PBL Netherlands Environmental
Assessment Agency

A GLOBAL PUBLIC GOODS PERSPECTIVE ON ENVIRONMENT AND POVERTY REDUCTION
IMPLICATIONS FOR DUTCH FOREIGN POLICY

Background Studies

A global public goods perspective on environment and poverty reduction

Implications for Dutch foreign policy

A global public goods perspective on environment and poverty reduction. Implications for Dutch foreign policy
© PBL Netherlands Environmental Assessment Agency
The Hague, 2011

ISBN: 978-90-78645-59-7
PBL publication number: 555075001

Acknowledgement
This scoping paper has been written at the request of the Environment, Water, Climate and Energy Department (DME) of the Netherlands Ministry of Foreign Affairs and Development Cooperation. We would like to thank Wijnand van IJssel, Jochem Wiers and Govert Visser (DME) for their guidance and constructive discussions during the writing of this paper. The paper furthermore benefited from comments and feedback from ministry staff and colleagues, in particular from Jacob Werksman (WRI) and Frank Dietz and Ton Manders (PBL).

Corresponding author
marcel.kok@@pbl.nl

Authors
Marcel Kok (PBL), Johan Brons (PBL), Maria Witmer (PBL and Ministry of Foreign Affairs)

Contributor
Piet Klop (World Resource Institute)

S**upervisor**
Frank Dietz

English-language editing
Serena Lyon, Annemieke Righart

Graphics
Filip de Blois

Layout
Studio RIVM

Parts of this publication may be reproduced, providing the source is stated, in the form: PBL Netherlands Environmental Assessment Agency, title and year of publication.

PBL Netherlands Environmental Assessment Agency is the national institute for strategic policy analysis in the field of environment, nature and spatial planning. We contribute 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 our studies. We conduct solicited and unsolicated research that is both independent and always scientifically sound.

Contents

Executive summary

Poverty reduction, environmental degradation and the distribution of scarce natural resources are important issues for Dutch international cooperation. To address these issues, foreign policies require a coherent policy agenda for sustainable poverty reduction and for dealing with global environmental change, both within the Netherlands and internationally. In this paper we explore the possible contribution of the global public good (GPG) perspective to the development of coherent Dutch policies for international cooperation on poverty reduction and the global environment.

We specify why global public goods are of interest to the Netherlands for international cooperation, and what the policy choices are arising from taking a global public goods perspective on these issues. This paper therefore has the following objectives: (i) to suggest an analytical framework for identifying strategic choices and providing a coherent rationale for international policies on poverty reduction and the global environment, (ii) to identify and analyse relevant global public goods within this context, and (iii) to explore the position of the Netherlands and possible policy choices related to adopting a global public goods perspective to sustainable poverty reduction and the global environment.

Global public goods

Public goods contribute to individual welfare that cannot be provided for by individual producers because of two essential characteristics. Firstly, their property rights are *non-exclusive* (or imperfectly exclusive): no one can be excluded from their benefits or avoid the negative effect in case of absence of the goods. Secondly, they are *non-rival in use*: the use by one person does not compete with the use by another person. Because of these characteristics, individual use cannot be adequately priced, free-riding occurs and markets typically fail in providing these goods. Policy interventions are therefore necessary to organise collective action, starting with agreements between actors involved to provide for specific public goods. The concept of public goods is relevant at different levels of decision-making and can therefore also be applied to issues of poverty reduction and global environmental management. Providing global public goods (GPGs) is particularly challenging as it requires cooperation and collective action involving many countries and stakeholders. Examples of global public goods are the protection of the ozone layer, peace and macro-economic stability. Development and poverty reduction rely, among other things, on the provisioning of environmental goods, some of which are public and global (e.g. a stable climate), others public and local (e.g. soil conservation), and yet others private (e.g. commodities).

Analytical framework

We developed a framework for the analysis of GPGs with the aim to increase policy coherence between local poverty reduction and global environmental management.

Table A

A framework for analysis of global public goods: from relevance to choices

Why are GPGs relevant for international cooperation on poverty and environment?	
Which GPGs are derived from the perspective of environment and poverty?	
Global environmental concern	Environmental GPGs
Global socio-economic consequences	Socio-economic GPGs
Global collective action needed	Provisioning / capacity GPGs
What are the governance challenges to realize GPGs?	
International capacity for environmental management and poverty reduction	
Different types of GPGs call for different types of action	
National policies in developed and developing countries	
What are the global concerns?	
Climate – land ecosystems – marine ecosystems	
Scarcity of resources: energy, food, water and minerals	
What is the position of the Netherlands with respect to GPGs?	
Four criteria: impact, influence, self-interest, and relevance for poverty reduction	
What are the policy choices for international cooperation?	
Motives and aim:	What does international cooperation seek to achieve?
Focus:	Global issues, national and international and short and long term policies
Organization:	Policy coherence, geopolitics, and channels and actors

The framework will be used to reflect on the responsibilities and interests the Netherlands has in the continuous provision and protection of GPGs.

This paper identifies three categories of GPGs that are relevant for global environmental issues and local poverty reduction: (i) environmental GPGs (climate, land ecosystems and marine ecosystems), (ii) socio-economic GPGs that depend on environmental GPGs or increasing scarcity of natural resources (e.g. stability and peace), and (iii) global capacities for the adequate provision of environmental GPGs (e.g. knowledge and regulation). We do not address socio-economic or 'provisioning' global public goods that are not directly related to environmental issues (e.g. financial stability).

The next question is how to organise collective action for the provision of public goods. The characteristics of the GPG at hand determine the kind of agreement, the institutions and national or transnational actions that are required to organise such a collective action. This implies that there are no universal solutions and strategies for international cooperation need to be tailored to the specific public good at hand to identify and stimulate the right mechanisms and incentives.

We elaborated four categories of environmental issues: climate, land ecosystems, marine ecosystems and increasing scarcity of natural resources. For each category we specified their GPG character in terms of global environmental concerns, their socio-economic relevance and the necessary, possibly global, capacities for environmental management. Natural resources, from a commodity perspective, by definition are not GPGs, however, associated effects such as the consequences of their increasing scarcity for stability and peace, make them relevant for consideration in this paper.

To be able to reflect on the responsibilities and interests of the Netherlands in the continued provision of these selected environmental GPGs and natural resources, we suggest four criteria to determine the position of the Netherlands regarding these problems:

- global impact: our co-responsibility for global environmental problems and scarcities;
- global influence: our public contribution to global efforts to secure environmental and provisioning GPGs;
- enlightened self-interest: our collective and commercial interests in investments in and the success of these efforts;
- relevance for poverty reduction: the inadequate provision of global environmental goods can worsen poverty dimensions and vice versa – the provisioning of GPGs might be threatened by poverty-driven developments (e.g. in the case of biodiversity or instability in critical resource regions).

Policy choices

We used this framework (as summarised in Table A) to identify policy choices for the Netherlands in relation to the provision of global public goods. A coherent strategy for international cooperation for global environmental issues and poverty reduction can be developed by answering three key questions: i) what does the Netherlands want to achieve through international cooperation; ii) what are the priorities in providing GPGs, and iii) what are the implications for the organisation of international cooperation?

The answers to these questions are political and views will diverge; this paper is restricted to identifying some choices that need to be taken into account, arguing that international cooperation can benefit from the GPG perspective, as it makes common interests visible and identifies strategies to apply them to national and global policies. The different criteria identified in this paper can help show where different perspectives on international cooperation can meet. A tentative scoring of the relative importance of the issues from a GPG perspective is also proposed. The paper identifies choices with respect to the focus of these policies, in particular thematic choices, the need to link domestic and international policies, and the time dimension of these policies. The implications with respect to organisation are then addressed, in particular the choices to be made regarding policy coherence across sectors, country choice and geopolitics and the selection of channels and actors to make the organisation of international cooperation more effective and efficient.

Introduction

Context

Poverty reduction, environmental degradation and the distribution of scarce natural resources are important issues for Dutch international cooperation. The Netherlands Scientific Council for Government Policy suggested in its recent report on the future of development cooperation '*Less pretention, more ambition*' (WRR, 2010) that a global public good perspective should be followed to develop policy directions for international cooperation. The WRR also recommends taking a broader look at development assistance (more than only aid) and taking the objectives of development and poverty reduction fully into account in all relevant domains of foreign policy (including for example trade, environment and security). It suggests that, in addition to aid, there are three – complementary – building blocks for international cooperation that can contribute to a more sustainable globalisation process: policy coherence for development, a strategy for global public goods, and a vision on global governance that is geared towards the changing geopolitical situation.

This paper elaborates why a strategy for global public goods is of interest to the Netherlands international cooperation for realising poverty reduction and dealing with global environmental change. Environmental quality is an important condition for development and poverty reduction but, due to its public good character, it is not realised without collective action (Barrett, 2007). In this paper we focus on the provisioning of global public goods (GPGs) as a specific form of collective action. GPGs refer to resources, services and systems of rules or policy regimes that generate non-excludable benefits and that are non-rival in use. These global benefits extend across countries and regions, across rich and poor population groups and across generations (Kaul et al., 2003). Collective action to ensure the provisioning of *global* public goods is particularly challenging since this requires the involvement of many countries and stakeholders.

A major challenge for Dutch foreign policy is how to combine the related agendas of sustainable development, poverty reduction and the realisation of global environmental goals in a coherent way. This paper explores how a GPG perspective can help with this. International cooperation has always been engaged in providing and protecting public interest at different levels in developing countries (see the Explanatory Statement on the Budget for Foreign Affairs (Ministerie van Buitenlandse Zaken, 2010)). By looking at the public interest in international cooperation from the perspective of public goods, a perspective is introduced (originating from economics) that provides a new view on old and emerging topics in international cooperation. In this paper we used the GPG perspective to help clarify and explain global public concerns as a starting point to develop new and coherent strategies for international cooperation.

Table 1

A framework for analysis of global public goods: from relevance to choices

Why are GPGs relevant for international cooperation on poverty and environment?	
Which GPGs are derived from the perspective of environment and poverty?	
Global environmental concern	Environmental GPGs
Global socio-economic consequences	Socio-economic GPGs
Global collective action needed	Provisioning / capacity GPGs
What are the governance challenges to realize GPGs?	
International capacity for environmental management and poverty reduction	
Different types of GPGs call for different types of action	
National policies in developed and developing countries	
What are the global concerns?	
Climate – land ecosystems – marine ecosystems	
Scarcity of resources: energy, food, water and minerals	
What is the position of the Netherlands with respect to GPGs?	
Four criteria: impact, influence, self-interest, and relevance for poverty reduction	
What are the policy choices for international cooperation?	
Motives and aim:	What does international cooperation seek to achieve?
Focus:	Global issues, national and international and short and long term policies
Organization:	Policy coherence, geopolitics, and channels and actors

Objectives and structure of the paper

This scoping paper has three objectives. The first is to develop an analytical framework for identifying strategic choices and providing a coherent rationale for international policies on poverty reduction and the global environment. Within this context, the second objective is to identify and analyse relevant global public goods and the third objective is to explore the position of the Netherlands and possible policy choices.
The paper is organised as follows (see Table 1). After clarifying the concept of public goods and its usefulness for international cooperation, we define different types of GPGs that are relevant for global environmental issues and sustainable poverty reduction (Chapter 2). In Chapter 3 we discuss some of the governance challenges in achieving the necessary international collective action to provide GPGs. Next, in Chapter 4, we analyse a number of global environmental issues from a GPG perspective and identify their benefits for poverty reduction and development at different levels. Chapter 5 assesses the responsibilities and interests the Netherlands has in the continued provision or protection of specific GPGs. The choices for international cooperation that arise when applying the GPG perspective to environment and poverty reduction are discussed in the last chapter (Chapter 6).

TWO

Global public goods: environmental and socio-economic relevance and capacities

Defining public goods

Public goods are complementary to individual goods in achieving welfare. Prevailing individual willingness to contribute to providing public goods is in itself insufficient to actually realise them. In economic and social science literature this is referred to as a market failure which needs collective action to solve it. Other examples of market failures and collective action dilemmas are concentration of market power and information asymmetries.

Public goods have two specific characteristics: the benefits of a public good are non-exclusive or imperfectly exclusive, and the use of the goods is to a large extent non-rival. The ozone layer is a well-known example of a pure public good: anybody can use its functionality and its use by one person does not affect its functionality. Public goods are best understood by contrasting them with private goods. Private goods are excludable and exclusive in consumption. They are associated with clear property rights and once consumed by one person they cannot be consumed by another person. Public goods, by contrast, are goods in the public domain; available for all to consume and potentially affecting all people in the case of under-provision. Their consumption by one person does not impede consumption by another person (Kaul et al., 2003). Examples of public goods are clean air, peace, lighthouses and macro-economic stability. To make the GPG concept relevant for policy making, public concerns need to be specified according to scale and scope.

Depending on the scale and scope of the good, local, national, regional, international and global public goods are discerned (International Task Force on Global Public Goods, 2006). This paper focuses on public goods of international dimensions that require international arrangements for them to be secured or provided: international and global public goods. *International* public goods are of interest to a limited number of countries. Often these international public goods are of a regional nature, such as peace and stability in the Great Lakes Region or water management in the Nile or Mekong basins. *Global* public goods are of interest to all countries and all people. When provision succeeds, global public goods make people everywhere better off (Barrett, 2007; Kaul & Mendoza, 2003 - cited in Went, 2010).

Although all people will be better off if public goods are provided, this is not a sufficient condition for effective provisioning. The necessary collective action potentially fails because of the before-mentioned typical market failures or collective action dilemmas. Obstacles to providing public goods at the production and consumption side include free-riding behaviour and lack of awareness or lack of collective responsibility. Consequently, public interventions that address these failures are necessary to organise cooperation and collective action to secure the provisioning of public goods. At national level, governments are used to providing public goods such as a public health system or a clean environment; at the global level new issues are emerging, such as climate change or new pandemic diseases, which call for adequate policies.

The governance challenge to organise such collective action can take multiple forms and is not necessarily limited to public action, but will also include private action and public-private partnerships. This will be elaborated in Section 3.

GPGs for global environmental issues

We identify three categories of GPGs that are relevant for poverty reduction and global environmental change and that we discuss throughout this paper[1]:

- *environmental GPGs* and their relevance for poverty reduction at different scales;
- *socio-economic GPGs* that are influenced by changes in the environment and by increasing scarcity of natural resources, and;
- *capacity-related global public goods* that are necessary to bring about collective action at the global level to provide GPGs.

The provision of environmental global public goods relies on environmental systems that are globally important and of which resilience and regeneration depend on collective action to maintain their provision (Collier, 2010). Socio-economic global public goods[2] refer to generic conditions (e.g. peace). We limit this paper to the consequences of changes in the state of environmental GPGs for the provision of socio-economic public goods. Capacity-related (or provisioning) global public goods are the result of public investment and include for example collective knowledge and regulatory systems that are necessary for collective action at the global level to provide GPGs. Policy implications are different across the three categories of public goods.

While GPGs are often independently analysed, they are related and need to be looked at in coherence. As already stated above, global environmental issues do have socio-economic consequences at different levels. For example, climate change (that results in the insufficient provision of the GPG 'stable climate') will affect food security, public health and social stability. In turn, global capacities can counteract this negative cascade. International agreements aim to decrease greenhouse gas emissions, stimulate reforestation and enlarge the environmental greenhouse gas absorption capacity. A global financing structure for adaptation costs in developing countries (a global capacity) would enable these countries to enlarge their capacity to adapt to climate change. The terms global public goods and global commons are sometimes used interchangeably. Resources that cannot be governed under the normal governance framework of national sovereignty are referred to as the 'global commons'. For example, it is so difficult to enforce restrictions on deep sea fishing that the world's fish stocks can be seen as a non-excludable resource, but one which is finite and diminishing (Ostrom, 2005). Global commons raise similar issues as for global public goods, such as the need for collective action.

GPGs and scarce resources

There are growing concerns about the current and future availability and fair distribution of natural resources; intergenerational equity is also at stake (Projectgroep Schaarste en Transitie, 2009; World Development report 2010). Old scarcities concern the depletion of finite natural resources such as fossil fuels, metals and minerals, and the overexploitation of renewable natural resources such as fish, timber and freshwater. Emerging environmental issues such as the depletion of ecological assets and the finite capacity of earth systems (atmosphere, ecosystems and oceans) to absorb and neutralise wastes are sometimes labelled as 'new scarcities'. Climate change and loss of ecosystem goods and services lead to new scarcities (Projectgroep Schaarste en Transitie, 2009; PBL, in prep.).

From a commodity perspective, scarce natural resources are not public goods; they are rival in use and excludable in ownership. Nevertheless, associated effects, such as the consequences of the increasing scarcity of a number of natural resources for stability and peace, make them relevant for consideration in this paper (International Task Force on Global Public Goods, 2006; Went, 2010). A specific example is the global capacity to ensure security of supply and continued access to increasingly scarce natural resources and key commodities (secure supply of different forms of energy, food and minerals). As with global environmental issues, access to commodities depends on the global capacity to realise open and stable international markets and technology and governance systems that ensure predictable and secure access to the world's finite and renewable resources. Affordable access to modern energy has additional important implications on equity and poverty.

Relevance for international cooperation

So far we have described what GPGs are; we now turn to the question how this perspective can potentially benefit international cooperation. There is as yet no strategy for GPGs within the Dutch agenda for international cooperation and development, and this would need to be developed as part of the vision on global governance and the role the Netherlands want to play in that (WRR, 2010).

Before elaborating further on the relevance of the GPG perspective, it is also useful to mention and reflect on some of the criticisms and disadvantages of the GPG perspective that are recognised in the literature. This paper addresses two main criticisms against the GPG perspective (Bezanson, 2002; Carbone, 2007; Went, 2010). Firstly, clarification of the GPG perspective is needed to overcome the criticism that the GPG perspective is academic and abstract. Lack of conceptual clarity risks applying a catch-all character in which people attach anything they want to the perspective. Secondly, an effective GPG perspective needs to take into account criticisms related to possible abuse in international policies. It is seen by some as the next imposition of the north on the south in the name of common rules of behaviour in the international arena. Others fear the possible misuse of the concept out of self-interest (e.g. by multilateral institutions to enlarge their legitimacy and demand for funding, or trade restrictions because of non-tariff trade barriers) and a disregard for the principles of subsidiarity and sovereignty. Donors fear that they will have to pay the bill, and developing countries have questions about who will set the priorities for providing GPGs and fear that the funding for GPGs will compete with ODA. These are real concerns to be taken into account should the GPG perspective be followed in developing strategies for international cooperation and we return to these in the last chapter.

There are a number of reasons why a GPG perspective produces interesting insights for international cooperation (International Task Force on Global Public Goods, 2006; E3G, 2006; Barrett, 2007; Went, 2010):

- GPGs are *important for national and local development and poverty reduction and longer-term risk reduction*. The nature of a GPG or international public good means that they are beyond the control of national policies.
- *As market forces fail for GPGs, international agreements are needed* on cooperation, responsibilities and sharing the necessary costs of providing GPGs.
- By defining them, *choices about priorities in GPGs can be made explicit*. Capacity and funding for different global, regional and national public goods can then be consciously considered, for example in ODA.
- Diagnosing the dimensions of GPGs *helps to design and organise the means of their provisioning*: for example who profits and who should profit, who pays and who should pay, and who should take the initiative.
- *Ineffective cooperation on GPGs* will stimulate unilateral alternatives and defensive expenditures from powerful countries that may be to the detriment of the poor and inefficient for the global community. Examples are bilateral trade agreements that ensure national interests or investment in adaptation to rather than mitigation of climate change.
- The awareness of externalities of policy making may *help to improve policy coherence*. 'Global public bads' can be avoided or fought against through GPGs.
- The understanding that GPGs are critical to everyone on earth provides a strong additional motive for international cooperation (collective *self-interest*), in addition to the moral motivation for development assistance.

A strategy for GPGs can help the development agenda and contribute to policy coherence. Policy coherence is essential and at the same time most difficult to achieve, as it is principally about dealing with diverging interests to realise public goals. While there might be international agreement on goals with regards to GPGs (e.g. global warming below two degrees, maintaining food security), there can be stark disagreement on how to achieve them and hence the question arises how to organise collective action at the global level to provide GPGs.

Notes

1 See also F.J. Rischard (2002): 'sharing our planet; sharing humanity and sharing our rulebook'.

2 It is evident that all socio-economic GPGs would encompass a domain much broader than that influenced by changes in the environmental domain. For example, socio-economic GPGs include issues such as equity, financial stability and internationally recognised labour standards.

THREE

The challenge for global governance in providing GPGs

When providing public goods is desired, governance mechanisms are needed to ensure that those involved contribute to collective efforts and that the resulting collective action is effective, efficient and legitimate. The agreements and institutions to organise adequate collective action need to be aligned with the characteristics of the public good in question. As elaborated in the previous chapter, these characteristics are: (i) the extent to which a good is *rival in use*; (ii) the extent to which the benefits are *exclusive*; (iii) the channels through which goods can be *provided* (public and private); and (iv) the *scale and scope* of the good. All goods can be ranked on these continuous scales. The provision of global public goods needs to be tailored to the specificities of the good at hand to identify and stimulate the right mechanisms and incentives (Barrett, 2007; Went, 2010). It is beyond the scope of this paper to do this in detail, but this section sets out a number of directions to achieve this.

The limitations of global governance

The optimal provisioning of GPGs is severely hampered by the well-known problems in global governance; essentially all GPGs are under-supplied for similar reasons (Barrett, 2007). Problems in international cooperation are many, including the political willingness of sovereign states and narrowly-defined national interests; finding the right level of solving problems (subsidiary principle); differences in preferences and interests across countries; the reliance on ethical choices for 'winners' to transfer or share benefits with 'losers'; the free-rider problem; dependency on the weakest link; keeping the momentum in implementing international agreements; and the lack of credible sanction mechanisms.

Carbone (2007) summarises the gaps in the arrangements for providing GPGs as follows: (i) a jurisdictional gap – which refers to the discrepancy between the global scope of GPGs and the predominantly national scope of policy and law making; (ii) a participation gap – which refers to the fact that many people and actors are excluded from the international governance system; and (iii) an incentive gap – which refers to the fact that, in the absence of effective incentives to act, there is an undue reliance on foreign aid to provide the resources to address GPG issues. These gaps need to be taken into account when developing international strategies for the provision of GPGs.

The interplay between governments, multilateral organisations, the private sector and civil society

It is increasingly clear that governments are no longer in a hierarchical position to govern complex issues such as GPGs. Many of the institutions that drive global governance include or are driven by non-state actors and involve a wide array of environmental and developmental alliances and private actors. Rule-setting and implementation is presently no longer confined to

governments, as non-state actors also participate in and set their own rules for action. Businesses and NGOs set up their own international systems of standards, as is happening in the Forest and Marine Stewardship Council. Likewise, enterprises are setting up voluntary certification schemes on for example coffee or tropical fruits, or are involved in public-private cooperation on for example renewable energy and access to energy (Biermann et al., 2009). One idea that can be linked to the provision of GPGs is the development of issue networks for global problems (Rischard, 2002; Glasbergen, 2010), which would bring together national governments, international civil organisations and businesses to produce and implement norms for the provision of global public goods.

This trend towards public-private arrangements is accompanied by the search for improving the system of governance. We focus on two specific questions on GPGs: i) regarding the problem of fit: are existing institutional arrangements well matched to the characteristics of the problem, and ii) regarding the problem of scale: at what decision-making level should interventions take place? For example, in climate policy an instrument 'Reducing emissions from deforestation in developing countries' (REDD) is being developed to realise climate targets. This mechanism needs to be compatible with international biodiversity policy. The question can be asked why there is no convention on forests like there is on other global environmental issues that would bring these different interests together. For global issues, people often first look to the United Nations and the World Bank. However, given the current problems in for example climate negotiations and biodiversity protection, there is much unease about what can be expected from the UN regarding the provision of GPGs. Others look to the role of the World Bank as a manager of globalisation. In many cases, new forms of multilateralism and new coalitions are being explored, including G20, G8, BRICS, BASIC, and so on (Weiss, 2009). The question here is whether the Netherlands is willing to invest in a stronger multilateral system and new coalitions in order to strengthen GPG provision.

For the Netherlands, international cooperation takes place within the context and as part of European Union (EU) external policies. These have both an internal EU dimension and an external dimension. Internal EU governance structures and dynamics will strongly determine the EU's ability to achieve external objectives, such as the provision of GPGs. Here the question is of course to what extent the Netherlands is willing to give up its own position in favour of a stronger EU. This would include shifting decision-making power to the EU in relevant areas. It would also involve addressing the role of the European External Action Services in relation to the role of international policies of the member states, policy coherence within the EU and the use of EU budgets. For the provision of GPGs, the EU will always need to collaborate with other world regions, but Europe seems unable to realise its full potential in the international arena. EU external policies and sustainable development objectives, including the provisioning of GPGs, would need further alignment at the political level to make a difference, for example by aiming to set global targets or to gradually convert EU voluntary agreements (FLEGT for illegal logging) or private initiatives into internationally binding agreements (van Schaik et al., 2009).

A closer look at underlying mechanisms in providing GPGs

To develop strategies for improving or securing the provision of GPGs (or taking care of the problem of under-supply), a further diagnosis is required of the type of GPGs concerned to design specific governance strategies. Barrett (2007) identifies the basic underlying mechanisms of GPG provision: single best effort, weakest link, aggregate effort, mutual restraint and coordination. He also shows how these underlying provisioning mechanisms determine the required form of international cooperation, the costs of provision and necessary financing and cost sharing, the enforcement agreements, and adequate institutions for provision.

Barrett (2007) describes the implications for policy making for each type of GPG. For *single best effort GPGs*, such as innovation or peace keeping, supply depends on the single best (unilateral or collective) effort. The provision of *weakest link GPGs* such as disease eradication and securing nuclear materials depends on the weakest individual effort. The provision of *aggregate effort GPGs* such as climate change protection and healthy ecosystems depends on the total effort of all countries. Protection of the ozone layer is an example of a successfully supplied GPG provided by aggregate effort. In the case of GPGs that depend on *mutual restraint*, states agree *not* to do something, such as not using nuclear weapons or not using genetically modified organisms in agriculture. For the last type of GPGs, supply depends on *coordination* and countries agreeing to do the same thing, for example standards for oil tankers in MARPOL. The conclusions from this analysis are that there are no generic solutions for GPG provision, that full international cooperation by all countries is not always necessary to provide for GPGs, and that it is not necessarily costly for governments.

Global and national public goods

Another important issue in developing governance strategies for the provision of GPGs is the relation between the provision of GPGs and national public goods (NPGs) and national policy making. This has various dimensions. Many of the least developed countries do not have enough capacity, resources and international influence to ensure that their interests in GPGs are addressed. The full participation of developing countries and the explicit consideration of equity and poverty dimensions are therefore required in international negotiations on GPG provision. Conversely, developing countries do not have the possibility to provide public goods at national level to compensate for international failure, for example investments in adaptation measures to climate change, or to contribute to the provision of GPGs. It is often necessary to develop international governance systems that provide incentives to maximise the co-production of linked GPGs and national public goods. As present negotiations show, failure to do so results in failure to reach global consensus on effective approaches. International finance obviously plays an important role in this.

The analysis in this chapter shows some starting points for developing strategies for international collective action that take into account i) the GPG at hand, ii) the role of state and non-state actors, iii) the right institutions in place internationally, iv) the scale of intervention, v) different intervention strategies, and vi) the interaction with national public goods and development strategies. The GPG perspective needs to be coherent with national policy making as national public goods will determine whether global public goods actually support the well-being of people on the ground.

FOUR

Global environmental public goods: relevance for development and poverty reduction

This chapter addresses a number of global environmental issues currently at stake. In the first half of the chapter, three environmental issues are discussed: i) a stable climate, ii) land and inland water ecosystems, and iii) marine ecosystems. The GPG character of these *environmental* issues is first described, followed by their *socio-economic* relevance for development and poverty by relating them to socio-economic GPGs and the necessary global *capacity* to be put into action to manage the issues at stake. In the last section of the chapter, scarcity of natural resources (energy, food and water, and minerals) is discussed. The global socio-economic relevance of these commodities is shown and the necessary capacities to ensure security of supply are discussed. This chapter concludes with an analysis of the benefits of environmental GPGs at different decision-making levels.

Climate

Climate change threatens the collective interest of all countries, with developing countries and the poor within these countries being the most vulnerable (IPCC, 2007; World Bank 2010a). IPCC (2007) shows that, without additional policy changes, expected trends in greenhouse gas emissions are likely to lead to an expected increase in average global temperature of 2.5–6 degrees Celsius by 2100, as compared to pre-industrial temperatures. To meet the two degrees target that is aimed for by the EU, the increase in global emissions needs to be halted by 2020 and to be reduced by 35–55% globally in 2050, compared to 1990 levels. Climate change will have large impacts on the functioning of terrestrial and marine ecosystems (UNEP, 2007). Possible climate change impacts include more frequent natural disasters, droughts, floods and sea-level rise.

Socio-economic relevance. While sustainable access to affordable energy is a prerequisite for development, climate change has negative impacts on development. The impacts of climate change mentioned above add to already existing socio-economic vulnerabilities and may lead to setbacks in development, increasing socio-economic inequality, declining agricultural productivity, socio-economic disruption, destabilisation and mass migration (IPCC, 2007). Local impacts of climate change and energy use include air pollution and the spread of diseases. Many developing countries do not have the capacity to adapt to climate change and are therefore even more dependent on a stable climate.

Capacity. For sustained poverty reduction, climate change needs to be mitigated and people need to adapt to unavoidable impacts. This involves capacity for environmental management at global, international, national and local scales. Agreements need to be made on emission reduction, mitigation, technology transfer and the financing of mitigation and adaptation in developing countries. Poverty reduction efforts have to become climate-resilient by, for example, maintaining and increasing the productivity of agricultural systems with new crop technologies, controlling the spread of vector-

borne diseases, planning and building the necessary infrastructure (e.g. for water storage, transport and coastal protection), installing conflict-resolution mechanisms, setting up insurance systems to bridge periods of minor climate-related disasters or lower productivity, monitoring and early warning systems, education and knowledge sharing. Developed countries need to make a transition towards low carbon economies (WRI with CSIS, 2009; PBL 2009).

The necessary policy efforts to reduce climate change are beyond the capacity of individual countries. There is evident individual interest for virtually all countries, yet multiple diverging interests frequently impede adequate collective action. An example of the complexity of the global capacity for environmental management is the present attempt to reach a binding agreement on climate change under the UNFCCC. What adjustments to the global governance architecture would be required to be able to mitigate climate change? Are problems currently being solved at the right scale, taking into account subsidiarity principles? Do international agreements leave sufficient policy space for least developed countries to address multiple challenges concerning poverty reduction and national development? Are technology agreements and open knowledge systems part of the solution?

Land and freshwater ecosystems

Land ecosystems, including freshwater ecosystems, provide for public goods known as ecosystem services. Ecosystem services are the benefits people obtain from ecosystems. These include provisioning services such as food and water; regulating services such as regulation of floods, drought, land degradation and disease; supporting services such as soil formation and nutrient cycling; and cultural services such as recreational, spiritual, religious and other non-material benefits. Ecosystems form the base of local livelihoods through fertile soils, water control and clean water provision. The Millennium Ecosystem Assessment (2005a) documented recent changes in the ability of global ecosystems to deliver 24 services considered fundamental to human well-being. While the delivery of some provisioning services (chiefly agriculture) has increased, about 60% of the services delivered by ecosystems are degrading, and the rate of degradation is in most cases accelerating. Healthy ecosystems have the capacity to absorb and neutralise waste. For example, a well-functioning ecosystem ensures CO_2 sequestration that provides global benefits. Of global CO_2 emissions, 20% is caused by deforestation and forest degradation. Ecosystems and biodiversity provide genetic diversity which forms an important resource for future productivity and global resilience (insurance). Ecosystems and biodiversity also represent intrinsic (existence) values and provide valuable landscapes. All these services are of global interest and in the end equally important for developing and developed countries, and are hence GPGs.

Socio-economic relevance. The major socio-economic importance of land ecosystems are local and national societal benefits based on the *productivity* of ecosystems. Local livelihoods depend on them and this can take the form of small farm communities as well as large-scale agricultural enterprises. The global interest in this production value of the land ecosystems is based on the secure supply of food, animal feed and other biological products. Also, a well-functioning ecosystem has local socio-economic importance as *a healthy environment* providing clean water and clean air. As with changes to the climate, changes to the ecosystems alter disease patterns and human exposure to disease outbreaks.

Capacity. Adequate implementation of international environmental policies for biodiversity is often hindered by conflicting local interests in both developed and developing countries. Illustrative for this are the conflicting interests within the agricultural sector in relation to biodiversity conservation. Agreements to avoid biodiversity loss and desertification (UNCCD, UNCBD) are becoming increasingly important global instruments for collective action. The development of global knowledge and assessment mechanisms is required. An example is the recently-decided equivalent of IPCC for biodiversity: the 'Intergovernmental Platform on Biodiversity and Ecosystem Services' (IPBES). Tools that still need to prove their global applicability are systems for 'payment for ecosystem services' mechanisms such as REDD. Certification systems and round tables on commodities connect stakeholders across boundaries on sustainability issues. At the regional scale, agreements and collaboration on water use within drainage basins or on cross-border nature protection can be seen as a global capacity for environmental management. As a last example, the planning, financing and implementation of projects for the protection, sustainable use and restoration of landscapes involves global capacities directed at agreements, education, communication, science and stakeholder participation.

Marine ecosystems

Marine ecosystem services (support, provisioning, regulation and culture) are equally important at the global level for developing and developed countries. The world's oceans play a central role in economic, environmental and social development (UNEP, 2010a). Major environmental changes taking place in marine systems are an increase in

sea surface temperature, land and sea ice melting, ocean acidification and biodiversity degradation mainly caused by overfishing and pollution. These have negative impacts on the goods and services marine ecosystems provide (UNEP, 2007; World Bank, 2010). Almost all marine fish stocks are fully exploited, over exploited or have crashed (SAUP, 2006 in UNEP, 2007). Marine ecosystems are the primary regulator of climate (the global ocean conveyor belt) and an important sink for greenhouse gases (UNEP, 2007).

Socio-economic relevance. Marine capture fisheries account for about 70% of total world capture. In 2005, the share of fish protein in the total animal protein supply was 15%, with a slightly higher share in low income countries (18–20%). The social and economic importance of marine ecosystems differs considerably across countries. The majority of fish production is located in Asia and the Pacific (in particular China). The fishery sector provides a livelihood for some 200 million people, especially in the developing world, where one in five people are dependent on fish as their primary source of protein. Fisheries are still the most ecologically-compatible system of meat production, in terms of ecological footprint as well as energy consumption per ton of meat produced. Overfishing, sometimes stimulated by perverse subsidies, destructive fishing practices and illegal fishing, both by local and non-local fishers, threatens the social and economic viability of fishing communities, their livelihoods and food security, both locally and globally (FAO, 2009). There is also increasing concern about the ocean as a repository of human inorganic waste, taking the form of a massive plastic soup concentrated in certain places as the result of particular ocean currents.

Capacity. The protection of oceans and seas is regulated by international agreements and national legislation. For the larger part of the high seas, 50% of total seas, no legislation on their use – that is fishery – exists. Developing countries enter into fishery agreements within their territorial waters with the EU, China, Japan and Russia. These agreements are mainly beyond the scope of public control. The Marine Stewardship Council deals with sustainable fishery practices and involves all stakeholders in fish commodities. NGOs are increasingly using Marine Conservation Agreements (MCAs) to complement other marine and coastal protection efforts. Despite the globally recognised importance of the world's fish stock, its problematic management is highly illustrative for the collective action dilemma (Collier, 2010). Stakeholders such as the fishery sector, consumers and governments have thus far been incapable of organising basic collective action to make the fishery sector more sustainable and more efficient.

Scarcity of natural resources

Scarcities have three interdependent dimensions (PBL, in prep.). The first is a *physical* dimension: the availability in relation to demand. Availability of resources is determined by physical and ecosystem characteristics and the main question is: is there enough to meet everyone's needs? Mineral resources such as fossil fuels, phosphate and metals are finite and non-renewable. Resources such as food and water are generally renewable. Secondly, there is an *economic* dimension, that is availability at the right place (functioning of markets) and in the right form (production process). This concerns bottlenecks over the whole supply chain, for example insufficient production capacity and infrastructure. Thirdly, there is a *political* dimension, geopolitical actions that influence the availability or affordability of resources at a certain place. World reserves of several resources are concentrated in a limited number of countries, creating power concentrations. This gives rise to political fears in import-dependent countries that their dependency might be misused politically by exporting countries. In a new multipolar world order, countries show their power by claiming their resource base.

As explained in Chapter 2 of this paper, the collective action dilemma concerning access to scarce natural resource is less related to public good characteristics. Rather, the markets for scarce natural resources are often suboptimal due to market concentrations. Nevertheless, the increasing scarcity of natural resources will have consequences for socio-economic GPGs (e.g. instability) and the necessary global capacity to mitigate these consequences *is* considered a GPG. When scarcity occurs, diverging interests to secure access to scarce resources between and within countries have to be taken into account in analysing the socio-economic relevance and designing necessary related global capacities. The issues that are dealt with in this paper relate to security of energy, food and freshwater, and minerals.

Concerning *energy security*, the present global energy supply consists for 80% of fossil fuels. In the business-as-usual scenario of the International Energy Agency (IEA, 2009), this percentage may still be the same in 2030 but with a 40% higher demand. Based on current proven reserves and present production rates, the depletion of conventional oil reserves would take 40 years, of gas reserves 60 years and of coal reserves more than 100 years. These estimates do not take into account new reserves to be discovered, an increase in recovery factor, changes in production rates and non-conventional resources. Emerging economies are increasingly competing with the OECD for fossil fuels, as most of the growth in demand stems from emerging economies. World reserves of oil and gas in particular are increasingly concentrated in a limited number of countries.

Concerning *food security*, growth in agricultural demand and slowing growth in agricultural production have pushed up prices in recent years. Reasons for slowing growth include the decreased concern for public investments in agricultural R&D, lack of market access for southern farmers and the negative effects of agricultural subsidies. Consumption of meat in developing and mid-income countries has increased, while cereal stocks have declined. Also, biofuel policies have resulted in an increasing demand for cereals and oil crops. The potential to increase food production by increasing yields and expanding agricultural land are theoretically enormous, but in practice production increases may be accompanied by increasing pressure on ecosystems and vulnerability to pests and diseases. In addition, most of the areas that are suitable for the intensification and expansion of agriculture are currently used by local population groups or for natural areas.

As for *water security*, renewable freshwater is an increasingly scarce commodity. Agriculture (70%), industry (22%) and drinking water (8%) are the main human applications of water. Demand is often larger than supply. Population growth and increasing industrial and agricultural production will result in an increasing demand for water. In 2008, almost 900 million people lacked access to safe drinking water (WHO and UNICEF, 2010). Human use of water competes with environmental needs in arid as well as humid areas. In sub-Saharan Africa, water scarcity is mainly economic: lack of human, institutional and financial capital limit access to water.

With respect to *minerals security*, for most metals global reserves are much higher than current production, although if minerals need to be extracted from ore with lower concentrations and from difficult locations, this will lead to higher costs. Recycling offers room for manoeuvre but requires additional energy inputs. The key question, for example for renewable energy technologies, is 'Will the necessary mineral resources be available in time and at acceptable costs to meet burgeoning demand for current and emerging products and technologies?' Many minerals are found in a very limited number of countries, with the largest producing countries in some cases holding more than three quarters of global reserves. Europe depends on foreign supplies for a large number of metallic minerals. China dominates the world production of many strategic minerals and Europe's policy response has been rather slow.

The scarcity of phosphate has been analysed in detail (PBL, in prep.). Phosphate is an essential raw material in fertilizer, a non-renewable source for which there is as yet no substitute. It can be recycled, but this only occurs to a very limited degree. Increasing food and biofuels production is increasing demand. Phosphate ore is found in a limited number of countries, primarily Morocco, China, South Africa and the United States. China has more than three quarters of total reserves and imposed an export tariff to secure supply on the domestic market. An extra problem is the pollution of phosphate ore with radioactivity.

Socio-economic relevance. Scarcity issues generally relate to poverty and growth and sharing benefits and costs across and within countries and generations. Predictable and secure access to the world's energy resources through stable and open markets requires collective action. If governance of these markets fails (e.g. gas supplies are disrupted), economies suffer and the public good of regional and global peace and stability can be jeopardised (PBL, in prep.). In the absence of strong institutions and agreements, water scarcity issues may lead to transboundary tensions, although collaboration is up to now taking place (PBL, in prep.). Water scarcity leads to migration to other areas.

Capacity. Capacity for management of scarce resources refers to the 'provisioning' arrangements for continued access to increasingly scarce natural resources: a global trade regime for market access, price stabilisation schemes, strategic reserves, and so on. International organisations have a contribution to make in developing and implementing policy options to ensure secure access to vital resources. Directions for policy making include improving resource efficiency and recycling, focusing R&D on substitutes and building strategic reserves, strategic partnerships and agreements with supplying parties (PBL, in prep.), which require much the same global capacities for environmental management as those indicated above.

Policy options to secure access to energy will be developed by stakeholders with highly diverging interests (both consumers and producers). Required collective action could be directed at expanding the resource base and reducing demand growth, improving functioning of markets and preventing politically motivated supply disruptions and market distortion. Policy options to ensure food and water security are expanding production, reducing demand growth (e.g. less meat consumption), preventing supply disruptions, and improving access to and functioning of markets and information. Again, the stakeholders involved in developed and developing countries have large and diverging interests. Access for farmers to markets and information are of crucial importance. This is most evident in Africa, where urbanisation is going at full speed and enlarges the gap between consumer markets (urban areas) and production (rural areas). Therefore a crucial part of the food consumed in the cities is imported and changing demand has barely been transmitted to production in the rural areas. Policy options to deal with scarcity of minerals include expanding

Table 2

Examples of benefits of environmental GPGs and commodities for development and poverty reduction at a global, regional (international), national and local level

Environmental issues	Global	Regional / international	National	Local (poverty reduction)
A stable climate	Geopolitical stability; food security; prevention of mass migration; prevention of spread of vector-borne diseases	Stability (e.g. concerning access to increasingly scarce water resources); food security; controlled migration; controlled spread of vector-borne diseases	Stability (e.g. concerning access to productive land, water); food security; controlled migration; controlled spread of vector-borne diseases	Limited disruption by weather extremes; maintaining productivity of agricultural systems; controlling the spread of vector-borne diseases; managing conflicts
Healthy land and freshwater ecosystems	CO_2 sequestration & climate regulation; long-term supply of food, feed, fibre and fuel	Stability notably around trans-boundary rivers; food security	Food security Secure freshwater supply	Productivity of agricultural and local ecosystem services for subsistence (e.g. purification, forest products)
Healthy marine ecosystems	CO_2 sink & climate regulation; long-term supply of food & feed	Coastal protection; food security (fish)	Coastal protection; food security (fish)	Productive fisheries; coastal protection (e.g. mangroves)
Managing energy security	Energy security	Regional energy collaboration	Economic development	Equitable access to natural assets and benefit sharing
Managing food and water security	Geopolitical stability	Stability through fair distribution of water in international drainage basin, upstream/ downstream	Optimal use of national land and water resources, e.g. through spatial planning	Basic needs
Managing minerals security	Access to vital finite mineral resources		Source of income for exporting countries	Equitable access to natural assets and benefit sharing

the resource base and reducing demand, improving functioning of markets and preventing politically motivated supply disruptions and market distortions (PBL, in prep.). The options mentioned need to be evaluated in relation to the provision of other GPGs because synergy or trade-offs may occur. For example, options for improving energy security may be at odds with a safe climate.

Benefits of environmental GPGs at different scales

In analysing environmental GPGs, and subsequently identifying relevant policies, it is important to jointly recognise the public benefits of environmental GPGs and security of supply of scarce natural resources for development and poverty reduction at a global, regional[3] (international), national and local level. These benefits are summarised in Table 2. From the analysis above it also becomes clear that the provisioning of environmental GPGs and ensuring sustainable resource use require very much the same type of capacity GPGs, underscoring the need to make that part of international cooperation as well.

Note

3 Regional scale implies geographical coherence, e.g. the international drainage basin of the river Nile, and is a specific form of international scale. International scale can also mean another form of coherence, e.g. the OESO, LDCs, or small island states.

The Netherlands and environmental global public goods

In the previous chapter we analysed global environmental public goods and scarcities of natural resources and their relevance for sustainable poverty reduction and global capacities for environmental management at different levels. In this chapter we make an initial attempt to assess the position of the Netherlands in relation to the environmental GPGs and scarcities mentioned in the previous chapter. However, against which criteria should that position be evaluated?

The degree to which the Netherlands plays a role in causing the problems co-determines our responsibility to work on their solution. If additionally the Netherlands has a meaningful leverage on these issues, allocation of efforts and resources for solving these issues would also be justified. Where the Netherlands does have a comparative advantage in moving agendas it offers opportunities for achieving objectives through effective foreign policy. More direct Dutch interests may also provide compelling reasons to get involved. Finally, development cooperation has over the past decades been a major element of Dutch foreign policy based on motives of international solidarity towards least developed countries and the alleviation of poverty. In the framework of GPGs, development assistance is considered as enlightened self-interest, not just solidarity (WRR, 2010).

We therefore analyse the position of the Netherlands for the environmental GPGs and scarcities of natural resources presented in Chapter 4 using the following four criteria that relate to different motives behind international cooperation:

1) Impact: to what extent is the Netherlands responsible for global environmental management and increasing scarcities? (responsibility)
2) Influence: what is the capacity of Dutch society, its private sector and government to contribute to collective solutions to secure global public goods? (leverage, influence)
3) Enlightened self-interest: to what extent are Dutch interests at stake, either because we depend on or benefit (commercially or otherwise) from collective efforts to secure global public goods?
4) Relevance for poverty reduction: to what extent is securing global public goods important for development and poverty reduction? (solidarity)

Climate

Impact. GHG emission in the Netherlands was about 13 tons CO_2 equivalents per capita per year in 2008, and this number is projected to increase to about 21 tons CO_2 equivalents per capita per year in 2040, without new policies (Compendium voor de Leefomgeving, 2010; PBL, 2009). The major sources of CO_2 emission are the energy sectors (electricity and oil), the agricultural sector and the transport sector. Worldwide GHG emissions per capita per year should be 3.5 tons CO_2 equivalents to reach the two degree target for climate as aimed for by the EU.

Influence. The Netherlands might have punched above its weight in climate matters, possibly because of a rather

pro-active political stance in the 1990s on global environmental concerns in the wake of the Rio conventions. It has, for example, had two successive heads of the UNFCCC, helped broker the Kyoto protocol and made strong contributions to the IPCC. It has also been at the forefront of developing carbon markets through its support to the World Bank, as well as through its own progressive financial sector.

Formal negotiations are conducted through the European Commission where, due to expanding membership, the Dutch influence is generally under pressure. At the Copenhagen conference, the EU as a whole was criticised for reduced leverage on the outcome. High levels of concern among the general public and active engagement through NGOs remain a strong driver for political commitment towards influencing negotiations on a possible global agreement. The Netherlands recently launched a major renewable energy development programme at a cost of 500 million euros, which helps in building a reputation.

Enlightened self-interest. Water systems in the Netherlands depend crucially on climate-related factors such as sea level and rainfall variability. Both flood protection and the management of run-off water during excess rainfall will be increasingly difficult. Hence, the Netherlands obviously has an interest in mitigating climate change. At the same time, the global market for Dutch know-how in water management is expected to strengthen. The financial sector may also want to capture opportunities in market-based mechanisms in emerging global carbon markets. The Netherlands has a relatively weak position on the emerging market for renewable energy, but may be able to catch up on for example wind energy at sea.

Relevance for poverty reduction and development. Climate mitigation is in the short term less relevant for least developed countries than access to affordable energy and low carbon development. Access to modern forms of energy is crucial for development and poverty reduction. The possibility to leap-frog from carbon intensive development pathways to low carbon development pathways is relevant for national and local development and poverty reduction, especially for the emerging economies. Adaptation strategies are highly relevant for national development and poverty reduction. If not addressed this could lead to high additional costs for developing countries and the most vulnerable people in those societies.

Land and freshwater ecosystems

Impact. Consumption in the Netherlands requires an area of land three times the size of the Netherlands (in the Netherlands and abroad). About 45% of this land claim is for consumption of food and 55% for wood products (paper, carton and other wood products). The Netherlands occupies about 0.8 hectares per capita, which is lower than most other developed countries because the Netherlands uses the more fertile lands (CBS et al., 2009). It is estimated that the Dutch contribution (for consumption and production) to deforestation worldwide was on average 160,000 ha per year in the period 1996–2005 (Grieg-Gran and Kessler, 2007).

The Netherlands influences freshwater resources in third countries through the import of water-intensive agricultural commodities such as cotton, sugar, soy and coffee (Hoekstra & Chapagain, 2007). If these commodities are produced in areas with water scarcity, this may negatively impact water availability for drinking and local food production. This is for example the case in South Africa, Central and South-East Asia, Central America and southern Europe (Van Oel et al., 2008).

Influence. By virtue of being a large importer of agricultural commodities, Dutch companies (e.g. Unilever) and their financiers (e.g. Rabobank) have adopted a leading role in defining global sustainability standards, partly driven by an active NGO community. The Dutch government in turn supports collective standard-setting efforts for the main agricultural commodities that account for 'damaged global public goods'. It does this through commodity round tables and the Sustainable Trade Initiative (IDH; *Initiatief Duurzame Handel*), as well as through its sizeable support to development banks (notably the World Bank and IFC) and UN agencies. The EU is a particularly important forum for expanding Dutch influence for support of sustainability criteria as an international public good (developing governance systems), opening avenues for its private sector (self-interest) and addressing our impact. The EU is also an important forum for policy coherence, for example on agricultural and trade policies in view of poverty alleviation and ecosystem protection.

Having been at the cutting edge of agricultural intensification, the Netherlands has built up a strong expertise in highly productive, resource-efficient technologies (e.g. horticulture and greenhouses). A similar story applies to the Dutch water sector, where the Netherlands could wield international or global influence through its considerable collective expertise and knowledge institutions. This knowledge and expertise can be used to support international public policy making (public good) or be made available as a private good. At

the same time, with growing international capacities on these issues in other regions, this needs to happen through international collaboration. The Netherlands is also at the forefront of experimental payment schemes for ecosystem services, and voluntary efforts to expand such markets, although with little international impact as yet.

Enlightened self-interest. The Netherlands relies for its food, feed, fibre (biomass) and timber supplies both on open and stable markets and ecosystem stability, to ensure the continued and sustainable production of agricultural commodities. It also has an interest in market access for its intellectual property, technology and investments to countries that are intensifying their agricultural production systems. Influence is clear from the collective market share, but companies also need a license to operate from society based on responsible behaviour in the social and environmental domains.

Relevance for poverty reduction and development. Stable ecosystems are highly relevant for poverty reduction and the interaction between ecosystems, biodiversity and poverty has received a large degree of interest (Tekelenburg et al., 2009; Leisher et al., 2010). It is evident that the rural poor rely for the largest part of their livelihood on crop and livestock activities and forest products. In addition, many aspects of quality of life for the poor depend on the physical environment. If the problem of degrading ecosystems is not adequately addressed, other policy measures to reduce poverty are less likely to succeed. Relations are, however, complex and only partly understood. Moreover, recent studies indicate that national and local development along business-as-usual scenarios are so far always achieved by converting diverse and multi-functional natural ecosystems into less diverse and more specialized forms of land use. In many cases these conversions do not lead to improvement of income for the poor while at the same time their access to important natural resources becomes more restricted (Millennium Ecosystem Assessment, 2005; Kessler et al. 2007; Brink ten et al., 2010; UNEP 2010b). Exceptions are restoration projects for extremely degraded ecosystems, where increasing biodiversity may go hand in hand with poverty alleviation.

Marine ecosystems

Impact. The Dutch fish catch is 0.6% of the world total. About one third of the fish landed by the Dutch fleet is caught off the coasts of Mauritania and Chili. The rest comes mostly from the waters around the UK and Ireland (PBL, in press). Other impacts on the value of marine ecosystems come from tourism and emission. Rood et al. (2005) estimate that the Dutch contribution to the total decline in the quality of the ocean worldwide is 2%.

Influence. As a fishing nation, the Netherlands is a small player on the global scene. The EU, however, is a large one. Dutch companies (notably Unilever) have adopted a leading role in defining global, albeit voluntary sustainability standards, such as the Marine Stewardship Council (with WWF). Through its active engagement with UN agencies (FAO, IWC, other fishery bodies and UNCLOS), the Dutch government is – often through the European Commission – working towards healthy ecosystems, supported by knowledge centres such as WUR/RIVO.

Enlightened self-interest. The most direct interest the Netherlands – its food industry and consumers – has in healthy marine ecosystems is the prevention of the collapse of fish stocks. The Dutch fishery sector exports around 80% of its production; 20% is for domestic consumption (Hartogh et al., 2008). It is among the top three exporters of fish and fish products within the EU and ranks fifth in terms of volume of catch among member states (Eurostat).

Relevance for poverty reduction and development. The livelihood and growth prospects of many coastal communities depend on available fish stocks and on the quality of the marine environment. Africa and Asia have 3.6 and 37.4 million fishers respectively, representing 94.2% of the total number of fishers in the world. Average capture in Africa and Asia is 2.1 and 2.5 tons per year per person respectively (compared to 21.4 tons per year per fisher for European fishers). As previously mentioned, the scope of economic activities beyond primary fish production is much larger and again, in number of people, extremely important for the poor.

Management of natural resources: energy, food and water, and minerals security

Impact. With 16 million inhabitants the Netherlands has, compared to other countries, a relatively small total impact on increasing scarcity of resources such as energy, food, water and minerals and metals. Regarding per capita energy use, the Netherlands is close to the OECD average. Western Europe has relatively large imports of about 5 Mt phosphates per year (in 2000), equivalent to a share of the global phosphate consumption of about 5%. Similarly, the Dutch claim on scarce metals is limited on a per capita basis.

Influence. As a big donor and active participant in many international organisations, and as a party to virtually all multilateral environmental agreements, the Netherlands has some influence on the design of global institutional arrangements for dealing with scarcities. That influence, however, may have ebbed with the delegation of responsibilities to the European Commission and the growing clout of emerging economies, for example in the G20. However, the Netherlands may wield more indirect influence on global environmental governance through its progressive business and financial sectors (including its pension funds), and its active and internationally-oriented NGOs.

Enlightened self-interest. The Netherlands, being an open economy, stands to gain from stable and open markets to vital but finite natural resources, notably oil and gas. It thus has a keen interest in a well-functioning system of global governance that maintains access to these markets. As well as managing environmental scarcities (including securing energy supplies), the Netherlands shares an interest in managing environmental risks brought about by technology transitions such as nuclear proliferation.

Relevance for poverty reduction and development. Food, water and energy constitute basic needs and thus when these resources become scarce the poor will be the most exposed to the consequences of scarcity (World Bank, 2010b). Scarcity of energy is frequently mentioned as an obstruction to building a livelihood, for example through small enterprise development. Competition for scarce resources offers export opportunities for resource intensive countries. Governance systems that offer dependable and equitable market access to energy and other vital commodities help mitigate climate change and facilitate offset markets (for carbon and other ecosystem services), which are important for developing countries.

Summary

The analysis in this chapter is summarised in Table 3. Without claiming to be comprehensive or complete, we think that this analysis can provide a basis for the exploration of the strategic choices that can help to develop a coherent rationale for Dutch international cooperation made in Chapter 6.

Table 3

Dutch position with respect to environmental GPGs and scarce natural resources

Issue	Global impact	Global influence	Enlightened self-interest	Relevance for poverty reduction and development
A stable climate	- Emission of GHG of 16 tons CO2 equivalent per capita (compared to 3.5 tons for two degree target)	- Government (through EC): prominent participant / honest broker in international climate negotiations; major donor to World Bank, GEF, UN agencies + climate funds + MRV - Private sector: large investors (pension funds) pushing for regulatory clarity (i.e. international agreement) - Civil society: broad-based support & informed engagement (e.g. MRV) - Expertise: clean tech cluster (TUe); climate-friendly/resilient spatial planning	- Global emission reductions to mitigate climate change impacts (notably sea-level rise) - Prevention of instability, conflict, migration as may be induced or aggravated by climate change - Private sector: efficiency + renewables in emerging economies; carbon trade & finance (incl. REDD)	- Global emission reductions to mitigate climate change - Impacts on water availability, agricultural productivity, public health, sea-level rise, etc. hamper development - Prevention of instability, conflict, migration as may be induced or aggravated by climate change
Healthy land and freshwater ecosystems	- Area occupation (ha per capita) because of consumption of food (0.36 ha) and wood and wood products (0.44 ha)	- Government: active participant in international organisations (e.g. IFC and equator principles) and MEAs - The Hague: centre for international dispute resolution (e.g. transboundary water) - Private sector: active participant in sustainable commodity round tables (e.g. Unilever) - Civil society: broad-based support & informed engagement - Expertise: intensive & efficient agriculture; PES schemes (WUR)	- Stable ecosystems that allow continued and sustainable production of agricultural commodities - Private sector: intensive & efficient agriculture; PES schemes - Private sector: water treatment - Water sector: water management expertise (consultancies, infrastructure)	- Rural livelihoods are based on crop and livestock production and forest products - Examples: deforestation, desertification
Healthy marine ecosystems	- Dutch contribution to the decline of the quality of ocean is 2% of total decline (Rood et al, 2004)	- Government: active participant in international fishery bodies and agreements (through EC) - Private sector: active participant in sustainable fisheries initiatives (e.g. Unilever and MSC) - Civil society: broad-based support & informed engagement - Expertise: sustainable fisheries (WUR/ RIVO)	- Prevention of fish stock collapse - Private sector: fishing fleet; food processing - Consumers: fish	- Productive fisheries important for employment, protein
Energy scarcity	- Energy: Small country with high use of energy per capita	- Government (through EC): active participant in relevant organisations: WTO, OECD, World Bank, UN agencies, etc. - Private sector: large businesses pushing for market access (level playing field) - Expertise: green tax reforms - Metals: high tech industries depend on availability of metals	- Open economy requires dependable access to stable markets - Private sector: large internationally operating companies and investors (e.g. pension funds) - Innovation requires protection of intellectual property rights?	- Energy is important for rural livelihoods and small enterprise development
Food and water scarcity	- Competition between food crops and cash crops including biofuel crops - Water demand for water-intensive crops (irrigation)			- Food is a basic need (1 billion people suffer from hunger) - Access to clean water (health) - Access to water resources for production
Metals and minerals scarcity	- Western Europe accounts for about 5% of the total world consumption of phosphate			- Less important: mining provides income opportunities for the poor

Implications for policy making

In the previous chapters we developed an analytical framework that can be used to develop a coherent rationale for international policies on poverty reduction and the global environment. We used this framework to identify and analyse relevant global public goods and conclude the analysis in this paper by exploring policy choices related to the implications of a GPG perspective for sustainable poverty reduction and the global environment.

A coherent strategy for international cooperation for global environmental issues and poverty reduction can be developed by answering three key questions: i) what does the Netherlands want to achieve through international cooperation on these issues, ii) what needs to be the focus in providing GPGs, and iii) what are the implications for the organisation of international cooperation? The answers to these questions are political; this paper is restricted to identifying choices.

Motives and aim

The first question to answer is what does the Netherlands want to achieve through international cooperation? This is a political question. The Millennium Development Goals, also subscribed to by the Netherlands, set international political targets for development cooperation. The current international cooperation mission is broad: i) protect and promote the interests of the Netherlands abroad, ii) promote an international legal order system, as the Netherlands is an external oriented nation, iii) contribute to building a safe, stable and prosperous world, iv) combat conflicts, poverty and injustice, v) contribute to the design of Europe and coordinate the Dutch voice (Ministerie van Buitenlandse Zaken, 2010). Enlightened self-interest is an important motivation behind this mission, in addition to solidarity and poverty alleviation. Most of these areas relate to global public goods.

Ensuring the provision of environmental GPGs will support poverty reduction and contribute to ensuring socio-economic GPGs such as peace and security. Capacity GPGs will be necessary for developing countries. At the same time, an increased focus on GPGs should not be at the expense of supporting the provision of national public goods, as that would render the provision of GPGs less effective on the ground or contribute to under-provision of GPGs. Views are likely to diverge regarding the question of what the Netherlands aims for through development cooperation. The sustainability outlook (MNP-RIVM, 2004; MNP, 2007) elaborates four different world views and their related visions on international cooperation, which are simplified by successive keywords: global market, global solidarity, safe region and caring regions. In some world views, poverty reduction is a logical part of the GPG of global solidarity. In other world views, sustained poverty reduction will be achieved under a well-functioning GPG of the global market. In the first world view, poverty reduction is a goal in itself while in the latter the provision of other GPGs leads to poverty reduction. The GPG perspective contributes to this debate by arguing that

Table 4

Tentative scoring from a GPG perspective of the importance of global environmental issues and scarcities taking into account the position of the Netherlands

Global environmental issues and scarcities in GPG perspective	The position of the Netherlands			
	Global impact	Global influence	Enlightened self-interest	Relevance for poverty reduction and development
Stable climate	*	***	****	**
Sustainable land ecosystems	**	**	***	*****
Sustainable marine ecosystems	*	*	**	***
Energy security	*	**	*****	****
Food and water security	**	***	*	*****
Minerals security	*	**	****	*

* is low and ***** is high priority

there are common interests and that the different criteria identified in this paper can help to show where these different perspectives on international cooperation, poverty reduction and global environmental change meet.

Based on the analyses in this paper, we suggest a tentative scoring of global environmental issues from a GPG perspective against the four criteria of relevance for the position of the Netherlands. This scoring is intended to stimulate a debate about priorities (see Table 4). Table 4, which is an abridged version of Table 3 in Chapter 5, provides a relative and subjective rating (on a scale of 1–5) of GPGs. It is clear that different stakeholders will do this rating differently. This table should therefore be used as a process tool to be completed by different stakeholders. This will help further clarify visions, ideas and positions amongst stakeholders as input for priority setting in policy making.

To illustrate the subjective nature of the matrix, we provide some examples of arguments and dilemmas behind this tentative scoring.

The Netherlands' national impact on the global climate is limited due to its small population size. This argument could apply to all issues, but also needs to be considered on a per capita basis, which changes the picture. Because of the land claim abroad for the production of animal feed the impact of the Netherlands on land ecosystems is ranked higher.

Dutch self-interest in climate change solutions is more prominent, not only for physical security in the part of the Netherlands below sea level, but also because the Dutch financial sector and other sectors such as the offshore wind industry could benefit from an emerging market for climate change solutions. Conversely, nationally important economic sectors such as agriculture and transport could be constrained by international targets and agreements. Dutch self-interest in food security is relatively limited because food insecurity is most important for the poorest (in particular in least developed countries).

Ecosystem services as an important income source and food security as a basic need are relevant for poverty reduction. For future mineral scarcity this seems less the case. Marine ecosystems, though globally important, rank low on relevance for Dutch policies because of the relatively limited economic importance of fishery activities. Coastal protection is evidently an important policy issue in the Netherlands, taken into account through the GPG of a stable climate.

Focus

The second question is what needs to be the focus of international cooperation? Concerning the issues of the global environment and poverty reduction as elaborated in this paper, we distinguish three type of choices: thematic choices, the need to link domestic policies and international policies, and the time dimension of policies.

Thematic choices: which global issues and GPGs are most relevant for poverty reduction and the global environment?

For major global environmental issues (safe climate, biodiversity, marine ecosystems and scarcity of natural resources) the challenge is to reach consensus on which environmental values matter most and which quality

targets need to be set. Factors such as domestic private sector interests and civil society concerns as well as geopolitical considerations influence these political decisions.
Environmental GPGs are interrelated. If priority is put on one theme, others will be influenced. Climate change targets are examples of a clear articulation of an environmental GPG. However, if international agreements on climate push markets to make massive investments in biofuels, then food security, ecosystems and biodiversity could be at stake.

Oceans are an example of a GPG that gets less attention than it deserves internationally. Would the Netherlands be willing to move that issue forwards in the international arena? If agreements were to be reached on large-scale land or marine protected areas, regional food security might be at stake or could improve if local user access were properly organised. However, these thematic choices on global environmental issues not only relate to ensuring the provision of environmental GPGs, but also have a direct connection to a number of socio-economic and capacity GPGs.

Coherence between domestic and international agendas is necessary

GPG provision needs to result in coherence between domestic and foreign policy agendas. If, for example, national economic activities and consumption patterns have a significant global impact on poverty and environment, domestic consumer choices, technology choices or consumption levels need to be subject to policy. The impact on biodiversity can be influenced by stimulating demand for sustainable production and by altering consumption levels. On the production side, policies could stimulate the agricultural sector to identify criteria for sustainable sourcing of animal feed. Other sectors could invest in more sustainable technologies. Regarding access to energy, security can also be assured by influencing the national fuel mix, including choices on investments in renewables. The need for coherence between national agendas and external relations also implies involving relevant line ministries in the development of international cooperation. For example, food security is clearly an issue for the Ministry of Agriculture.

The trade-off between domestic and external policies also becomes visible when unsustainable levels of emissions are being offset by the commoditisation of carbon through international market mechanisms. Although often questioned, it may allow the avoidance of drastic changes in production and consumption patterns in the Netherlands.

Issues of timing: short term versus long term in the provision of GPGs

A well-known dilemma in technology development is whether to invest in currently available technologies or await new innovations (that ultimately may be the result of a single best effort). Furthermore, in addition to the plain technological argument there is also the cost argument. Policymakers need to choose between the costs to the economy now and to current generations, or the much higher costs later and to future generations. For example for biodiversity and climate change, the cost of policy inaction appears to be much higher than the costs of immediate policy interventions (Braat et al, 2008; Stern, 2006). The much-debated Kuznet curve (environmental damage is a temporary cost until societies are rich, develop their technologies and they are willing to address and pay for the environment) is clearly invalid for some environmental costs (e.g. species extinction) and unproven and highly questionable for some others (e.g. CO_2 emissions and climate change)(Vollebergh et al, 2009). Moreover, instead of addressing the costs, wealthier countries too often transfer them to poor countries. A third choice is which GPGs are most important to developing countries. A point in case is energy security and access to energy as a short-term priority and a low carbon energy system as a long-term concern.

Organisation

The third question to be answered is what are the implications of a GPG perspective for the organisation of international cooperation? We identify choices regarding policy coherence across sectors, country choice and geopolitics and the selection of channels and actors to make the organisation of international cooperation more effective and efficient.

Policy coherence across sectors and objectives

Effectiveness in providing GPGs and in achieving poverty reduction requires policy coherence across sectors and objectives. This involves difficult choices in which not all can be winners. Without explicit consideration of impacts on equity and poverty reduction, poorer countries may lose out in international negotiations on GPG provision. Benefits for European farmers or fishermen may have to be traded against the benefits for farmers and fishermen in developing countries. In short, the adequate provisioning of GPGs depends on negotiations and on the willingness of 'winners' to transfer benefits to 'losers' or to those who incur the costs.

The Netherlands already actively pursues the 'Policy Coherence for Development' agenda, albeit with mixed results (Seters and Wolff, 2010). It would for example be

useful to elaborate in greater detail to what extent priorities in the EU, OECD/DAC and Dutch PCD agenda are consistent with a GPG agenda. Without the explicit consideration of impacts on equity and poverty reduction, poorer countries may lose out in international negotiations on GPG provision.

Which regions and countries to focus on in a changing geopolitical context?

If foreign policy increasingly focuses on the provision of GPGs, this will affect the content and weight of relations with specific countries. This impact will not only originate from environmental GPGs, but also from such socio-economic public goods as peace and stability or financial stability. Obviously, MICs, LDCs and BRICs (emerging economies) play different roles in relation to environmental GPGs. Least developed countries may have control over vast forest resources harbouring global biodiversity or fixing carbon, or may control critical minerals or energy resources. Fragile states could constitute a weak link in the provision of specific GPGs. Policies on the provision of GPGs shaped by a focus on specific countries or regions will have consequences for current international cooperation and development cooperation.

Another consideration could be whether more efforts should be directed at the provisioning of regional public goods at the expense of an exclusive country-based focus. Examples could be the Amazon region (carbon sequestration, biodiversity) or regions with severe ecological threats (management of the Mekong or Ganges, the Sahel or water crisis in North Africa). The impact or influence of the Netherlands on these regional issues with global implications (e.g. expertise in water management) could steer such decisions.

Human and financial resources for national and international governance are limited, hence all choices have trade-offs. For example, will the Netherlands decide to make a deliberate effort to maintain its comparative influence at the UN and European level in climate policy? If it loses this position, for whatever reason, does it then choose to downscale its ambition and re-allocate capacities? Regarding other topics, are we involved with considerable effort and little influence or interest, or vice versa?

Which channels and actors are most important in the provision of GPGs?

A dilemma for GPG provision is the choice and relative weight between bilateral (or unilateral) and multilateral channels. Bilateral efforts might seem politically appealing as they may seem to offer more control and bring results closer to home. Pressure from private sector or civil society might also appeal to bilateral interventions. However, GPG provision typically requires multilateral efforts. One approach is to move the EU Commission to a concerted and strong position in the international debate. Its potential to influence multilateral negotiations over global public goods has not yet fully materialised. Another approach is to exert influence on different multilateral channels (WB, G20, OECD, UN), but which channel would be most appropriate? Apart from influencing multilateral positions through formal representations, another proven tactic is to place key personnel with these agencies.

Multilateral practices in turn risk developing excess capacity of regulation that reduces national policy space. For developing countries in particular, it is crucial to maintain sufficient policy space for pressing development challenges in their national economies without being constrained by the mandates of global governance dictated by richer country concerns (Stiglitz, 2002). Yet, on the other hand, when international or global governance fails on GPGs, unilateral alternatives and defensive expenditures from powerful countries will prevail, possibly to the detriment of the poor and inefficient for the global community.

Formal global governance, as a collective of governments, is just one element in the game and might well be too sluggish. So the question to consider is what role for governments is necessary to provide for GPGs and what can be arranged through the market? International markets, including financial markets, global corporations, international civil society and consumers increasingly play a crucial role in defining and performing environmental management. Fit-for-purpose issue networks working on markets (e.g. round tables on soy, cotton or fish) or targeted investments in GPGs through specific groups (e.g. World Bank, G8, G2, small island states) might offer more effective ways forward. The legitimacy of such arrangements requires special attention. International rather than global governance could also be considered for more agile opportunities to solving issues around GPGs. For example, bringing together major emitters of GHG and major climate change victims could be considered. Likewise, countries with high population densities resulting in claims on large areas abroad could attune their policies together with biodiversity rich countries.

Concluding remarks

The GPG perspective discussed in this paper summarises public interest in international cooperation in a single analytical framework. From a GPG perspective, interests of wealthier and poorer countries converge thus creating a common base for international cooperation. Poverty

reduction policies, national as well as international, are far more effective and efficient when based on adequately provided GPGs. Another argument for linking poverty reduction and GPGs is the observation that poverty itself will have negative effects on global public interests. Despite these globally common interests, the provision of GPGs is hampered due to market and global governance failures.

The WRR (2010) indicates that expanding the GPG agenda and adding more political weight to it is wise for a small country that strongly depends on international trade and its regional (EU) and global context. For that agenda to be effective, a critical look is required at how the government is organised (foreign affairs and line ministries) and how policies are attuned with other countries and the multilateral system including governments, civil societies and the private sector. Policy coherence is crucial for the provisioning of GPGs. Policy coherence for development is crucial for poverty reduction in the least developed countries. Without due consideration for equity in international relations and negotiations, the provisioning of GPGs will be endangered.

References

Barrett, S (2007) *Why cooperate? The incentive to supply global public goods*. Oxford University Press.

Bezanson, K.A. (2002) *Global Public Goods: opportunities and threats*. EU-LDC Network.

Biermann, F. et al. (2009) *Earth system governance. People, places and the planet*. IHDP-report, 20, Bonn.

Braat, L. and P. ten Brink (eds.) (2008) *The Cost of Policy Inaction. The case of not meeting the 2010 biodiversity target*. Brussels / Bilthoven.

Brink ten, B., S. Esch van der, et al. (2010) *Rethinking Global Biodiversity Strategies: Exploring structural changes in production and consumption to reduce biodiversity loss*. PBL - Netherlands Environment Assessment Agency. The Hague / Bilthoven.

Carbone, M. (2007) Supporting or resisting global public goods. *Global Governance* 13 (2007) 179 - 198.

CBS, CPB, PBL, SCP (2009) *Monitor duurzaam Nederland 2009*. Den Haag.

Compendium voor de Leefomgeving (2010) at http://www.compendiumvoordeleefomgeving.nl/.

Collier, P. (2010) *The plundered planet. Why we must - and how we can - manage nature for global prosperity*. Oxford University Press.

E3G (2006) *Global public goods conceptual framework*. Third Generation Environmentalism.

FAO (2008) *The state of the world fisheries and aquaculture*. Rome.

FAO (2009) Fisheries and Aquaculture Report No. 932. Rome.

Glasbergen, P. (2010) Global action networks: Agents for collective action. *Global Environmental Change*, 20(1), 130-140.

Grieg-Gran, M. and J. J. Kessler (2007). *The Dutch economic contribution to worldwide deforestation and forest degradation*, Aidenvironment, IIED.

Hartogh, H., M. Parr en H. Simons (2008) I*mpact Nederlandse visserijsector buiten de EU*. IUCN Nederlands Comité, Amsterdam.

Hoekstra, A.Y and A.K. Chapagain (2009) The water footprints of Morocco and The Netherlands: Global water use as a result of domestic consumption of agricultural commodities. *Ecological Economics* 64 (2007) 143 – 151.

International Task Force on Global Public Goods (2006) *Meeting global challenges: International cooperation in the national interest*. Report of the International task Force on Global Public Goods. Stockholm.

IEA, International Energy Agency (2009). *World Energy Outlook 2009*. Paris.

IPCC (2007) *Climate Change 2007*. Synthesis report. The fourth assessment report.

Kaul and Le Goulven (2003) Institutional Options for Producing Global Public Goods. In Inge Kaul, Pedro Conceição, Katell Le Goulven and Ronald U. Mendoza (eds) *Providing Global Public Goods: Managing Globalization*. New York: Oxford University Press.

Kaul, I. (2009) *From a Social-constructivist conceptualization to the triangle of publicness: Efficient and legitimate provision of global public goods*. REFGOV Working Paper Series GPS-5, Centre for Philosophy of Law, Université catholique de Louvain (final version submitted to MIT Press).

Kaul,I., P. Conceição, K. Le Goulven and R.U. Mendoza (eds) (2003) Why do Global Public Goods Matter Today? In: *Providing Global Public Goods: Managing Globalization*. Oxford University Press.

Kaul,I., P. Conceição, K. Le Goulven and R.U. Mendoza (eds) (2003) *Providing Global Public Goods: Managing Globalization*. New York: Oxford University Press.

Kaul, I. and R. Mendoza (2003) Advancing the concept of public goods. In Inge Kaul, Pedro Conceição, Katell Le Goulven and Ronald U. Mendoza (eds). *Providing Global Public Goods: Managing Globalization*. New York: Oxford University Press.

Kessler, J. J., T. Rood, et al. (2007) Biodiversity and socioeconomic impacts of selected agro-commodity production systems. *Journal of Environment and Development* 16(2): 131-160.

Kremer, M. P. van Lieshout and R. Went (eds) (2009) *Doing good, doing better. Development policies in a globalizing world*. WRR. Amsterdam University Press.

Leisher, C., M. Sanjayan, J. Kontoleon, S. Neil Larsen (2010) *Does conserving biodiversity work to reduce poverty? A state of knowledge review*. The Nature Conservancy, University of Cambridge and IIED.

Millenium Ecosystem Assessment (2005) *Ecosystems and Human Well-being*. Volume 1 Current state and trends. Island Press, Washington.

Ministerie van Buitenlandse Zaken. Ontwikkelingssamenwerking (2010). *Memorie van toelichting*. Vaststelling van de begrotingsstaat van het Ministerie van Buitenlandse Zaken (V) voor het jaar 2010.

MNP-RIVM (2004). *Kwaliteit en Toekomst - verkenning van duurzaamheid*, SDu, Den Haag.

MNP (2007) *The Netherlands in a Sustainable World: Poverty, Climate and Biodiversity*, Second Sustainability Outlook, Milieu- en Natuurplanbureau, Bilthoven.
Oel, P.R. van, M.M. Mekonnen and A.Y. Hoekstra (2008) *The external water footprint of the Netherlands: quantifications and impact assessment*. Value of water research report series no. 33. IHE, Delft.
Ostrom, E. (2005) *Understanding institutional diversity*. Princeton.
PBL (in prep) *Scarcity in a Sea of Plenty?* Netherlands Environmental Assessment Agency. The Hague/ Bilthoven.
PBL (2009) *Milieubalans 2009*, Den Haag/Bilthoven.
Perrings, C. and M. Gadhil (2003) Conserving biodiversity: reconciling local and global public benefits. In Inge Kaul, Pedro Conceição, Katell Le Goulven and Ronald U. Mendoza (eds). *Providing Global Public Goods: Managing Globalization*. New York: Oxford University Press.
Projectgroep Schaarste en transitie (2009) *Scarcity and transition*. Research questions for future policy.
Rischard, J.F. (2002) *Vijf voor twaalf. Twintig wereldproblemen, twintig jaar om ze op te lossen*. Lemniscaat. De Kritische Reeks.
Rood, G.A., H.C. Wilting, D. Nagelhout, B.J.E. ten Brink, R.J. Leewis and D.S. Nijdam (2005) *Spoorzoeken naar de invloed van Nederlanders op mondiale biodiversiteit*. Milieu Natuurplanbureau, Rijksinstituut voor Volksgezondheid en Milieu. Bilthoven.
Seters van, J. and S. Wolff (2010) *European Development Cooperation Brokering environmental knowledge beyond Lisbon*. Discussion paper. ECDPM. Maastricht, ECDPM.
Stern, N. (2006) *The economics of climate change, The Stern review*. Cambridge University Press, Cambridge UK.
Tekelenburg, T., B. Ten Brink and M. Witmer (2009) *How do biodiversity and poverty coincide? An explorative study*, Netherlands Environmental Assessment Agency. The Hague/Bilthoven.
UNEP (2010a) *An assessment of assessments. Findings of the group of experts*. Start-up of a regular process for global reporting and assessment of the state of the marine environment including socio economic aspects. United Nations for Environmental Protection, United Nations Education, Scientific and Cultural Organisation, Intergovernmental Oceanographic Commission. Nairobi, Paris.
UNEP (2010b) *Assessing the environmental impacts of consumption and production. Priority products and materials*.
UNEP (2007) *Global Environmental Outlook 4. Environment for Development*. Nairobi.
Schaik van, L.G., M.T.J. Kok and A.C. Petersen (2009) *Adapting EU Governance for a more sustainable future. Background paper to getting in the right lane*. Clingendael and Netherlands Environmental Assessment Agency PBL report 500159002, The Hague/Bilthoven.
Stiglitz, J. (2002) *Globalisation and its discontents*. Penquin books, London.
Vollebergh, H. R. J., B. Melenberg, et al. (2009). Identifying reduced-form relations with panel data: The case of pollution and income. *Journal of Environmental Economics and Management* 58(1): 27-42.
Weiss, T.G. (2008) What is wrong with the UN and how to fix it? New York.
Went, R.C.P.M. (2010) *Internationale publieke goederen: karakteristieken en typologie*. WRR-webpublicatie. Den Haag.
WHO and UNICEF (2010) *Progress on sanitation and drinking water: 2010 update*. WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation, WHO/ UNICEF.
World Bank (2010a) *World Development Report 2010*. Washington.
World Bank (2010b) *MDG after the crisis*. Global monitoring report. Washington.
World Resources Institute with Center for Strategic and International Studies (2009) *A Roadmap for a Secure, Low-Carbon Energy Economy*, Washington DC.
WRR (2010) *Minder pretentie, meer ambitie. Ontwikkelingshulp die verschil maakt*. Amsterdam University Press.

Foreign policies require a coherent policy agenda for sustainable poverty reduction and dealing with global environmental change, both within the Netherlands and internationally. In this paper we explore the possible contribution of the global public good perspective to the development of coherent Dutch policies for international cooperation on poverty reduction and the global environment. We specify why global public goods are of interest to the Netherlands for international cooperation, and what the policy choices are arising from taking a global public goods perspective on the issues of poverty reduction and the environment.

This background study is a publication by

PBL Netherlands Environmental Assessment Agency

Mailing address
PO Box 30314
2500 GH The Hague
The Netherlands

Visiting address
Oranjebuitensingel 6
2511VE The Hague
T +31 (0)70 3288700

www.pbl.nl/en

March 2011