scopus.com/inward/record.url?eid=2-s2.0-62549149387&partnerID=40&md5=e95f91937817793a5fdb159522bfda35
Kruyt, B., van Vuuren, D.P., de Vries, H.J.M., Groenenberg, H.	Indicators for energy security	2009	Energy Policy	37	6		2166–2181	41	http://www.scopus.com/inward/record.url?eid=2-s2.0-64749100476&partnerID=40&md5=28d2c9e7630cff30fe0ee1642d757cac
Laird, J., Geurs, K., Nash, C.	Option and non-use values and rail project appraisal	2009	Transport Policy	16	4		173–182	1	http://www.scopus.com/inward/record.url?eid=2-s2.0-68749086000&partnerID=40&md5=97d1b5855449cb8e3c609592b4f5503c
Limtanakool, N., Schwanen, T., Dijst, M.	Developments in the dutch urban system on the basis of flows	2009	Regional Studies	43	2		179–196	2	http://www.scopus.com/inward/record.url?eid=2-s2.0-61549132516&partnerID=40&md5=5ee4f3c53ee02775bca4408dccaa9ff6
Lowe, J.A., Hewitt, C.D., Van Vuuren, D.P., Johns, T.C., Stehfest, E., Royer, J.-F., Van Der Linden, P.J.	New study for climate modeling, analyses, and scenarios	2009	Eos	90	21		181–182	8	http://www.scopus.com/inward/record.url?eid=2-s2.0-67650918290&partnerID=40&md5=456947902d26a17e9ae7951213351ce9
Mayer, A.L., Vihermaa, L., Nieminen, N., Luomi, A., Posch, M.	Epiphytic macrolichen community correlates with modeled air pollutants and forest conditions	2009	Ecological Indicators	9	5		992–1000	5	http://www.scopus.com/inward/record.url?eid=2-s2.0-60849139059&partnerID=40&md5=73d4e804b1060b571f06be35c8d0e305
Miraglia, M., Marvin, H.J.P., Kleter, G.A., Battilani, P., Brera, C., Coni, E., Cubadda, F., Croci, L., De Santis, B., Dekkers, S., Filippi, L., Hutjes, R.W.A., Noordam, M.Y., Pisante, M., Piva, G., Prandini, A., Toti, L., van den Born, G.J., Vespermann, A.	Climate change and food safety: An emerging issue with special focus on Europe	2009	Food and Chemical Toxicology	47	5		1009–1021	58	http://www.scopus.com/inward/record.url?eid=2-s2.0-63149085557&partnerID=40&md5=3c26a091e8136c894cf70c574040411c
Mooij, W.M., De Senerpont Domis, L.N., Janse, J.H.	Linking species- and ecosystem-level impacts of climate change in lakes with a complex and a minimal model	2009	Ecological Modelling	220	21		3011–3020	11	http://www.scopus.com/inward/record.url?eid=2-s2.0-70350050589&partnerID=40&md5=c44ad3088759469fbdfc16831c703dbb
Needham, B., Boschma, R., Duhr, S., Fan, C., Frenken, K., Hassink, R., Iammarino, S.,	Editorial: Reaching out to new territories ...	2009	Regional Studies	43	1		1–4	0	http://www.scopus.com/inward/record.url?eid=2-s2.0-60749085041&partnerID=40&md5=3fe91ab918e3dba9d562e4242

Authors	Title	Year	Source title	Volume	Issue	Art. No.	Pages	Cited by	Link
Lagendijk, A., Van Oort, F., Oinas, P., Pike, A., Torre, A., Varga, A.									e6bbfa4
Niessen, L., Ten Hove, A., Hilderink, H., Weber, M., Mulholland, K., Ezzati, M.	Comparative impact assessment of child pneumonia interventions	2009	Bulletin of the World Health Organization	87	6		472–480	17	http://www.scopus.com/inward/record.url?eid=2-s2.0-67649160604&partnerID=40&md5=2e759a6bea52ce126876caf716c4c6dc
Nijland, H.A., Hartemink, S., Van Kamp, I., Van Wee, B.	The influence of sensitivity for road traffic noise on residential location: does It trigger a process of spatial selection?	2009	Noise and Vibration Worldwide	40	3		17–26	0	http://www.scopus.com/inward/record.url?eid=2-s2.0-65349147107&partnerID=40&md5=3c4057b313f8ebd1f2d20a983fa2314b
Pitman, A.J., De Noblet-Ducoudré, N., Cruz, F.T., Davin, E.L., Bonan, G.B., Brovkin, V., Claussen, M., Delire, C., Ganzeveld, L., Gayler, V., Van Den Hurk, B.J.J.M., Lawrence, P.J., Van Der Molen, M.K., Müller, C., Reick, C.H., Seneviratne, S.I., Strengen, B.J., Voldoire, A.	Uncertainties in climate responses to past land cover change: First results from the LUCID intercomparison study	2009	Geophysical Research Letters	36	14	L14814		61	http://www.scopus.com/inward/record.url?eid=2-s2.0-70349592923&partnerID=40&md5=fb4871c1a95daff67c4e76779bcdb541
Ponds, R.	The limits to internationalization of scientific research collaboration	2009	Journal of Technology Transfer	34	1		76–94	11	http://www.scopus.com/inward/record.url?eid=2-s2.0-58149182880&partnerID=40&md5=7f66f54ae80f83512ef6f10d82eaacd5
Ponds, R., van Oort, F., Frenken, K.	Innovation, spillovers and university-industry collaboration: An extended knowledge production function approach	2009	Journal of Economic Geography	10	2	lbp036	231–255	24	http://www.scopus.com/inward/record.url?eid=2-s2.0-77649146318&partnerID=40&md5=16e95e3bd5376d6096168033b61309e1
Posch, M., de Vries, W.	Dynamic modelling of metals - Time scales and target loads	2009	Environmental Modelling and Software	24	1		86–95	6	http://www.scopus.com/inward/record.url?eid=2-s2.0-49549110475&partnerID=40&md5=dd05b1a4c91949e4871b8267326bf4f4
Posch, M., Reinds, G.J.	A very simple dynamic soil acidification model for scenario analyses and target load calculations	2009	Environmental Modelling and Software	24	3		329–340	13	http://www.scopus.com/inward/record.url?eid=2-s2.0-56449104964&partnerID=40&md5=2789d3cc9430487b293a76cf5e0fddf5
Raspe, O., van Oort, F.	Growth of new firms and spatially bounded knowledge externalities	2009	Annals of Regional Science				1–24	1	http://www.scopus.com/inward/record.url?eid=2-s2.0-71649103452&partnerID=40&md5=6c816495a1708be2844394686a2f8f6f

Authors	Title	Year	Source title	Volume	Issue	Art. No.	Pages	Cited by	Link
Reidsma, P., Oude Lansink, A., Ewert, F.	Economic impacts of climatic variability and subsidies on European agriculture and observed adaptation strategies	2009	Mitigation and Adaptation Strategies for Global Change	14	1		35–59	6	http://www.scopus.com/inward/record.url?eid=2-s2.0-58149291555&partnerID=40&md5=dc15f00fbe3d9e9a0b49a6a072fbc77d
Reinds, G.J., Posch, M., de Vries, W.	Modelling the long-term soil response to atmospheric deposition at intensively monitored forest plots in Europe	2009	Environmental Pollution	157	4		1258–1269	8	http://www.scopus.com/inward/record.url?eid=2-s2.0-60949092703&partnerID=40&md5=7686e83f5ea19a6ba90904bb497c546c
Reinds, G.J., Posch, M., Leemans, R.	Modelling recovery from soil acidification in European forests under climate change	2009	Science of the Total Environment	407	21		5663–5673	6	http://www.scopus.com/inward/record.url?eid=2-s2.0-70249093901&partnerID=40&md5=9bed100ddaf5d4db418beb3d468c34f6
Ros, J., Nagelhout, D., Montfoort, J.	New environmental policy for system innovation: Casus alternatives for fossil motor fuels	2009	Applied Energy	86	2		243–250	7	http://www.scopus.com/inward/record.url?eid=2-s2.0-52149098570&partnerID=40&md5=f97a8f720f0d3215a0e047c3ed0a7a08
Rothman, D.S., van Bers, C., Bakkes, J., Pahl-Wostl, C.	How to make global assessments more effective: lessons from the assessment community	2009	Current Opinion in Environmental Sustainability	1	2		214–218	6	http://www.scopus.com/inward/record.url?eid=2-s2.0-70449711316&partnerID=40&md5=0b126bca1f810cacc8aef87137e727e0
Smeets, E.M.W., Bouwman, L.F., Stehfest, E., van Vuuren, D.P., Posthuma, A.	Contribution of N2O to the greenhouse gas balance of first-generation biofuels	2009	Global Change Biology	15	1		1–23	53	http://www.scopus.com/inward/record.url?eid=2-s2.0-58149521082&partnerID=40&md5=525d0a11258be852f5a479da5e64ac05
Smeets, E.M.W., Bouwman, L.F., Stehfest, E., van Vuuren, D.P., Posthuma, A.	Erratum: Contribution of N2O to the greenhouse gas balance of first-generation biofuels (Global Change Biology vol. 15 (1))	2009	Global Change Biology	15	3		780	1	http://www.scopus.com/inward/record.url?eid=2-s2.0-59849126557&partnerID=40&md5=e74bf82cb7bfb49607e2f925f5b6f578
Stehfest, E., Bouwman, L., Van Vuuren, D.P., Den Elzen, M.G.J., Eickhout, B., Kabat, P.	Climate benefits of changing diet	2009	Climatic Change	95	2 Jan.		83–102	52	http://www.scopus.com/inward/record.url?eid=2-s2.0-67651149526&partnerID=40&md5=8b2c101e5adb90e6fe89d0c4143f6076
Swart, R., Bernstein, L., Ha-Duong, M., Petersen, A.	Agreeing to disagree: Uncertainty management in assessing climate change, impacts and responses by the IPCC	2009	Climatic Change	92	2 Jan.		1–29	21	http://www.scopus.com/inward/record.url?eid=2-s2.0-58149378235&partnerID=40&md5=ceb8b303f9af3f97a09474a0edb7335f
Thissen, M., Hilbers, H., Van De Coevering, P.	The difference between bi-regional and full networks when analysing agglomeration effects	2009	Tijdschrift voor Economische en Sociale Geografie	100	2		171–182	1	http://www.scopus.com/inward/record.url?eid=2-s2.0-62349104041&partnerID=40&md5=c6798c0fc73874cb0ace7a72f9f38543
Tominaga, K., Aherne,	Voyage without	2009	Hydrology Research	40	3 Feb.		261–272	3	http://www.scopus.com/inward/r

Authors	Title	Year	Source title	Volume	Issue	Art. No.	Pages	Cited by	Link
J., Watmough, S.A., Alveteg, M., Cosby, B.J., Dri Scoll, C.T., Posch, M.	constellation: evaluating the performance of Three uncalibrated process-oriented models								ecord.url?eid=2-s2.0-67649817529&partnerID=40&md5=785609f56bdc56d8c6ad4645422fa664
Tominaga, K., Aherne, J., Watmough, S.A., Alveteg, M., Cosby, B.J., Driscoll, C.T., Posch, M.	Erratum: Voyage without constellation : Evaluating the performance of three uncalibrated process-oriented models (Hydrology Research (2009) 40:2 (261-272))	2009	Hydrology Research	40	5		503	0	http://www.scopus.com/inward/record.url?eid=2-s2.0-70049092600&partnerID=40&md5=154b414607857bf74578a6439d4dea7f
van de Kassteele, J., Stein, A., Dekkers, A.L.M., Velders, G.J.M.	External drift kriging of NOx concentrations with dispersion model output in a reduced air quality monitoring network	2009	Environmental and Ecological Statistics	16	3		321–339	7	http://www.scopus.com/inward/record.url?eid=2-s2.0-67651244673&partnerID=40&md5=1568fdce92f562715ec3deb9fb889c03
van der Linden, A.M.A., Tiktak, A., Boesten, J.J.T.I., Leijnse, A.	Influence of pH-dependent sorption and transformation on simulated pesticide leaching	2009	Science of the Total Environment	407	10		3415–3420	4	http://www.scopus.com/inward/record.url?eid=2-s2.0-62749137109&partnerID=40&md5=5716ed4de66186e92bd61b40a624ac1c
Van Der Werf, G.R., Morton, D.C., Defries, R.S., Olivier, J.G.J., Kasibhatla, P.S., Jackson, R.B., Collatz, G.J., Randerson, J.T.	CO2 emissions from forest loss	2009	Nature Geoscience	2	11		737–738	148	http://www.scopus.com/inward/record.url?eid=2-s2.0-70350787414&partnerID=40&md5=c604323b9ae051df24c9c06cac88cf6b
Van Drecht, G., Bouwman, A.F., Harrison, J., Knoop, J.M.	Global nitrogen and phosphate in urban wastewater for the period 1970 to 2050	2009	Global Biogeochemical Cycles	23	3	GB0A03		24	http://www.scopus.com/inward/record.url?eid=2-s2.0-75749096327&partnerID=40&md5=2450e42336dfea5d12a5c00d28cd60d9
van Minnen, J.G., Goldewijk, K.K., Stehfest, E., Eickhout, B., van Drecht, G., Leemans, R.	The importance of three centuries of land-use change for the global and regional terrestrial carbon cycle	2009	Climatic Change	97	1		123–144	7	http://www.scopus.com/inward/record.url?eid=2-s2.0-70350725923&partnerID=40&md5=ad2ac0cf1c397f94a9f50c3b2b9e8314
van Oort, F.G., Oud, J.H.L., Raspe, O.	The urban knowledge economy and employment growth: A spatial structural equation modeling approach	2009	Annals of Regional Science	43	4		859–877	4	http://www.scopus.com/inward/record.url?eid=2-s2.0-76149143379&partnerID=40&md5=a90ce4975e143115b5f47d121b2f0225
van Ruijven, B., van Vuuren, D.P.	Oil and natural gas prices and greenhouse gas emission mitigation	2009	Energy Policy	37	11		4797–4808	11	http://www.scopus.com/inward/record.url?eid=2-s2.0-70449498139&partnerID=40&md5=f7f9dac7b0807798040b9358976cc2a3
van Vliet, J., den Elzen, M.G.J., van Vuuren, D.P.	Meeting radiative forcing targets under delayed participation	2009	Energy Economics	31	SUPPL. 2		S152–S162	12	http://www.scopus.com/inward/record.url?eid=2-s2.0-70749151959&partnerID=40&md5=a4449c9e5937765b361f5bff6e

Authors	Title	Year	Source title	Volume	Issue	Art. No.	Pages	Cited by	Link
									35753e
van Vuuren, D.P., den Elzen, M.G.J., van Vliet, J., Kram, T., Lucas, P., Isaac, M.	Comparison of different climate regimes: the impact of broadening participation	2009	Energy Policy	37	12		5351–5362	9	http://www.scopus.com/inward/record.url?eid=2-s2.0-71649088774&partnerID=40&md5=14f03cb69e51b8b0796038ea18da571f
van Vuuren, D.P., Hoogwijk, M., Barker, T., Riahi, K., Boeters, S., Chateau, J., Scrieciu, S., van Vliet, J., Masui, T., Blok, K., Blomen, E., Kram, T.	Comparison of top-down and bottom-up estimates of sectoral and regional greenhouse gas emission reduction potentials	2009	Energy Policy	37	12		5125–5139	20	http://www.scopus.com/inward/record.url?eid=2-s2.0-71549146843&partnerID=40&md5=c07bfdf9db545cc47174678bda1bf323
van Vuuren, D.P., van Vliet, J., Stehfest, E.	Future bio-energy potential under various natural constraints	2009	Energy Policy	37	11		4220–4230	23	http://www.scopus.com/inward/record.url?eid=2-s2.0-70449453485&partnerID=40&md5=3a4f54021c3604942dd5e1a4da29701b
Velders, G.J.M., Diederen, H.S.M.A.	Likelihood of meeting the EU limit values for NO2 and PM10 concentrations in the Netherlands	2009	Atmospheric Environment	43	19		3060–3069	9	http://www.scopus.com/inward/record.url?eid=2-s2.0-65649149858&partnerID=40&md5=f99b2d67931c9b79519f2e7e435679ed
Velders, G.J.M., Fahey, D.W., Daniel, J.S., McFarland, M., Andersen, S.O.	The large contribution of projected HFC emissions to future climate forcing	2009	Proceedings of the National Academy of Sciences of the United States of America	106	27		10949–10954	45	http://www.scopus.com/inward/record.url?eid=2-s2.0-67650469894&partnerID=40&md5=e3b1866a5fe449b0c143484b48323935
Velders, G.J.M., Matthijsen, J.	Meteorological variability in NO2 and PM10 concentrations in the Netherlands and its relation with EU limit values	2009	Atmospheric Environment	43	25		3858–3866	5	http://www.scopus.com/inward/record.url?eid=2-s2.0-67650167711&partnerID=40&md5=057528fb73669423a19c764982ac06af
Verburg, R., Stehfest, E., Woltjer, G., Eickhout, B.	The effect of agricultural trade liberalisation on land-use related greenhouse gas emissions	2009	Global Environmental Change	19	4		434–446	4	http://www.scopus.com/inward/record.url?eid=2-s2.0-70349758092&partnerID=40&md5=29fe32ed5c2941a0852d2937c1e7dc20
Visser, H., Petersen, A.C.	The likelihood of holding outdoor skating marathons in the Netherlands as a policy-relevant indicator of climate change	2009	Climatic Change	93	2 Jan.		39–54	2	http://www.scopus.com/inward/record.url?eid=2-s2.0-60849126670&partnerID=40&md5=ecebd676abb420b6944212548c4b660d
Vollebergh, H.R.J., Melenberg, B., Dijkgraaf, E.	Identifying reduced-form relations with panel data: The case of pollution and income	2009	Journal of Environmental Economics and Management	58	1		27–42	8	http://www.scopus.com/inward/record.url?eid=2-s2.0-67349127596&partnerID=40&md5=97823d4cbaa16052170fd88b4c0c793a
Walker, B., Barrett, S., Polasky, S., Galaz, V., Folke, C., EngstrÃ¶m,	Looming global-scale failures and missing institutions	2009	Science	325	5946		1345–1346	41	http://www.scopus.com/inward/record.url?eid=2-s2.0-70249104634&partnerID=40&md

Authors	Title	Year	Source title	Volume	Issue	Art. No.	Pages	Cited by	Link
G., Ackerman, F., Arrow, K., Carpenter, S., Chopra, K., Daily, G., Ehrlich, P., Hughes, T., Kautsky, N., Levin, S., Maler, K.-G., Shogren, J., Vincent, J., Xepapadeas, T., De Zeeuw, A.									5=726af8e19b47ae43c160655d5c623222
Wardekker, J.A., Petersen, A.C., van der Sluijs, J.P.	Ethics and public perception of climate change: Exploring the Christian voices in the US public debate	2009	Global Environmental Change	19	4		512–521	10	http://www.scopus.com/inward/record.url?eid=2-s2.0-70349776048&partnerID=40&md5=b075e930838a9af7e8e0fcc3ece552e9
Weijters, M.J., Janse, J.H., Alkemade, R., Verhoeven, J.T.A.	Quantifying the effect of catchment land use and water nutrient concentrations on freshwater river and stream biodiversity	2009	Aquatic Conservation: Marine and Freshwater Ecosystems	19	1		104–112	15	http://www.scopus.com/inward/record.url?eid=2-s2.0-64349116948&partnerID=40&md5=336e1bce2f5457e6a5e620618caae200
Weltevreden, J.W.J., Rietbergen, T.V.	The implications of e-shopping for in-store shopping at various shopping locations in the Netherlands	2009	Environment and Planning B: Planning and Design	36	2		279–299	3	http://www.scopus.com/inward/record.url?eid=2-s2.0-66349110485&partnerID=40&md5=1e171fed87776ac2839d6c317eaf8bfb
Weltevreden, J.W.J., Rotem-Mindali, O.	Mobility effects of b2c and c2c e-commerce in the Netherlands: a quantitative assessment	2009	Journal of Transport Geography	17	2		83–92	7	http://www.scopus.com/inward/record.url?eid=2-s2.0-61449103497&partnerID=40&md5=e29688aff334fa21e95d10d740d1b228
Weterings, A., Boschma, R.	Does spatial proximity to customers matter for innovative performance?. Evidence from the Dutch software sector	2009	Research Policy	38	5		746–755	13	http://www.scopus.com/inward/record.url?eid=2-s2.0-64049108076&partnerID=40&md5=bf32f05804eba4db077470c9aef4762d
Weterings, A., Ponds, R.	Do regional and non-regional knowledge flows differ? An empirical study on clustered firms in the Dutch life sciences and computing services industry	2009	Industry and Innovation	16	1		11–31	4	http://www.scopus.com/inward/record.url?eid=2-s2.0-70350135025&partnerID=40&md5=caca32dc4aa04bd0f86bea52025f5d58
Aalbers, R.F.T., Vollebergh, H.R.J.	An economic analysis of mixing wastes	2008	Environmental and Resource Economics	39	3		311–330	3	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-38849088761&partnerID=40&rel=R8.2.0
Aherne, J., Posch, M., Forsius, M., Vuorenmaa, J., Tamminen, P., Holmberg, M., Johansson, M.	Modelling the hydro-geochemistry of acid-sensitive catchments in Finland under atmospheric deposition and biomass harvesting scenarios	2008	Biogeochemistry	88	3		233–256	10	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-44949252896&partnerID=40&rel=R8.2.0

Authors	Title	Year	Source title	Volume	Issue	Art. No.	Pages	Cited by	Link
Beusen, A.H.W., Bouwman, A.F., Heuberger, P.S.C., Van Drecht, G., Van Der Hoek, K.W.	Bottom-up uncertainty estimates of global ammonia emissions from global agricultural production systems	2008	Atmospheric Environment	42	24		6067–6077	18	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-47549102399&partnerID=40&rel=R8.2.0
Biggs, R., Simons, H., Bakkenes, M., Scholes, R.J., Eickhout, B., van Vuuren, D., Alkemade, R.	Scenarios of biodiversity loss in southern Africa in the 21st century	2008	Global Environmental Change	18	2		296–309	15	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-44149122134&partnerID=40&rel=R8.2.0
Brakkee, K.W., Huijbregts, M.A.J., Eickhout, B., Jan Hendriks, A., Van De Meent, D.	Characterisation factors for greenhouse gases at a midpoint level including indirect effects based on calculations with the IMAGE model	2008	International Journal of Life Cycle Assessment	13	3		191–201	5	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-45349085245&partnerID=40&rel=R8.2.0
Craig, L., Krewski, D., Samet, J., Shortreed, J., Van Bree, L., Krupnick, A.J.	International perspectives on air quality: Risk management principles for policy development - Conference statement	2008	Journal of Toxicology and Environmental Health - Part A: Current Issues	71	1		4–8	0	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-37249033767&partnerID=40&rel=R8.2.0
den Elzen, M., Höhne, N.	Reductions of greenhouse gas emissions in Annex I and non-Annex I countries for meeting concentration stabilisation targets - An editorial comment	2008	Climatic Change	91	4 March		249–274	?	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-51249110332&partnerID=40&rel=R8.2.0
den Elzen, M., Höhne, N., Moltmann, S.	The Triptych approach revisited: A staged sectoral approach for climate mitigation	2008	Energy Policy	36	3		1107–1124	18	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-39149086652&partnerID=40&rel=R8.2.0
Den Elzen, M.G.J., Lucas, P.L., Van Vuuren, D.P.	Regional abatement action and costs under allocation schemes for emission allowances for achieving low CO2-equivalent concentrations	2008	Climatic Change	90	3		243–268	24	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-51749124884&partnerID=40&rel=R8.2.0
Dumont, E., Bakker, E.J., Bouwman, L., Kroeze, C., Leemans, R., Stein, A.	A framework to identify appropriate spatial and temporal scales for modeling N flows from watersheds	2008	Ecological Modelling	212	4 March		256–272	1	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-39749177021&partnerID=40&rel=R8.2.0
Golicher, D.J., Cayuela, L., Alkemade, J.R.M., González-Espinosa, M., Ramírez-Marcial, N.	Applying climatically associated species pools to the modelling of compositional change in tropical montane forests	2008	Global Ecology and Biogeography	17	2		262–273	14	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-38949212149&partnerID=40&rel=R8.2.0
Hagoort, M., Geertman, S., Ottens, H.	Spatial externalities, neighbourhood rules and CA land-use modelling	2008	Annals of Regional Science	42	1		39–56	14	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-38549090130&partnerID=40&rel=R8.2.0
Hof, A.F., den Elzen,	Analysing the costs and	2008	Global Environmental	18	3		412–424	21	http://www.scopus.com/scopus/i

Authors	Title	Year	Source title	Volume	Issue	Art. No.	Pages	Cited by	Link
M.G.J., van Vuuren, D.P.	benefits of climate policy: Value judgements and scientific uncertainties		Change						nward/record.url?eid=2-s2.0-53049100140&partnerID=40&rel=R8.2.0
Houweling, S., van der Werf, G.R., Goldewijk, K.K., Röckmann, T., Aben, I.	Early anthropogenic CH4 emissions and the variation of CH4 and 13CH4 over the last millennium	2008	Global Biogeochemical Cycles	22	1	GB1002		11	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-38649108428&partnerID=40&rel=R8.2.0
Janse, J.H., De Senerpont Domis, L.N., Scheffer, M., Lijklema, L., Van Liere, L., Klinge, M., Mooij, W.M.	Critical phosphorus loading of different types of shallow lakes and the consequences for management estimated with the ecosystem model PCLake	2008	Limnologica	38	4 March		203–219	9	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-56749186241&partnerID=40
Kerkhof, A.C., Moll, H.C., Drissen, E., Wilting, H.C.	Taxation of multiple greenhouse gases and the effects on income distribution. A case study of the Netherlands	2008	Ecological Economics	67	2		318–326	11	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-49949095917&partnerID=40&rel=R8.2.0
Kloster, S., Dentener, F., Feichter, J., Raes, F., Van Aardenne, J., Roeckner, E., Lohmann, U., Stier, P., Swart, R.	Influence of future air pollution mitigation strategies on total aerosol radiative forcing	2008	Atmospheric Chemistry and Physics Discussions	8	2		5563–5627	?	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-41349086715&partnerID=40&rel=R8.2.0
Kok, M., Metz, B., Verhagen, J., van Rooijen, S.	Integrating development and climate policies: National and international benefits	2008	Climate Policy	8	2		103–118	17	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-43449130050&partnerID=40&rel=R8.2.0
Maas, R.	Fine particles: Compromising with scientific uncertainties [Particules fines: Composer avec l'incertitude scientifique]	2008	Environnement, Risques et Sante	7	3		174–175	0	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-45549094009&partnerID=40&rel=R8.2.0
Metz, B., Kok, M.	Integrating development and climate policies	2008	Climate Policy	8	2		99–102	6	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-43449133271&partnerID=40&rel=R8.2.0
Nijland, H., van Wee, B.	Noise valuation in ex-ante evaluations of major road and railroad projects	2008	European Journal of Transport and Infrastructure Research	8	3		216–226	0	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-53649090501&partnerID=40
Petersen, A.C.	The practice of climate simulation and its social and political context	2008	Geologie en Mijnbouw/Netherlands Journal of Geosciences	87	3		219–229	2	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-56049101390&partnerID=40
Pontius Jr., R.G., Boersma, W., Castella, J.-C., Clarke, K., Nijs, T., Dietzel, C., Duan, Z., Fotsing, E., Goldstein, N., Kok, K., Koomen, E., Lippitt, C.D., McConnell, W., Mohd Sood, A.,	Comparing the input, output, and validation maps for several models of land change	2008	Annals of Regional Science	42	1		11–37	72	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-36348937663&partnerID=40&rel=R8.2.0

Authors	Title	Year	Source title	Volume	Issue	Art. No.	Pages	Cited by	Link
Pijanowski, B., Pithadia, S., Sweeney, S., Trung, T.N., Veldkamp, A.T., Verburg, P.H.									
Posch, M., Aherne, J., Forsius, M., Fronzek, S., Veijalainen, N.	Modelling the impacts of European emission and climate change scenarios on acid-sensitive catchments in Finland	2008	Hydrology and Earth System Sciences	12	2		449–463	9	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-40449117274&partnerID=40&rel=R8.2.0
Posch, M., Seppälä, J., Hettelingh, J.-P., Johansson, M., Margni, M., Jolliet, O.	The role of atmospheric dispersion models and ecosystem sensitivity in the determination of characterisation factors for acidifying and eutrophying emissions in LCIA	2008	International Journal of Life Cycle Assessment	13	6		477–486	11	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-51749113550&partnerID=40&rel=R8.2.0
Powlson, D.S., Addiscott, T.M., Benjamin, N., Cassman, K.G., De Kok, T.M., Van Grinsven, H., L'Hirondel, J.-L., Avery, A.A., Van Kessel, C.	When does nitrate become a risk for humans?	2008	Journal of Environmental Quality	37	2		291–295	50	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-40849139278&partnerID=40&rel=R8.2.0
Ramírez, A., de Keizer, C., Van der Sluijs, J.P., Olivier, J., Brandes, L.	Monte Carlo analysis of uncertainties in the Netherlands greenhouse gas emission inventory for 1990-2004	2008	Atmospheric Environment	42	35		8263–8272	8	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-53749083141&partnerID=40&rel=R8.2.0
Refsgaard, J.C., Kovar, K., Haarder, E., Nygaard, E.	Proceedings of an international conference on calibration and reliability in groundwater modelling: Credibility of modelling, modeICARE2007: Preface	2008	IAHS-AISH Publication		320			?	
Reinds, G.J., Posch, M., De Vries, W., Slootweg, J., Hettelingh, J.-P.	Critical loads of sulphur and nitrogen for terrestrial ecosystems in Europe and northern Asia using different soil chemical criteria	2008	Water, Air, and Soil Pollution	193	4 Jan.		269–287	6	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-48149114678&partnerID=40
Schaap, M., Apituley, A., Timmermans, R.M.A., Koelemeijer, R.B.A., De Leeuw, G.	Exploring the relation between aerosol optical depth and PM2.5 at Cabauw, the Netherlands	2008	Atmospheric Chemistry and Physics Discussions	8	5		17939–17986	?	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-54249166603&partnerID=40
Schaap, M., Timmermans, R.M.A., Koelemeijer, R.B.A., de Leeuw, G., Builtjes, P.J.H.	Evaluation of MODIS aerosol optical thickness over Europe using sun photometer observations	2008	Atmospheric Environment	42	9		2187–2197	16	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-43049137992&partnerID=40&rel=R8.2.0
Schaap, M., Timmermans, R.M.A., Roemer, M., Boersen,	The LOTOS-EUROS model: Description, validation and latest developments	2008	International Journal of Environment and Pollution	32	2		270–290	32	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-39349101242&partnerID=40&rel

Authors	Title	Year	Source title	Volume	Issue	Art. No.	Pages	Cited by	Link
G.A.C., Builtjes, P.J.H., Sauter, F.J., Velders, G.J.M., Beck, J.P.									=R8.2.0
Smaling, E.M.A., Roscoe, R., Lesschen, J.P., Bouwman, A.F., Comunello, E.	From forest to waste: Assessment of the Brazilian soybean chain, using nitrogen as a marker	2008	Agriculture, Ecosystems and Environment	128	3		185–197	15	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-49049096653&partnerID=40&rel=R8.2.0
Sollie, S., Janse, J.H., Mooij, W.M., Coops, H., Verhoeven, J.T.A.	The contribution of marsh zones to water quality in Dutch shallow lakes: A modeling study	2008	Environmental Management	42	6		1002–1016	3	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-56549127238&partnerID=40
Spranger, T., Hettelingh, J.-P., Slootweg, J., Posch, M.	Modelling and mapping long-term risks due to reactive nitrogen effects: An overview of LRTAP convention activities	2008	Environmental Pollution	154	3		482–487	5	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-46449101040&partnerID=40&rel=R8.2.0
Strengers, B.J., Van Minnen, J.G., Eickhout, B.	The role of carbon plantations in mitigating climate change: Potentials and costs	2008	Climatic Change	88	4 March		343–366	20	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-44949170962&partnerID=40&rel=R8.2.0
Sun, B., Shen, R.-P., Bouwman, A.F.	Surface N Balances in Agricultural Crop Production Systems in China for the Period 1980-20151 1 Project supported by the Chinese Academy of Sciences (No. KZCX2-YW-N-038) and the National Basic Research Program of China (No. 2005CB121108).	2008	Pedosphere	18	3		304–315	11	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-43049168548&partnerID=40&rel=R8.2.0
Ten Brinke, W., Bannink, B., Ligtvoet, W.	The evaluation of flood risk policy in the Netherlands	2008	Proceedings of the Institution of Civil Engineers: Water Management	161	4		181–188	7	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-57849085872&partnerID=40
Tuinstra, W.	European air pollution assessments: Co-production of science and policy	2008	International Environmental Agreements: Politics, Law and Economics	8	1		35–49	3	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-43449086391&partnerID=40&rel=R8.2.0
Tuinstra, W., Jager, J., Weaver, P.M.	Learning and evaluation in Integrated Sustainability Assessment	2008	International Journal of Innovation and Sustainable Development	3	2 Jan.		128–152	10	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-43449085541&partnerID=40&rel=R8.2.0
Van Der Sluijs, J.P., Petersen, A.C., Janssen, P.H.M., Risbey, J.S., Ravetz, J.R.	Exploring the quality of evidence for complex and contested policy decisions	2008	Environmental Research Letters	3	2	24008		33	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-46749106445&partnerID=40&rel=R8.2.0
van Minnen, J.G., Strengers, B.J., Eickhout, B., Swart, R.J., Leemans, R.	Quantifying the effectiveness of climate change mitigation through forest plantations and	2008	Carbon Balance and Management	3		3		15	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-43049125474&partnerID=40&rel=R8.2.0

Authors	Title	Year	Source title	Volume	Issue	Art. No.	Pages	Cited by	Link
	carbon sequestration with an integrated land-use model								
van Pul, W.A.J., van Jaarsveld, J.A., Vellinga, O.S., van den Broek, M., Smits, M.C.J.	The VELD experiment: An evaluation of the ammonia emissions and concentrations in an agricultural area	2008	Atmospheric Environment	42	34		8086–8095	5	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-53249118918&partnerID=40&rel=R8.2.0
van Ruijven, B., Hari, L., van Vuuren, D.P., de Vries, B.	The potential role of hydrogen energy in India and Western Europe	2008	Energy Policy	36	5		1649–1665	5	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-41249087427&partnerID=40&rel=R8.2.0
van Ruijven, B., Urban, F., Benders, R.M.J., Moll, H.C., van der Sluijs, J.P., de Vries, B., van Vuuren, D.P.	Modeling Energy and Development: An Evaluation of Models and Concepts	2008	World Development					?	
van Vuuren, D.P., de Vries, B., Beusen, A., Heuberger, P.S.C.	Conditional probabilistic estimates of 21st century greenhouse gas emissions based on the storylines of the IPCC-SRES scenarios	2008	Global Environmental Change	18	4		635–654	?	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-48249143614&partnerID=40&rel=R8.2.0
Van Vuuren, D.P., Meinshausen, M., Plattner, G.-K., Joos, F., Strassmann, K.M., Smith, S.J., Wigley, T.M.L., Raper, S.C.B., Riahi, K., De La Chesnaye, F., Den Elzen, M.G.J., Fujino, J., Jiang, K., Nakicenovic, N., Paltsev, S., Reilly, J.M.	Temperature increase of 21st century mitigation scenarios	2008	Proceedings of the National Academy of Sciences of the United States of America	105	40		15258–15262	42	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-55749106792&partnerID=40
van Vuuren, D.P., Riahi, K.	Do recent emission trends imply higher emissions forever?	2008	Climatic Change				1–12	?	
van Wezel, A.P., Franken, R.O., Drissen, E., Versluijs, K.C., van den Berg, R.	Societal cost-benefit analysis for soil remediation in The Netherlands.	2008	Integrated environmental assessment and management	4	1		61–74	3	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-40949102796&partnerID=40&rel=R8.2.0
van Zelm, R., Huijbregts, M.A.J., den Hollander, H.A., van Jaarsveld, H.A., Sauter, F.J., Struijs, J., van Wijnen, H.J., van de Meent, D.	European characterization factors for human health damage of PM10 and ozone in life cycle impact assessment	2008	Atmospheric Environment	42	3		441–453	24	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-38049095026&partnerID=40&rel=R8.2.0
Verburg, P.H., Eickhout, B., Meijl, H.	A multi-scale, multi-model approach for analyzing the future dynamics of European land use	2008	Annals of Regional Science	42	1		57–77	71	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-38549099126&partnerID=40&rel=R8.2.0

Authors	Title	Year	Source title	Volume	Issue	Art. No.	Pages	Cited by	Link
Vollebergh, H.R.J.	Lessons from the polder: Energy tax design in The Netherlands from a climate change perspective	2008	Ecological Economics	64	3		660–672	1	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-37049017341&partnerID=40&rel=R8.2.0
Wardekker, J.A., van der Sluijs, J.P., Janssen, P.H.M., Kloprogge, P., Petersen, A.C.	Uncertainty communication in environmental assessments: views from the Dutch science-policy interface	2008	Environmental Science and Policy	11	7		627–641	32	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-46749090316&partnerID=40&rel=R8.2.0
Wilting, H.C., Faber, A., Idenburg, A.M.	Investigating new technologies in a scenario context: description and application of an input-output method	2008	Journal of Cleaner Production	16	Suppl. 1		102–112	?	
Winkler, H., Höhne, N., den Elzen, M.	Methods for quantifying the benefits of sustainable development policies and measures (SD-PAMs)	2008	Climate Policy	8	2		119–134	9	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-43449125602&partnerID=40&rel=R8.2.0
Wollheim, W.M., Vörösmarty, C.J., Bouwman, A.F., Green, P., Harrison, J., Linder, E., Peterson, B.J., Seitzinger, S.P., Syvitski, J.P.M.	Global N removal by freshwater aquatic systems using a spatially distributed, within-basin approach	2008	Global Biogeochemical Cycles	22	2	GB2026		25	http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-50849145132&partnerID=40&rel=R8.2.0