

**CLIMATE, ENERGY AND POVERTY REDUCTION**

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## **Foreword**

The Advisory Council on International Affairs (AIV) issued the present advisory report at the request of the Minister for Development Cooperation. The request for advice on 'Climate, Energy and Poverty Reduction' of 15 March 2008 is included as Annexe I.

The report was prepared by the specially convened Climate, Energy and Poverty Reduction Committee (KEA) which was chaired by Professor C.J. Jepma (Development Cooperation Committee – COS). The vice-chair was Professor L.B.M. Mennes (COS). The members of the committee were Dr B.S.M. Berendsen (COS), T. ETTY (Human Rights Committee – CMR), Ms A.N. Papma (COS), Professor A. de Ruijter (chair of COS), Professor N.J. Schrijver (CMR), C.G. Trojan (General Energy Council (AER) and European Integration Committee – CEI) and A. van der Velden (COS). Professor J.B. Opschoor and Professor R. Rabbinge took part as external experts. Discussions were also held with J.R. Ybema of the Energy Research Centre of the Netherlands (ECN). P.A.G. Hassing, deputy director of the Ministry of Foreign Affairs' Environment and Water Department, acted as civil service liaison officer. The executive secretary was Ms W.A. van Aardenne, assisted by Ms S.M.N. van Schoten (temporary member of staff) and trainees K. Blaazer and M. Erik.

# I Introduction

## I.1 Request for advice

On 15 March 2008 the Minister for Development Cooperation asked the Advisory Council on International Affairs to produce an advisory report on the relationship between climate, energy and poverty reduction. Climate change has only recently been acknowledged as a problem that will impede global sustainable development. As such, it has raised concerns over and above those being addressed by the Millennium Development Goals (MDGs).

The fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC),<sup>1</sup> published in 2007, concludes among other things that climate change is to a large extent the result of human activity.<sup>2</sup> Human activity produces greenhouse gas emissions as a result of fossil fuel combustion and land use. Climate change is reflected in, among other things, temperature changes, which are in turn leading to many other adverse trends. Reducing emissions could curb temperature changes and the frequency and scale of other phenomena associated with climate change. However, even if we were to embark on a global mitigation programme today, involving emission reductions and the capture/storage of greenhouse gases (see section II), the temperature in various parts of the world would continue to rise over the next few decades, allowing the effects and manifestations of climate change to continue unabated. This means that in addition to alleviating climate change in all its myriad forms, we need to adapt to its effects. Adaptation entails devising a comprehensive set of facilities (including infrastructural facilities) and other measures – not in order to *prevent* the manifestations of climate change, but rather to *face the challenge* of their harmful effects, both present and future.

The risks and impact of climate change differ widely in different regions and in different countries in those regions, and are still surrounded by a great deal of uncertainty. The Human Development Report 2007/2008 states that developing countries, above all, and particularly the poorest groups in those countries, run a greater risk of suffering negative effects. Climate change is also hitting certain sectors, including farming, water, health, natural resources, transport and infrastructure, and certain locations, such as coastal areas, harder than others.

- 1 The Intergovernmental Panel on Climate Change (IPCC) was established in 1988 by the World Meteorological Organisation and the United Nations Environment Programme (UNEP). It was charged with the task of producing a report based on the available scientific information relating to all factors that have a bearing on climate change and its potential impact, and to set out realistic strategies in response to this. The first IPCC Assessment Report served as the basis for the negotiation of the United Nations Framework Convention on Climate Change (UNFCCC) which was signed at the Rio de Janeiro summit in 1992 and entered into force in 1994. The Convention provides a comprehensive policy framework for addressing issues related to climate change. The relationship between the UNFCCC and the IPCC serves as a model for interaction between scientists and policymakers.
- 2 The AIV is aware that not all experts endorse the IPCC's conclusions concerning climate change and its causes. On the basis of the precautionary principle, however, the AIV is of the opinion that we cannot afford to take the risks involved.

Given the dramatic consequences of climate change, adaptation must be included in global, national and sectoral plans relevant to developing countries, and in the policies of industrialised countries, as a matter of urgency. Early and effective mitigation is needed to minimise the costs of adaptation.

As we have said, climate change is to a great extent the result of rising greenhouse gas emissions. This means that there is a link with the scale and growth of global energy consumption and the way this demand is met. We must therefore restructure the supply of and demand for energy, with a focus on sustainable sources. One special issue concerns the need to increase access to energy for the many hundreds of millions of people who currently have none.

These considerations prompted the Minister to put the following questions to the AIV:

1. How could the Netherlands most effectively fulfil its responsibility to support efforts to curb climate change in developing countries? How could the polluter pays principle be applied to Dutch society?
2. Climate change is a relatively new issue on developing countries' political agendas. Until now, there has been little research into which segments of society will feel the effects of climate change most, and this forms an obstacle to effective adaptation policy. In view of the limited knowledge available on adaptation, what should be the Netherlands' priorities in order to ensure an effective use of resources?
3. What is the relationship between climate change and global energy security for the two billion people with limited energy access? How could the Netherlands find a good balance between possibly conflicting interests? To what extent should the Netherlands and other donors, driven by long-term environmental interests, restrict their energy sector support programmes for the two billion energy-poor to renewable energy?

Another issue related to climate change is its potentially negative impact on security. Existing tensions and instability could be exacerbated, possibly leading to conflict and large numbers of environmental migrants. In July 2008 the AIV received a request for advice from the Minister of Defence on the relationship between climate and security. This issue will be considered in a separate advisory letter, which is expected to be published early next year.

## **1.2 Strategy for addressing the questions**

Sections II and III of this advisory report look at questions 1 and 2. The main focus of the AIV's attention is the issue of adaptation, not because mitigation is any less important, but because the Minister's question specifically refers to adaptation. It also considers matters such as responsibility for climate change, estimates of adaptation costs and how they are to be financed, and the development of adaptation policies and programmes.

Sections IV and V examine question 3. They discuss the paradox of the need for mitigation on the one hand, and the need to increase access to energy for the many hundreds of millions of poor people in the world on the other. Here the AIV considers the question of whether, for the sake of long-term interests, support for the two billion poor people with no access to basic energy supplies should focus exclusively on

renewable energy or if other priorities might play a role. In this connection, the potential of biomass energy, particularly biofuels, and the problems associated with them are also considered.



## II Adaptation in developing countries: responsibility and potential costs

In this section, the AIV examines the first question in the request for advice, focusing particularly on:

- the responsibility of the Netherlands and other industrialised countries to support developing countries in their efforts to arrive at a system for adaptation to the negative impacts of climate change; this includes consideration of the 'polluter pays' principle;
- projections of the scale of the costs of adaptation in developing countries.

### II.1 Introduction

To date, the key focus of international climate policy and research has been reducing emissions of and capturing/storing greenhouse gases, a process generally referred to as mitigation. The 1997 Kyoto Protocol is primarily geared towards mitigation, for example, as were the previous IPCC assessments. Recently, however, there has been a growing focus on adaptation, that is, combating the negative effects of climate change.<sup>3</sup>

This increased attention for adaptation is understandable – and necessary – for a number of reasons. The problem is urgent. Firstly, climate change is already occurring, and is already causing damage. Secondly, given the slow response of our climate system to any reductions in emissions, future climate change will almost certainly be unavoidable, all the more so given the fact that there is still no sign of a global trend towards lowering the volumes of greenhouse gases emitted each year. Thirdly, the damage appears to be occurring to a disproportionate extent in the most vulnerable areas, which historically have contributed least to the problem:<sup>4</sup> the developing countries, and often the poorest and most vulnerable groups in those countries,<sup>5</sup> whose human rights are coming under pressure as a result of climate change.<sup>6</sup>

While this advisory report focuses mainly on the question of how adaptation policy can be shaped for and with developing countries, the AIV would like to emphasise that

3 IPCC, *Climate Change 2007: Impacts, Adaptation and Vulnerability, Working Group II Contribution to the Fourth Assessment Report of the IPCC* (Cambridge: Cambridge University Press, 2008), p. 6. See also: *The Economist*, 'Adapt or die', 13 September 2008, pp. 65-66.

4 According to the IPCC in 2001 and 2007, a disproportionate amount of the damage will occur in developing countries – an idea that is central to and is examined in greater detail in the UNDP Human Development Report 2007/2008, *Fighting Climate Change: Human Solidarity in a Divided World* (Houndmills: Palgrave Macmillan, 2007).

5 For an overview of likely impacts differentiated by region, see the materials for the UNFCCC Least Developed Countries Expert Group (LEG) stocktaking meeting on the preparation and implementation of National Adaptation Programmes of Action (NAPAs), Bangkok, 3-5 September 2007.

6 See the recent Oxfam Briefing Paper: 'Climate wrongs and human rights: putting people at the heart of climate-change policy', 9 September 2008.

mitigation is also of the utmost importance in these countries. Developing countries also explicitly called for mitigation in the Bali Action Plan. As we shall argue below, there is great potential for mitigation in developing countries. It is also possible to reduce greenhouse gas emissions there at reasonable cost, in a way that need not necessarily be incompatible with efforts to achieve sustainable development.<sup>7</sup> Examples of this potential include the reorientation of farming and the introduction of renewable energy. CO<sub>2</sub> reduction using the Clean Development Mechanism (CDM) is another example.<sup>8</sup>

**Box 1: Mitigation: some facts to consider**

Although the request for advice refers only to adaptation, mitigation – measures designed to reduce greenhouse gas emissions – is also a highly important issue in the current climate debate.

The Dutch government has attempted to take the lead in Europe on mitigation policy, as evidenced by, among other things, its work programme ‘Clean and Efficient: New Energy for the Climate’, which was presented in September 2007. It sets out the government’s target of reducing greenhouse gas emissions by 30% in the period up to 2020.<sup>9</sup>

The climate action and renewable energy package presented by the European Commission in January 2008 also includes ambitious mitigation targets.<sup>10</sup> The European Union aims to reduce greenhouse gas emissions by at least 20% relative to 1990 by 2020. This target will in fact be raised to 30% if other industrialised countries undertake a similar obligation under an international climate agreement.

The package presented by the Commission provides specific examples of how mitigation targets might be achieved. Before these measures can be put into effect, however, they will have to be approved by the European Parliament and the European Council.

7 For some recent useful suggestions as to how sustainable development criteria can be better observed in climate projects in developing countries, see: IOB, *Clean and Sustainable? An Evaluation of the Contribution of the Clean Development Mechanism to Sustainable Development in Host Countries*, Evaluations no. 310 (The Hague: Ministry of Foreign Affairs, April 2008).

8 The CDM is a flexible instrument from the Kyoto Protocol which allows industrialised countries to achieve a proportion of their obligation to reduce greenhouse gas emissions in other countries, such as developing countries that have no emission reduction targets of their own. This promotes sustainable energy and clean technologies in developing countries, and reduces emissions at the same time. According to figures from UNEP/Riseo, on 11 June 2008 there were 3498 CDM projects in the pipeline (excluding 82 withdrawn or rejected projects). Of those, 1080 have now been registered, and a further 162 are in the registration phase. This series of projects is ultimately expected to generate over 1.5 billion Certified Emission Reductions (CERs; expressed per tonne of CO<sub>2</sub> eq.) during the Kyoto period (2008 to 2012). See also: <http://www.cdmpipeline.org>.

9 Ministry of Housing, Spatial Planning and the Environment, ‘The “Clean and Efficient” programme: new energy for climate policy’, December 2007.

10 Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, ‘20 20 by 2020: Europe’s climate change opportunity’, COM(2008) 30 final, 23 January 2008.

Europe hopes to take the lead in negotiating a new climate agreement in Copenhagen at the end of 2009. At the climate summit, attention will focus particularly on the emerging economic powers India and China which, though poor, are also responsible for a considerable and rapidly growing proportion of global emissions of greenhouse gases, and will therefore also have to be involved in any climate agreement if mitigation policy is to be successful.<sup>11</sup> However, these countries are reluctant to accede to Western demands in this matter, defending their right to economic development and the attendant emissions on the grounds that the West was not denied this opportunity in the past.

Developing countries, where there are major opportunities for mitigation, must also be involved in mitigation policy. Many of these opportunities are in the agricultural sector. The transition from traditional farming techniques to more advanced ones could significantly reduce various types of emissions, including methane. This could be achieved by improving land management, introducing supplementary irrigation and reorganising existing farmlands. Better management of livestock and manure could also reduce emissions. Of course, regardless of what is decided next year in Copenhagen, the Dutch government could amend its development cooperation policy to reflect these considerations, by investing more in advanced agricultural methods in developing countries.

Negotiations on mitigation in the international climate treaty are not proceeding smoothly in the run-up to Copenhagen, mainly because the benefits of mitigation will not be felt for a long time, while the costs will be immediate and considerable. The European Commission's climate and energy package will, for example, cost some 0.5% of the European Union's GDP (around EUR 60 billion) in 2020.

The Stern Review, published in 2006, predicted that the cost of worldwide mitigation measures would rise to around 1% of GDP (about a trillion dollars) in 2050. This figure pales into insignificance, incidentally, in comparison with the estimate in the same report of the total costs that would be incurred if no extra mitigation measures were taken: at least 5% of global GDP in 2050.<sup>12</sup>

In spring 2008 the International Monetary Fund published the results of a study on the impact of climate change on the global economy. Some of them have a bearing on the issue of mitigation.<sup>13</sup> The IMF used a model to investigate the impact of various instruments, and combinations of instruments (carbon taxes, emissions trading and combinations thereof<sup>14</sup>) on different groups of countries and on the global economy as

11 For an overview of CO<sub>2</sub> emissions by country, see [http://unstats.un.org/unsd/ENVIRONMENT/air\\_co2\\_emissions.htm](http://unstats.un.org/unsd/ENVIRONMENT/air_co2_emissions.htm).

12 Commission, '20 20 by 2020', op.cit., p. 2 and Nicholas Stern, *The Economics of Climate Change: The Stern Review* (Cambridge: Cambridge University Press, 2007).

13 IMF, 'Climate change and the global economy', Chapter 4 in *World Economic Outlook, April 2008* (Washington DC: IMF, 2008), and Natalia Tamirisa, 'Climate change and the economy', *Finance and Development* 45.1 (March 2008), pp. 18-22.

14 The IMF emphasises the advantages of market-based instruments such as carbon taxes and emissions trading, with a preference for the former.

a whole. What would be the impact of a 40% emission reduction target by 2100 relative to 2002? The key period is 2013 to 2040. The IMF found that the various instruments analysed would entail costs to the tune of around 2% of global GNP (net present value) in 2040 (baseline scenario). Nevertheless, global GNP would still be 2.3 times greater in 2040 than in 2007. This projection appears to fall within the scope of those presented by the IPCC in 2007.<sup>15</sup>

Mitigation is only one side of the coin, however. Regardless of the scale of the mitigation measures taken and the resources spent over the next few decades, adaptation measures (and thus a significant financial outlay) will remain necessary, due to the climate changes that are already taking place. Over time, however, mitigation can halt more radical changes to the climate system, rendering adaptation measures less urgent. Although mitigation and adaptation are often seen as two independent strategies in the fight against climate change, they are actually complementary.<sup>16</sup> In a number of areas, such as optimising land use, they behave synergistically, reinforcing each other to greater effect. Obviously, this interaction has implications for overall costs: if mitigation efforts fall short, the costs of adaptation will rise. For that reason climate policy should always consist of both mitigation and adaptation.

## **II.2 The basis of a responsibility for industrialised countries**

Under international law, industrialised countries have a responsibility to aid vulnerable developing countries in their fight against climate change and the damage it causes. This responsibility arises from the general duty of international cooperation, the principle of common but differentiated responsibilities, and the principle of intergenerational equity (i.e. the obligation to take account of the interests of future generations). These principles are all firmly anchored in international law.

This is a general duty of cooperation, set out in the Charter of the United Nations, as reflected in the title of Chapter IX: International Economic and Social Cooperation. This general duty is also the basis of the post-war international economic order, including the IMF, the World Bank and GATT. In more general international law terms, this duty was clearly set out on the 25th anniversary of the United Nations, in a Declaration on Principles of International Law that is universally acknowledged as an authoritative interpretation of international law. The general duty applies to international environmental law perhaps more than to any other aspect of international legal relations. This is not to say, however, that the object of this duty is always immediately obvious, particularly when it comes to the obligations of states that are not party to the Kyoto Protocol to the UN Climate Convention, including the US. Nevertheless, the US has the same duty of cooperation when it comes to managing climate change.

The principle that 'the polluter pays' for measures to tackle environmental problems is fairly new, and has certainly not yet been universally acknowledged. This principle is

<sup>15</sup> IPCC, *Climate Change 2007: Mitigation of Climate Change, Working Group III Contribution to the Fourth Assessment Report of the IPCC* (Cambridge: Cambridge University Press, 2007).

<sup>16</sup> *Ibid*, p. 101.

mentioned several times in the Social and Economic Council's (SER) advisory reports on sustainable development, particularly the 1989 report on 'Our Common Future'. This SER report, in response to the Brundtland report, referred to this principle as the translation into policy of the idea that internalisation of environmental costs is an efficient way to achieve the optimum allocation of available resources.<sup>17</sup> According to the SER, the principle also reflects the idea that it is just for the costs of environmental damage to be borne by the party responsible.

The SER reminds us that the OECD countries adopted this principle in 1972, and that the then European Community called for its application in a Council recommendation.<sup>18</sup> The 'polluter pays' principle was also enshrined in the then EEC treaty (article 130R). Since late 2007, it has also featured in the Treaty on the Functioning of the European Union (article 191, paragraph 2).

In its 1993 advisory report on environment and development, the SER looked at the relationship between the two, placing the 'polluter pays' principle in an international context. Referring to its advisory report on the Dutch National Environmental Policy Plan (1989), the SER mentioned the particular responsibility of countries like the Netherlands towards developing countries, particularly in 'contributing to an international strategy for tackling the climate problem, which has been caused primarily by rich countries'.<sup>19</sup>

In its recent advisory report *On Sustainable Globalisation: A World to be Won*, the SER does not explicitly consider the 'polluter pays' principle. It does however emphasise the relationship between climate change and poverty. In this connection, the SER believes 'it is of the utmost importance that climate change be incorporated into the development assistance agenda'.<sup>20</sup>

In the opinion of the AIV, this principle, which also appears as principle 16 of the 1992 Rio Declaration on Environment and Development, can not yet be regarded as binding in international law.<sup>21</sup> A general basis for the responsibility of industrialised countries to help rein in climate change can be found in principle 7 of the Rio Declaration and in article 3 of the United Nations Framework Convention on Climate Change (UNFCCC).<sup>22</sup> Article 3, paragraph 1 of the UNFCCC refers to countries' duty 'to protect the climate

17 Social and Economic Council, *Our Common Future*, advisory report no. 1989/6, The Hague, 17 March 1989, pp. 27-9.

18 See AIV, *The OECD of the Future*, advisory report no. 54, The Hague, March 2007, p. 17.

19 Social and Economic Council, *Milieu en Ontwikkeling [Environment and Development]*, advisory report no. 1993/4, The Hague, 19 March 1993, pp. 30-2.

20 Social and Economic Council, *On Sustainable Globalisation: A World to be Won*, advisory report no. 2008/6, The Hague, June 2008, pp. 61-2 of Dutch text (not included in English translation).

21 Principle 16 of the 1992 Rio Declaration states: 'National authorities should endeavour to promote the internalization of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution'.

22 This is the framework convention drafted in 1992 at the conference in Rio de Janeiro. The main aim of the convention is to reduce greenhouse gas emissions.

system to the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capacities'. Article 3, paragraph 2 sets out the principle that account must be taken of 'the specific needs and special circumstances of developing country Parties, especially those that are particularly vulnerable to the adverse effects of climate change, and of those Parties, especially developing country Parties, that would have to bear a disproportionate or abnormal burden'.<sup>23</sup>

In addition, a number of developed countries, including the Netherlands, have undertaken (on the basis of article 4 of the UNFCCC) to make available 'new and additional financial resources to meet the ... costs incurred by developing country Parties in complying with their obligations' in terms of data collection, including data on the costs of their mitigation projects (article 4, paragraphs 2 and 3) and to assist 'developing country Parties that are particularly vulnerable to the adverse effects of climate change in meeting costs of adaptation to those adverse effects' (article 4, paragraph 4).

Taking these provisions into consideration, the AIV believes that the Netherlands is right to feel a sense of responsibility for the future of the planet and its inhabitants. Bearing in mind this responsibility, the disproportionate responsibility of wealthy countries for the climate problem, and the huge gulf in prosperity between this country and the developing world, the AIV believes that the Netherlands should be prepared to undertake certain obligations with regard to funding adaptation in developing countries. The actual amounts involved will have to be specified in the course of future negotiations. This does not alter the fact that emerging economic powers like India and China are also responsible for a substantial and rapidly growing proportion of global greenhouse gas emissions and should therefore also be involved in the new climate agreement.

There is reason for concern about the financing of adaptation in developing countries, given that '... the multilateral aid response to adaptation financing in developing countries ... has been characterised by chronic under-financing, fragmentation and weak leadership'.<sup>24</sup> Recent financial and economic developments in the industrialised countries are unlikely to improve the situation.

With this in mind, the AIV would advise the Minister for Development Cooperation to concentrate not only on pushing for more clarity about financial burden sharing in this area, but also on making an appropriate contribution to the financing.

These obligations could have major implications for the Netherlands. Total spending under the Homogeneous Budget for International Cooperation (HGIS) may have to be increased as a result.<sup>25</sup> The impact on total HGIS expenditure will have to be the

23 UNFCCC, 1992, p. 4.

24 UNDP, *Fighting Climate Change*, op.cit., Chapter 4, pp. 187-188.

25 The overseas activities of several ministries are combined and integrated in the Homogeneous Budget for International Cooperation. The principle behind HGIS is the promotion of cooperation and harmonisation in international cooperation. It is therefore an important instrument for an integrated and coherent foreign policy. Within HGIS, a distinction is drawn between spending that meets the criteria for Official Development Assistance (ODA) and other expenditure on international policy (non-ODA). (Letter to the House on the HGIS policy document, 2009).

outcome of political decisions. At the climate talks in Accra in August 2008, the developing countries expressed their desire for financial resources over and above the donors' commitment of 0.7% of ODA (an additional 0.1%) to be made available for adaptation and mitigation. Whether such an increase would be acceptable to donors will have to be clarified at international level.

The establishment of an adaptation fund under the Kyoto Protocol also implies a responsibility for providing adaptation support. This is also reflected in various initiatives undertaken by multilateral institutions. As reported above, despite the urgency of adaptation, only limited adaptation support has been forthcoming at a global level, and the initiatives tend to be fragmented. Some funds are for instance available via the Global Environment Facility (GEF), which was set up in 1991,<sup>26</sup> and under the Kyoto Protocol, but they certainly will not cover the projected costs of adaptation (see section II.3). Though a total of USD 220 million has been committed to the Least Developed Countries Adaptation Fund and the Special Climate Change Fund (both of which fall under the GEF), by the end of September 2007 only USD 127 million had actually been made available. These funds are intended to help with the drafting of National Adaptation Programmes of Action (NAPAs) and smaller pilot projects associated with them.<sup>27</sup>

At the Bali talks in December 2007, the purpose of which was to design a post-Kyoto climate regime, the developing countries explicitly gave notice that they expect more adaptation support and financial and technology transfer than under the Kyoto regime. This resulted in the statement in the Bali Action Plan that there would be 'enhanced action on adaptation' with the support of the developed countries (article 1.c-i-v). Account will be taken of the needs of the developing countries that are particularly vulnerable, such as the Least Developed Countries, small island states and especially countries in Africa at risk of drought, desertification or flooding. The agreements reached in Bali created the option of compensating developing countries via the Reducing Emissions from Deforestation in Developing Countries (REDD) mechanism.<sup>28</sup> It is even possible that adaptation support might be the issue that prompts the emerging industrialised economies (including China, India and Brazil) and the United States to take action on the climate problem.

### **II.3 Estimating adaptation costs**

It is becoming increasingly clear from the scientific literature that total adaptation costs for all developing countries together, while still uncertain – especially given that they will depend partly on present and future mitigation efforts – could run into the billions, if

26 The GEF, set up in 1991 to finance projects and programmes in developing countries designed to protect the global environment, helps developing countries with mitigation and adaptation projects. The GEF adaptation programme consists of a GEF Trust Fund, the Least Developed Countries Fund and Special Climate Change Fund. These last two have their own rules and procedures and are administered separately from the Trust Fund.

27 According to Oxfam figures, the Netherlands has committed 10% and 15% of these funds respectively. It has transferred 40% of the first commitment, and the second in full.

28 Payment for REDD is a new opportunity currently being developed by the World Bank. Countries that successfully reduce their emissions by improving the protection of their forests and adopting sustainable production methods will be eligible for compensation based on the carbon credits they have saved.

not the tens of billions, each year.

When estimating adaptation costs, one must first define what costs one actually means. Adaptation can in general refer either to changes to existing processes and infrastructure (such as raising dikes, changes in the use of crops, and construction of irrigation systems) – which, though perhaps making them more expensive, will prevent part of the damage caused by climate change – or to entirely new activities or structures (independent adaptation measures). The total costs of these last activities (or structures) can be seen as adaptation costs. In the case of changes to existing processes or structures, only extra costs can be regarded as adaptation costs – these are referred to as increased costs or sometimes additional costs resulting from adaptation. These costs are thus the extra costs of process or infrastructural improvements relative to the costs that would have been incurred if no climate change was occurring ('baseline costs', in other words).<sup>29</sup>

The GEF assumes that the baseline costs will be covered by regular development budgets, but that additional facilities are needed for the additional costs. The LDC Climate Fund was one facility set up for this purpose.

The World Bank is currently working on a systematic forecast of adaptation costs.<sup>30</sup> Pending the results of this exercise, a number of other cost projections are given below. They range from USD 30 to 70 billion a year (within a total range of at least USD 10 to 100 billion). The AIV has assumed costs in this order of magnitude in the rest of this advisory report.

a) In a previous study, the World Bank took the scale of expected development-related funding flows in developing countries (consisting of ODA and other 'concessional finance', Foreign Direct Investment (FDI) and Gross Domestic Investment (GDI) as a basis, estimated what proportions of these funding flows were climate-sensitive, and calculated what additional adaptation costs this could lead to. It arrived at a total figure for adaptation costs in developing countries of between USD 9 and 41 billion a year (USD 3 to 30 billion of which would be related to GDI).<sup>31</sup>

The 2006 Stern Review gives a figure of between USD 4 and 37 billion dollars a year (2 to 30 billion of which is related to GDI).<sup>32</sup> This projection is based on the structural development-related core of current funding flows. Since these are rough estimates, the figures can be rounded up to between USD 10 and 40 billion a year.<sup>33</sup>

29 See, *inter alia*: Joel Smith, Richard Klein and Saleemul Huq (eds.), *Climate Change, Adaptive Capacity and Sustainable Development* (London: Imperial College Press, 2003); E. Nillesen and E. van Ierland, *Climate Change: Scientific Assessment and Policy Analysis* (Bilthoven: Netherlands Environmental Assessment Agency, 2006); Alf Wills, 'Emerging paradigms of understanding on climate change adaptation issues: the 360° approach', PPP, UNEP, Nairobi, 15 November 2006.

30 See: [web.worldbank.org/WBSITE/EXTERNAL/TOPICS/ENVIRONMENT/EXTCC/0](http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/ENVIRONMENT/EXTCC/0).

31 World Bank, *Clean Energy and Development: Towards an Investment Framework* (Washington DC: World Bank, 2006), particularly Annex K.

32 Stern, *op.cit.*

33 World Bank, *Clean Energy and Development*, *op.cit.*, p. 144.



- b) UNDP adopts a similar logic but applies its own estimates and parameters, arriving at USD 44 billion a year towards 2015 for climate-proofing infrastructure and development investments. UNDP adds a further two components: the costs of adapting poverty reduction to climate change and the costs of providing more emergency relief.<sup>34</sup> The costs of climate-proofing poverty reduction are estimated at USD 40 billion a year (some 0.5% of the GNP of low and middle income countries); for disaster response the extra costs are estimated at USD 2 billion a year. The total comes to some USD 86 billion a year.
- c) Oxfam puts the costs of adaptation in developing countries at ‘... at least \$50 bn each year, and far more if global greenhouse-gas emissions are not cut fast enough’.<sup>35</sup> This is based on the World Bank projection of USD 9 to 41 billion mentioned above, plus:
- costs of community-based projects: USD 7.5 billion;
  - upwardly revised costs based on NAPA proposals concerning urgent and immediate needs: USD 8 to 33 billion;
  - a contingency for unexpected and to some extent as yet unknown consequences, and the impact of failed mitigation efforts.
- In total, this amounts to at least USD 24 to 81.5 billion, giving an average of around 50 billion. Oxfam also refers to other forecasts by NGOs, which have arrived at a figure of USD 100 billion.<sup>36</sup>
- d) The UNFCCC secretariat commissioned an alternative calculation for the Bali Conference.<sup>37</sup> This included an estimate of the funding required for adaptation in 2030 (not 2015) ‘in addition to the investment and financial flows needed under a situation in which there is no climate change’ for five sectors: agriculture (including forestry and fisheries), water supply, health, coastal zones and infrastructure. This did not therefore include ecosystems/biodiversity. The estimate (for non-Annex I countries: developing countries that have ratified the Kyoto Protocol) of USD 28 to 67 billion a year consists of USD 26 billion for the first four sectors and 2 to 41 billion for infrastructure.<sup>38</sup> This relatively large margin is due largely to the uncertainties surrounding the climate-proofing of infrastructure. This sum is equal to 0.06 to 0.21% of projected global GNP for 2030. UNFCCC assumes that a quarter to a half of the total will be financed from public funds (see section III.4).

34 UNDR, *Fighting Climate Change*, op.cit., p. 194.

35 Oxfam, ‘Financing adaptation: why the UN’s Bali Climate Conference must mandate the search for new funds’, Oxfam Briefing Note, 4 December 2007, p. 1.

36 Oxfam, ‘Adapting to climate change: what’s needed in poor countries and who should pay’, Oxfam Briefing Paper No. 104, May 2007, pp. 19-23.

37 UNFCCC, Report on the Analysis of Existing and Potential Investment and Financial Flows relevant to the Development of an Effective and Appropriate International Response to Climate Change, Fourth Workshop, Vienna, 27-31 August 2007, Dialogue Working Paper 8, 2007.

38 Under the Kyoto Protocol the Annex I countries (industrialised countries) undertook an obligation to reduce emissions. The non-Annex I countries (also known as Annex II countries) are all other countries, including developing countries.

### **III Adaptation support: funding and fleshing out policy**

In this section, the AIV examines question 2 of the request for advice, on how the Netherlands can pursue an effective adaptation policy. The funding of adaptation support is also addressed, and priorities for the effective use of the available resources are considered.

#### **III.1 Policymaking by industrialised countries: various components**

It is time for the industrialised countries to be more specific about their future adaptation policy for developing countries. The AIV would like to see the Netherlands take the initiative in clarifying these plans. This standpoint is based on a number of factors: the Netherlands has traditionally played an important role in international climate policy and, more generally, development cooperation as a whole. Given the country's low elevation, it will have to implement major adaptation programmes of its own.<sup>39</sup> The Netherlands also has several comparative advantages in typical adaptation sectors like agriculture, infrastructure, water management and coastal defences.

In developing support for adaptation initiatives in vulnerable developing countries, it is important to bear in mind that investing in adaptation can in certain circumstances be seen as a cost-effective form of insurance against the risks of damage and the attendant increase in poverty. For example, UNDP estimates that in Bangladesh the combined costs of future disasters will equal 5% of GNP by 2050, but that these costs could be avoided by effective adaptation.<sup>40</sup> The World Bank's Development Committee and the IMF estimate that without adaptation, a sea level rise of one metre in Vietnam would affect 10% of the population, cost 10% of GNP and destroy 30% of the country's wetlands.<sup>41</sup> In other words, investing in adaptation support can be cost-effective: a point that should be emphasised in communicating with the public.

With regard to shaping adaptation policy, the AIV is in favour of distinguishing between three components of adaptation support, depending on the nature of the climate change processes. This is necessary to allow us to gain a clear overview of countries' actual efforts, with a view to reaching international agreement on commitments, for example. Otherwise, a proportion of those efforts could easily remain hidden as part of existing foreign policy spending. Although the categories below do not adequately reflect the complexity of budgets and commitments, the AIV believes it is useful to distinguish three components of adaptation support.

39 The Delta Commission has now presented an adaptation plan for the Netherlands. Read the Commission's findings in its advisory report *Working with Water*, September 2008. See also the report recently published by the Advisory Council on Government Policy entitled *Onzekere Veiligheid [Safety Uncertain]*, No. 82. (Amsterdam: Amsterdam University Press, 2008).

40 UNDP, *Fighting Climate Change*, op.cit., p. 176.

41 Zia Qureshi et al., *Global Monitoring Report 2008: MDGs and the Environment, Agenda for Inclusive and Sustainable Development* (Washington DC: World Bank, 2008), p. 4.

One of the principal manifestations of climate change will be an increase in extreme weather conditions: floods, hurricanes, sudden extreme drought, heat waves, unusually heavy rainfall, etc. These conditions can give rise to natural disasters that require an immediate humanitarian response. Efforts designed to provide such a response are typically part of the development programmes of bilateral and multilateral donors, and for that reason require no new policy frameworks. It may, however, be advisable to restructure existing budgets so as to direct more resources towards humanitarian aid. This will have to be done on a case-by-case basis, depending on the climatological situation. The AIV would note that extensive budget restructuring will have to be financed with traditional development cooperation resources or in some other way. Better international coordination is also crucial in this connection.

The second component has to do with the gradual changes in the average values of the main climate variables (e.g. temperature, rainfall or wind force). This means that while certain regions will gradually become drier, others will grow wetter, and so on. Such slow processes would probably not necessitate a fundamental change to the existing structures for foreign and development cooperation policy. The AIV assumes that, barring certain exceptions, the impact of slow climate shifts can be accommodated by a development cooperation policy which is already designed in part to help societies that are undergoing dramatic (and sometimes quite rapid) changes in many other areas. Examples of such implicit adaptation policy include development efforts geared to adapting agricultural systems to changing drought or rainfall patterns and projects to cope with salinisation, erosion and the like.

New adaptation initiatives are most clearly visible in the third component, the most important such initiative being climate-proofing current and future development cooperation activities, and the sum total of all measures aimed at building adaptation capacity. In other words: the sum total of skills, resources and institutions in a country or region available for the development and implementation of effective adaptation measures, to minimise the damage caused by climate change.

Climate-proofing means reorienting existing development efforts in such a way that they adequately incorporate adaptation. It also involves building, and/or reducing the shortfall in, adaptation capacity.<sup>42</sup> Like climate-proofing, building adaptation capacity is a new phenomenon. It is related to a country's level of development and/or its specific adaptation needs. Ultimately, however, all these things are associated with the issue of climate change.

The AIV feels the new initiatives designed to build up current and future adaptation capacity, preferably in the context of the Bali Action Plan, should be seen as a new, supplementary area of development cooperation policy and indeed foreign policy in general, including international security and reconstruction policy. These international obligations can have major consequences for the Netherlands. For instance, such initiatives may result in a further increase in total HGIS expenditure, depending on the political decisions made. Deciding whether such an increase is advisable will entail consultation with international partners. It will also require a significant measure of support from the Dutch public.

42 UN Office of the High Representative for the LDCs, LLDCs and SIDS (UN-OHRLLS), *The Impact of Climate Change on Least Developed Countries and Small Island Developing States* (New York: UN-OHRLLS, June 2007).

In so far as adaptation takes the form of emergency relief (component one) or adaptation incorporated into gradual processes of change (component two), it can be funded as part of development policies designed to reduce poverty, and within the current ODA percentage.

The AIV wishes to point out the importance of allowing for the possibility that a failure to tackle adaptation promptly could cause many resources that had been earmarked for adaptation support to be swallowed up by emergency aid, which could in turn jeopardise other parts of the ODA budget.

### **III.2 The range of initiatives**

A wide range of initiatives will need to be launched to climate-proof current transfers and support programmes and to build adaptation capacity. They will depend partly on the priorities of the recipient countries. In this connection, a number of recent reports have distinguished between sectors: agricultural production and food security, water, economic activities in coastal areas, health, ecosystems and biodiversity, and transport and infrastructure.<sup>43</sup> The aims can be wide-ranging, and include:

- improving people's knowledge of and resilience to climate change through health, education and social policy;
- promoting the application of appropriate technologies in various sectors;
- building and improving infrastructure designed to cope with climate change;
- integrating adaptation policy into various policy and administrative frameworks;
- developing financial and economic mechanisms specifically geared to climate change;
- protecting ecosystems from climate change;
- developing early warning systems and providing instruction in their use.

Depending on the category targeted in building adaptation capacity, this might involve large or very large infrastructural projects affecting large areas and ecosystems, including water management, IT-based information systems and large-scale agricultural and forestry systems adapted to changing conditions. Small-scale projects and programmes can also help build adaptation capacity.

Such projects require large amounts of money and technical input, but are not suitable for the generally more fragmented approach typical of bilateral aid policy. It is therefore expected that industrialised countries will make a serious financial or in-kind contribution to the international Adaptation Fund linked to the Bali Action Plan. Given the magnitude of the projected cost of climate change in the developing world (USD 30 to 70 billion per year), the annual contribution for each committed party could mount up over time to a proportional share (on the basis of as yet undetermined criteria). In the opinion of the AIV, the Netherlands should also strive towards this goal, provided there is sufficient international support and commitment. (See also section II).

43 See, *inter alia*: Saleemul Huq et al. *Mainstreaming Adaptation to Climate Change in Least Developed Countries (LDCS)* (Nottingham: IIED, 2003); UNOHRLLS, *The Impact of Climate Change on Least Developed Countries and Small Island Developing States*, op.cit.; World Bank, *Clean Energy and Development*, op.cit.; UNDR, *Fighting Climate Change*, op.cit..

### **III.3 Accounting for public adaptation resources provided by donors**

As argued above, it is not always easy to identify the costs and benefits of adaptation in such a way that adaptation and regular development cooperation projects can be accounted for separately. This is particularly true of the first two components. At the same time, however, given the fact that these are regarded as new and additional costs, some form of identification is needed. We need to be able to clearly establish the scale of those costs, not least in view of possible future international agreements on how they are to be met.<sup>44</sup> Assuming that a proportion of the costs of adaptation can be met as part of traditional development cooperation, this means that a careful allocation method is required for this part of the adaptation effort. It must be based on appropriate baseline costs that would have been incurred if there had been no climate change.

With regard to efforts under the third component, it should be much easier in future to determine how the costs of adaptation support are to be apportioned. The total national adaptation effort will of course be equal to the sum of adaptation efforts under all three components.

Public sources of financing for adaptation might combine funds for development cooperation and resources for international cooperation with resources based on specific mechanisms, such as emissions-based taxes or the sale of emission rights. The AIV would highlight the fact that this last group of resources (obtained via specific mechanisms) is regarded in the sources cited in this section as private financing, although they are in fact principally extra private-sector contributions to specific projects (from companies and consumers) generated by additional taxes and other regulations.<sup>45</sup> In the case of adaptation, in particular, we are not therefore talking about private (domestic or foreign) investment in adaptation projects. Given this fact, the AIV takes the view that this last component will not make any significant contribution.<sup>46</sup>

### **III.4 Sources of funding for adaptation**

The development of adaptation policy in developing countries can be regarded first and foremost as a matter for individual states and communities. As regards the funding of such policy, as in the previous section, we draw a distinction between public and private financing. The international community bears some responsibility for the public share of financing, as acknowledged in the Bali Action Plan. Negotiations on the sums that should be made available internationally are only just beginning.

Several projections of the scale of the funding needed have already been made, as discussed above. The UNFCCC estimate includes additional information that can be used to produce a cautious allocation between the public and private sectors, which

44 Oxfam argues, for example, that donors must account for adaptation resources separately as 'compensatory finance', alongside existing ODA, and points out that willingness to participate in adaptation programmes may be a factor in any legal proceedings over the impact of climate change.

45 See: Qureshi et al., *Global Monitoring Report 2008*, op.cit.; Oxfam, 'Financing adaptation', op.cit.

46 For a more optimistic view, see: World Bank, 'Development and climate change: a strategic framework for the World Bank Group', October 2008, pp. 45-8.

comes to between USD 10 and 28 billion for the private sector and USD 18 to 39 billion for the public sector. The World Bank's Development Committee and the IMF assume USD 28 to 67 billion (see also section II.3), adding that the private sector is expected to provide over 80% of this. UNFCCC arrives at 75 to 90% private-sector funding for new infrastructure worldwide.<sup>47</sup> Oxfam assumes that the majority of funding for adaptation will have to be generated from public funds. In short, opinions differ as to how the costs will be apportioned between the public and private sectors.

Oxfam has proposed a formula for apportioning the costs between Annex I and Annex II countries based on the UNFCCC principles of responsibility and capacity, whereby the US and the EU would be called upon to fund over 75% (the US taking at least 40% and the EU at least 30%). On the basis of the Netherlands' share in global CO<sub>2</sub> emissions, Oxfam has estimated that this country would be responsible for just under 2% of these costs.<sup>48</sup> This is only a rough approximation, and apparently a somewhat high one at that. It indicates an order of magnitude, in the absence of internationally accepted formulas.

If we combine the projections of annual adaptation costs in developing countries produced so far – roughly between USD 30 and 70 billion – with the Netherlands' approximate 2% share of the international contribution, this gives us a commitment in the order of USD 600 million to 1.4 billion a year. This is between 0.1 and 0.2% of GNP (in 2007 the Netherlands' GNP was some USD 630 billion). If, for the sake of convenience, we assume that an equal proportion is financed from public and private funds, the public contribution could come to around USD 300 to 700 million a year, or some EUR 200 to 450 million. Together with the private-sector contribution, this would take the Dutch contribution to around EUR 400 to 900 million annually.

### **III.5 The choice of channel for possible adaptation support**

As regards the channel for providing possible adaptation support – except for support via the first two components, which can be provided from the regular development cooperation budget – there are in principle three possibilities: bilateral, EU or multilateral (GEF-Bali).

The question is whether, given the scale of the problem, it would make sense to set up such an initiative primarily on a bilateral basis, especially since adaptation support based on the first two components will presumably have to be provided via bilateral policy. Given the global nature of the problems and the negotiations, it would seem more appropriate for the majority of the Netherlands' adaptation effort to take place via EU or multilateral channels.

A number of multilateral initiatives have in fact already been launched. Supplementary international mechanisms are being considered for the post-Bali regime (for example, mechanisms based on the much-discussed 2% CDM levy).

In 2007 the European Commission launched a proposal for a 'Global Climate Change Alliance' (GCCA), a platform for dialogue and practical collaboration on adaptation,

47 UNFCCC, Report on the Analysis of Existing and Potential Investment and Financial Flows, op.cit.

48 Oxfam, 'Adapting to climate change', op.cit.

among other things in support of the MDGs. Though this is more a matter of capacity for developing adaptation plans and pilot projects, the Commission has in this connection called upon the member states to join in establishing a GCCA financing mechanism.

More recently, and with reference to the above proposal, the EU presented a report to the UNFCCC setting out its preferred approach to adaptation strategies for developing countries. The EU expresses in the report its commitment to providing new and additional resources to cover the costs of adaptation, including the costs of capacity building.<sup>49</sup>

This would seem to make the EU the most appropriate channel for additional adaptation support, even from individual member states.<sup>50</sup> The Netherlands could foster the development of such a mechanism, press for its terms of reference to be adapted to the international debate on the scale and structure of adaptation funds, and allocate to the mechanism all or part of its contribution to the costs of adaptation. This might help engender the necessary support from other member states.

In view of the above, in building up adaptation capacity and climate-proofing existing development efforts by way of both the public and private sectors, the AIV believes that the Netherlands should not act alone, but rather direct its efforts via incipient EU, Bali and post-Bali channels, depending on the degree of progress made in international negotiations.

### **III.6 Setting priorities**

We must consider the question of whether, and to what extent, further priorities should and can be set for activities to be supported in the event that adaptation support is provided. In so far as that support is provided via multilateral channels – by strengthening EU or UNFCCC activities, programmes and funds, for example – the Netherlands would be able to set priorities only indirectly, in so far as it can persuade other countries to accept them. Such restrictions do not of course apply to adaptation support provided via bilateral channels.

The AIV believes that any action taken by the Netherlands to influence the adaptation agenda should be informed by the following considerations, particularly point (a):

- a) the needs of the relevant developing countries themselves, as expressed in (independently reviewed) National Adaptation Programmes of Action (NAPAs) and elsewhere (see Box 2);
- b) the relevance of these needs with respect to the poorer segments of the population, and their importance as measured by the number of citizens involved and the economic interests to be safeguarded;
- c) the impact on poverty reduction (MDG1);
- d) the absorption capacity of the relevant developing countries or regions;
- e) the relevant priorities in international cooperation and development cooperation policy, in terms not only of sectors and countries/regions, but also of human rights;
- f) the relative expertise present in Dutch society.

49 See also: FCCC/SBI/2008/MISC.4.

50 AIV, *The Netherlands and European Development Policy*, advisory report no. 60, The Hague, May 2008.

The key role of criterion a) is based on the internationally accepted principle that the existing strategies of the countries concerned, particularly those designed to help the poorer segments of the population, should be the focus of international cooperation. As far as the Netherlands is concerned, in terms of climate and energy, this is in compliance with the Policy Letter to the House of Representatives of 16 October 2007.<sup>51</sup> However, the extra tests based on the other criteria are also important. After all, catering for the needs and choices of the countries concerned, and the poorer segments of their populations, could produce a patchwork of priorities that would be difficult to incorporate into policy. Furthermore, experience has shown that projects are generally effective in the long term only if there is enough local absorption capacity in terms of regulations, process management and the like.

Nor would it be desirable for new programmes geared to adaptation to contribute to a fragmentation of Dutch development policy. Dutch policy concentrates on a limited number of developing countries (36, plus four in post-conflict situations) and enhanced policy focuses, including in the field of climate, sustainability and energy.<sup>52</sup> Adaptation support via bilateral channels should, in the AIV's view, in principle be limited to these countries. The policy letter lists land use, food production, water and health as preferential sectors for the enhancement of adaptive capacity in developing countries. The AIV regards this as a useful focus.

The AIV proposes as the final criterion for possible bilateral adaptation support the Netherlands' relative expertise and comparative advantages in certain areas (including coastal defences, water management, and agricultural systems/crop development). It is important to remember in this connection that adaptation support will preferably be provided in public-private partnerships, whereby the private sector will also – perhaps primarily – contribute to project development and the provision of expertise. It is also important that adaptation support be used to strengthen the capacity of the public and private sectors in the developing countries concerned.

### **III.7 The role of local adaptation programmes**

Adaptation programmes should be developed at national, regional and global level parallel to policy on adaptation support, to ensure that the available resources are used as effectively as possible for funding projects and measures.

As a result of the Climate Change Convention and its acknowledgement of the special position of developing countries, a programme has been launched to develop NAPAs. NAPAs focus on 'urgent and immediate needs ... for which further delay would increase vulnerability and/or costs at a later stage'.<sup>53</sup> NAPAs are the result of processes whereby stakeholder communities are given the opportunity to set out their needs for enhanced adaptation capacity and have input into the programmes eventually adopted. UNFCCC has received notification of 33 NAPAs.

51 'Our Common Concern: investing in development in a changing world', Policy Letter, 10 October 2007.

52 The 40 countries fall into three 'profiles' that provide a framework within which choices can be made:  
(i) countries where MDG achievement needs to be accelerated, (ii) security and development,  
(iii) broad-based relationship ('Our Common Concern, op.cit.).

53 See: <http://unfccc.int/adaptation/napas/items/2679txt.php>.



The NAPAs, produced in a bottom-up process, supplement the National Communications (NCs) which all parties to the UNFCCC, and thus almost all developing countries, have submitted. NCs are ‘top-down’ notifications from governments making their adaptation needs known to the international community, in accordance with the UNFCCC. The NCs submitted so far implicitly focus on adaptation needs. As a rule, NAPAs tend to be more specific.

Over half the prioritised activities in NAPAs are actual adaptation activities (mostly on a small scale or in the form of pilot projects); the others are geared to capacity building. Furthermore, according to a random sample of 33 NAPAs (see also Box 2), significantly more than half of cases involve development cooperation projects with an adaptation component (incremental or otherwise), or an enhancement or expansion of development cooperation programmes with an adaptive effect. The priority activities are spread across a large number of sectors: many of them are in agriculture and water management.

However, many NAPAs set no priorities and cater only partially for future needs. An eye to the possible future effects of climate change is essential when it comes to adaptation. After all, changes currently being made do not necessarily offer adequate protection against the future impact of climate change. One example of a NAPA that caters for future adaptation needs was the plan presented by the Netherlands’ Delta Commission on 3 September 2008, entitled *Working with Water*. However, the international community is at a loss as to how to prioritise different sectors, programmes and regions in developing countries, making it unclear how resources intended for adaptation support can be spent most effectively.

The AIV believes that NAPAs should be used as a matter of urgency to address developing countries’ future adaptation needs. The Netherlands should actively work to develop NAPAs or similar policy plans in the most vulnerable of the 40 development cooperation partner countries. The AIV is therefore in favour of establishing an international think-tank that can take the lead in devising the necessary ‘Delta plans’ (comprehensive master plans with a long-term horizon). In addition to national NAPAs, a global adaptation master plan for developing countries (a kind of worldwide NAPA coordinated by the UN) should be drafted for developing countries to offer an integrated framework for defining the extent and urgency of adaptation problems in the various developing countries, setting priorities for future actions, and facilitating the development and application of national NAPAs on the basis of technical and economic knowledge. In this connection, the AIV would point out that the World Bank’s study now under way of the costs of adaptation may explore this possibility.

#### **Box 2: Developing NAPAs**

NAPAs identify the most urgent needs of LDCs related to the *current* threats posed by climate change.<sup>54</sup> NAPAs also include responses to current climate variability, and are based on existing knowledge. UNFCCC has been compiling a compendium of methodologies and a best practice database to support NAPA processes. The United Nations Environment Programme (UNEP) and UNDP are also actively supporting the NAPA process. Support for the development of NAPAs is provided via the GEF LDC Fund.

54 They therefore only partly address future needs, which are expected to grow.

Analysis of the first 21 NAPAs has found that the proposed priorities and programmes will cost USD 341 million. A rough estimate of the figure for NAPAs in all developing countries together is around USD 650 million.<sup>55</sup>

The drafting of a NAPA follows a certain pattern, based on the established guidelines. It starts with an analysis of development and the relevant environmental and climatic conditions in the country concerned, which is then used as a basis for diagnosing the country's vulnerability to climate change and for analysing this vulnerability sector by sector. A typical NAPA will include analyses for sectors including agriculture, water, health, forests, energy, coastal and marine resources, nature/biodiversity, tourism, infrastructure etc. Climate trends are also included in so far as they have a bearing on development in the country concerned. An analysis of existing adaptation practices, their reach, desired new practices and possible barriers to implementing of the NAPA is also included. This information is then used to flesh out the adaptation strategy (generally based on a ranking of sectors and activities, sometimes with additional regional priorities) and systematically identify the most urgent elements. NAPAs then give a detailed description (including a budget) of the selected activities and projects.

A more or less random selection of seven of the 33 NAPAs published so far has been subjected to closer scrutiny.<sup>56</sup> The top five priorities of each selected country were analysed, producing the following results.

- Over half the priorities concern actual adaptation activities (albeit mostly on a small scale or in the form of pilot projects); the others involve capacity building.
- Almost 40% are pure adaptation programmes; the others are development cooperation programmes with a growing adaptation component.
- There is a considerable spread across sectors, with a relatively high number of priorities in the agriculture and water management sectors.<sup>57</sup>
- Many actual activities are community-based or explicitly involve the community.

NAPAs focus on urgent and immediate needs identified in consultation with stakeholders on the basis of their knowledge of coping and adaptation strategies, and are not therefore based on long-term developments (except in so far as those groups already take these into account). None analyses long-term scenarios for climate change.<sup>58</sup> This must be regarded as undesirable from a long-term perspective.<sup>59</sup> Furthermore, it is clear that the emphasis of current NAPAs lies more on developing

55 LEG stocktaking meeting, op.cit.

56 Bangladesh was chosen deliberately; the following countries were selected randomly: Burundi, Eritrea, Kiribati, Mauritania, Samoa and Tanzania.

57 UNFCCC's own summary (2007) of priority activities in NAPAs includes: forecasts of weather and disasters, water management, food security, land use and management, coastal zone management, health care, capacity building and promotion of sustainable tourism.

58 UNFCCC, *Climate Change: Impacts, Vulnerabilities and Adaptation in Developing Countries* (Bonn: UNFCCC, 2007).

59 Bo Lim and Erika Spanger-Siegfried (eds.), *Adaptation Policy Framework for Climate Change: Developing Strategies, Policies and Measures* (Cambridge: UNDP/Cambridge University Press, 2005).

knowledge and on testing and disseminating it through pilot projects than on actual adaptation programmes on a national scale based on aggregated need. The limited funding available under the GEF and the Kyoto Protocol has exacerbated this situation.<sup>60</sup>

The LDC Expert Group (LEG) which is overseeing the NAPA process for UNFCCC has evaluated 21 NAPAs, partly on the basis of UNEP, UNDP and World Bank findings.<sup>61</sup> Its most striking conclusions are the following.

- Departmental compartmentalisation is a barrier to the integration of climate into other policies.
- NAPA priorities mix adaptation and development elements. (LEG is keen that duplication of regular development activities should be avoided.)
- LEG is satisfied with the extent to which NAPAs have actually been drafted through participatory processes.

60 UNFCCC, *Climate Change*, op.cit.

61 LEG stocktaking meeting, op.cit.

## **IV Climate and global energy supply**

### **IV.1 Introduction**

In this section the AIV examines the Minister's third question, which is in three parts. First: what is the relationship between climate change and global energy security for the two billion people with limited energy access? Second: how can the Netherlands find a good balance between possibly conflicting interests? Third: to what extent should the Netherlands and other donors, driven by long-term environmental interests, restrict their energy sector support programmes for the two billion poor to renewable energy?

In addressing the first part of question 3, the AIV has drawn mainly on analyses and studies by the International Energy Agency (IEA), particularly the annual World Energy Outlook.<sup>62</sup> The IEA distinguishes four categories of energy consumption:

- mobility (non-electrical);
- domestic and industrial consumption (mainly fossil fuels);
- electricity (domestic and industrial);
- energy generation by fuel conversion.

In terms of the relationship between energy and poverty, the IEA has identified two objectives for the poor:

- increasing their access to electricity;
- making the transition from biomass to modern fuels, particularly for domestic consumption (kerosene, LPG and diesel).

### **IV.2 Energy security**

Some 1.6 billion people in developing countries currently have no access to electricity.<sup>63</sup> Most of them live in South Asia and Sub-Saharan Africa. In the latter region, only one in four people have access to a modern energy supply.<sup>64</sup> Eighty per cent of energy-poor people live in rural areas.<sup>65</sup> The IEA expects this figure to remain at 1.4 billion as late as 2030.

Almost 2.5 billion people are still dependent on traditional biomass for their household energy (particularly for cooking and heating).<sup>66</sup> In countries like Ethiopia, Mozambique, Niger, Tanzania, and Zambia, 75% of the population depend on this type of fuel.<sup>67</sup> The

<sup>62</sup> IEA, *World Energy Outlook* (Paris: OFCD/IEA, 2002) (also 2003 to 2007).

<sup>63</sup> UNDP, *Fighting Climate Change*, op.cit., p. 43, and UN-Energy, 'Sustainable bioenergy: a framework for decision makers', April 2007, p. 43.

<sup>64</sup> UNDP, *Fighting Climate Change*, op.cit., p. 44.

<sup>65</sup> IEA, *World Energy Outlook 2002*, op.cit., p. 32.

<sup>66</sup> Mainly straw, manure, agricultural waste and charcoal.

<sup>67</sup> UNDP, *Fighting Climate Change*, op.cit., p. 43, and UN-Energy, *Sustainable Bioenergy*, op.cit., p. 44.

IEA estimates that their numbers will in fact increase by 0.2 billion up to 2030. In China, Indonesia and Latin America, the number of people dependent on traditional biomass is falling. Elsewhere, their numbers are increasing,<sup>68</sup> against the background of an IEA-forecast population increase in developing countries over this period (2000-2030) from 4.56 to 6.642 billion.<sup>69</sup> This lack of access to energy has a negative impact, particularly on the welfare of women and girls. They often spend a great deal of time gathering firewood, time that with better access to energy could be spent on more productive or recreational activities. They also face major risks to their safety, particularly – though not exclusively – in fragile states.

In densely populated areas, too, the demand for traditional fuels often outstrips supply. This causes large-scale deforestation and land degradation, which in turn leads to declining agricultural production.<sup>70</sup>

In another study the IEA presents a scenario incorporating MDG1 (a 50% reduction in the number of people living in extreme poverty – on less than one dollar a day – by 2015). The IEA calculates that, under this MDG scenario, almost one billion people would still have no access to electricity in 2015, an overall reduction of more than 500 million relative to the baseline scenario for that year.<sup>71</sup> According to the same MDG scenario, by 2015 the number of people using traditional biomass for domestic purposes will still be over 2.5 billion, 700 million fewer than in the baseline scenario.<sup>72</sup> The AIV will return to the question of the relationship between climate change and poverty reduction at the end of this section.

### **IV.3 Potential conflicts of interest**

The AIV initially interpreted the second part of the Minister's third question as a request for an analysis of actual or potential conflicts between the desired emission reductions to stabilise the current processes of climate change and the generally acknowledged priority of achieving a major, rapid reduction in poverty in developing countries, together with an equally major and rapid improvement in their energy supply. The AIV will address this point in its response to the third part of question 3.

The AIV will, however, at this juncture identify a number of other potential conflicts of interest, related chiefly to threats to global energy supplies. The IEA notes first and foremost that existing fossil fuel resources will keep the world supplied with energy for at least another 30 years. The current concerns about global energy consumption therefore focus more on the following problems.

68 Ibid., pp. 4 and 6; Stephan Slingerland, Lucia van Geuns and Coby van der Linde, 'Van zwarte naar groene energie: geopolitiek van mondiale energietransitie', *Internationale Spectator* 62.5 (2008), pp. 259-63.

69 IEA, *World Energy Outlook 2006*, op.cit., p. 11.

70 Letter to parliament on the policy memorandum on the environment and renewable energy in development cooperation, pp. 4/19.

71 IEA, *World Energy Outlook 2006*, op.cit., p. 11.

72 Ibid., p. 36.

- Security of energy supply: oil and gas importing countries are increasingly dependent on a small number of exporting countries (particularly Russia and the Middle East). In the Middle East, 80 to 90% of national income is derived from fossil fuel exports. There is concern that these countries will exploit this dependency for economic or political ends. Security of energy supplies is therefore currently high on the political agenda.
- Access to energy: see the discussion of the first and third parts of question 3 in sections IV.2 and IV.4.
- Growing demand: the demand for energy is forecast to rise by 1.6% a year up to 2030. This rapid rise is being driven mainly by emerging economies like China and India, which are experiencing strong economic and demographic growth.<sup>73</sup> *The World Energy Outlook 2007* predicts that by 2030 demand will have risen by 50% relative to 2007. A large proportion of this demand (around 45%) will come from China and India.<sup>74</sup>
- Investments in energy infrastructure: the expansion in production required to meet the growing demand is forecast to cost in the region of USD 20 billion, according to the IEA.<sup>75</sup>
- Environment: fossil fuels still dominate the energy market, and their use is incontrovertibly associated with environmental pollution. CO<sub>2</sub> emissions are forecast to rise by 1.7% a year up to 2030.<sup>76</sup> A considerable proportion of those emissions will come from developing countries, which are reluctant to commit to mitigation as long as major polluters like the United States also refuse to do so.

#### **IV.4 Renewable energy**

This brings us to the third part of question 3: whether the Netherlands and other donors, driven by long-term environmental interests, should restrict their energy sector support programmes for the two billion energy-poor to renewable energy.

In this context, it is important to note first of all that annual pro capita energy consumption among the almost two billion energy-poor and the associated CO<sub>2</sub> emissions are minimal compared to total CO<sub>2</sub> emissions worldwide.<sup>77</sup> Basic energy consumption of 50 kWh per person per year by the two billion energy-poor gives us CO<sub>2</sub> emissions of 120 million tonnes a year.<sup>78</sup> If the minimum energy targets for the two billion energy-poor

73 IEA, *World Energy Outlook 2002*, op.cit., pp. 26 and 28, and IEA, *World Energy Outlook 2005*, op.cit., p. 44.

74 IEA, *World Energy Outlook 2007*, op.cit., p. 3.

75 Ibid.

76 Ibid., p. 25.

77 The following reflections are based largely on the work of Heleen de Coninck, manager of the International Energy and Climate Issues group of the Energy Research Centre of the Netherlands' (ECN) Policy Studies unit. She in turn refers to the work of Shoibal Chakravarty (Princeton Environmental Institute - PEI), Ananth Chikkatur (Harvard), Steve Pacala (PEI), Robert Socolow (PEI) and Massimo Tavoni (Fondazione Eni Enrico Mattei (FEEM), Italy).

78 This is based on use of a small electric pump, lamp and refrigerator in the home, and a school and clinic for public use.

are achieved, the emissions caused will account for only a very small proportion of global emissions, which are around 30 billion tonnes of CO<sub>2</sub> a year.

The IEA also notes that traditional biomass is being replaced by modern fuels (for domestic consumption). According to its calculations, the extra emissions associated with this transition and with additional energy consumption should be less than 4% of the total emissions forecast for 2015.<sup>79</sup>

Meeting limited basic energy needs of approximately 50 kWh per person per year by means of renewable energy will have hardly any effect on achieving global climate objectives. It is therefore ineffective, in the short term, to use renewable energy on a large scale to meet the energy needs of the two billion energy-poor, because that course of action would do little to bring us closer to global climate change objectives. Nevertheless, depending on local conditions, there are still major opportunities in this area, not all of them involving renewable energy. Whether renewable energy is the preferred option depends on factors like:

- Infrastructure: the presence of basic distribution facilities;
- population density in relation to the required infrastructure;
- degree of development (and thus demand for energy), industrialisation etc.;
- access to indigenous fossil fuel resources;
- infrastructure for the supply of fossil fuels;
- robustness and simple technology;
- guaranteed supply;
- independence;
- technological leap-frogging;
- the living environment.

Providing for the energy needs of the very poorest requires a differentiated approach, which will vary by country and region. There is no one-size-fits-all solution. The solution will depend partly on the local development potential for renewable energy, such as wind and solar energy.

The AIV takes issue with the suggestion that stabilising climate change and reducing poverty are somehow incompatible, as a result of the increase in emissions that is thought by some to be an inevitable corollary of higher energy consumption. To begin with, this increase in energy consumption is likely to be relatively minor. But even if it should turn out to be larger than expected and even if only a fraction of it consists of renewable energy, the AIV cannot imagine that this would justify lowering poverty reduction objectives in the Millennium Development Project. The AIV supports the recent policy memorandum on the environment and renewable energy in development cooperation, with respect to promoting the introduction of renewable energy in the poorest countries in Africa.<sup>80</sup> It is important however to ensure that projects to promote the use of renewable energy do not derail efforts to improve energy access for the very poorest.

79 IEA, 'Energy and sustainable development', Energy for Development Conference final draft report, 9 October 2004, p. 32.

80 Letter to parliament on the policy memorandum on the environment and renewable energy, op.cit.

## **V Biofuel: energy for the future?**

### **V.1 Introduction**

In this section the AIV discusses the political and public debate on the use of biofuels, considering what biomass and biofuels might mean for developing countries.

Biofuels comprise all engine fuels produced from biomass – organic material from which energy and energy sources (gas, liquid fuels, heat and/or electricity) can be produced using various conversion technologies. Examples of biomass that can be used for energy production include residues from the agriculture and forestry sector, waste (including manure, fats, sludge and used paper) and crops grown specially for the purpose. Biofuels can be produced from all these categories of basic materials; in almost all cases the biomass can be converted into energy by some other means, sometimes after processing.

The AIV distinguishes between first-, second- and third-generation biofuels. First-generation biofuels are those produced from food crops, such as maize, rapeseed, palm oil and sugar cane. They produce lower CO<sub>2</sub> emissions than fossil fuels – at least 80% lower in the case of sugar cane (ethanol), and some 30% lower in the case of ethanol made of maize, vegetable oil, sugar beet or wheat.<sup>81</sup> These figures assume that the crops are grown on good soil and cause no expansion in global land use. Any increase in land use would considerably reduce the beneficial effect on emissions.

The second generation of biofuels is not produced from food crops, but largely from crop residues (inedible parts of food crops), agricultural waste products and wood chips. The production of biofuel from this type of biomass can reduce emissions by 90% relative to fossil fuels. However, the technology required is at present not generally available on a commercial basis for large-scale application.

The AIV does not consider third-generation biofuels (biofuels based directly on photosynthetic reactions in micro-organisms, whose production is highly efficient) here, as they are not yet ready for use.

### **V.2 European biofuels policy**

It was initially thought that biofuels would make a major contribution to solving global climate and energy issues. The use of biofuels has therefore risen sharply over the past decade, partly as a result of the continuous rise in the price of fossil fuels. Since biofuel seems to be an attractive form of sustainable energy, governments and the EU have promoted its use with grants and obligatory blending.

EU Directive 2003/30/EC was adopted on 8 May 2003.<sup>82</sup> The Directive stipulates, among other things, that 5.75% of total diesel and petrol consumption by the European

<sup>81</sup> OECD, *Biofuel Support Policies: An Economic Assessment* (Paris: OECD, 2008), p. 8.

<sup>82</sup> Directive 2003/30/EC of the European Parliament and of the Council on the promotion of the use of biofuels or other renewable fuels for transport, 8 May 2008.



Union transport sector must consist of biofuel by the end of 2010. The Community strategy on biofuels was set out in 2006 in a Communication from the Commission.<sup>83</sup> This document made it clear that the European Commission intends to further develop biofuels technology, on condition that biofuels are sustainably produced and reduce greenhouse gas emissions. In early 2007 the European Commission proposed that the existing directive on the quality of petrol and diesel fuels be amended in order to further reduce greenhouse gas emissions in the EU.<sup>84</sup> The Presidency Conclusions of 8 and 9 March 2007 presented 'An Energy Policy for Europe' which was based on the Commission Communication of the same name of January 2007. The policy included the following targets for energy efficiency and renewable energy (Article IV):

- 20% of total EU energy consumption to consist of renewable energy by 2020 at the latest;
- 10% of total consumption of petrol and diesel in the EU transport sector to consist of biofuels by 2020 at the latest.

### **V.3 Biofuel: sustainable energy?**

At the time of writing, there is growing debate over the issue of whether these targets for biofuels are feasible and whether the side effects of producing and processing biofuels are in fact as positive as was thought. Only recently, the government announced in a letter to the House of Representatives that the 5.75% target for biofuels is to be reduced to 3.75% for 2009 and 4% for 2010. The Netherlands currently continues to support the 10% European target, though the government says that its continued support in the long term will depend on the outcome of the evaluation scheduled for 2012.<sup>85</sup> At European level, too, plans are currently in the pipeline to reduce the original target for biofuels to 6.5%.

The AIV is in favour of such a move, as it doubts whether the 10% target can be achieved without compromising sustainability requirements for the production of biofuels. This concern relates primarily to production in vulnerable developing countries, and is based on the following considerations.

Biofuels are said to produce lower greenhouse gas emissions than fossil fuels. In practice, however, life cycle analysis shows that this is not always or not entirely the case. The large-scale production of second-generation biofuels is not likely to begin in the near future, for technological and commercial reasons. The biofuels produced will therefore be predominantly first-generation for some time yet.

Several studies have found that production of one litre of biodiesel takes an average of 0.2 to 1.3 litres of oil, to power the machinery used and produce artificial fertilisers,

83 An EU Strategy for Biofuels, COM(2006) 34 final, 8 February 2006.

84 Proposal for a Directive of the European Parliament and of the Council amending Directive 98/70/EC as regards the specification of petrol, diesel and gas-oil and introducing a mechanism to monitor and the introduction of a mechanism to monitor and reduce greenhouse gas emissions from the use of road transport fuels, COM(2007) 18 final, 31 January 2007.

85 Letter to parliament on biofuels targets, 13 October 2008.

pesticides etc.<sup>86</sup> The emissions caused by the production of biomass and biofuels can negate any environmental advantage of biofuel vis-à-vis fossil fuels, especially in the case of biodiesel and ethanol produced from maize.

In terms of energy supply, too, the potential will remain limited until major breakthroughs are made in the supply of second-generation biofuels. In a recent advisory letter, the General Energy Council stated that biomass cannot be expected to supply more than 10 to 30% of the world's energy in the future, simply because insufficient sustainably produced biomass is available.<sup>87</sup> To grow it requires a huge amount of agricultural land, something that Europe has in only limited supply. The OECD's *Environmental Outlook to 2030* predicts that, if policy on biofuels remains unchanged, the farmland needed to grow the raw materials for first-generation biofuels will have to increase by 242% worldwide by 2030, which would likely have a disastrous impact on biodiversity.<sup>88</sup> South America currently looks like the most promising location for the production of raw materials for biofuels, as large amounts of land are still available there, and to a very limited extent in Africa. Here, too, however, we must guard against the risk of large-scale deforestation, environmental damage and adverse social effects of biomass production for energy supply. There is therefore no reason for great optimism. The AIV would however like to highlight the fact that limited substitution of fossil fuels is already possible.

Furthermore – besides the huge development potential that biomass production might hold for developing countries – there is also a risk that biofuels production will have an adverse effect on the world food supply and on prices. Vulnerable groups in developing countries, particularly women, who are highly dependent on small-scale farming, are most at risk. According to World Bank figures, food prices have risen some 83% over the past three years.<sup>89</sup> This has prompted a debate between experts over the extent to which the price rises have been caused by the rapidly growing demand for energy produced from biomass. The Food and Agriculture Organisation (FAO) recently highlighted the extent to which agricultural markets are tied to other types of market, such as that for biofuels.<sup>90</sup> This has caused problems because, for example, countries like the United States and Brazil (the world's two largest producers of biofuels) have a policy of using a fixed percentage of their food crop harvest for biofuel production.<sup>91</sup> This reduces the food supply which, while it means food producers in developing countries profit from higher prices, increases the vulnerability of developing countries that are dependent on food imports.

86 Martijn Katan, Rudy Rabbinge and Wim van Swaaij, 'Toekomst voor biodiesel is illusie' ['Future for biodiesel an illusion'], *Het Financieele Dagblad*, 7 July 2006.

87 General Energy Council, Policy letter on biofuels, 10 April 2008, p. 1.

88 OECD, *Environmental Outlook to 2030* (Paris: OECD, 2008), p. 11.

89 World Bank, 'Rising food prices: policy options and World Bank response', 2008.

90 FAO, 'Soaring food prices: facts, perspectives, impacts and actions required', April 2008, p. 4.

91 In 2007, the US and Brazil accounted for 48% and 31% of bioethanol production respectively. See: OECD, *Biofuel Support Policies*, op.cit., p. 8.

Opinions now differ widely as to the role of biofuels in world food price rises. In July 2008 World Bank economist Donald Mitchell published a report in which he estimated that 75% of the total rise between January 2002 and February 2008 could be attributed to biofuels.<sup>92</sup> OxfamNovib's estimate in its report 'Another inconvenient truth' of June 2008 is considerably lower, at 30%.<sup>93</sup> It forecasts that this will jeopardise the livelihoods of 100 million poor people.<sup>94</sup> The OECD recently reported that government measures in support of biofuels have had a particular impact on the price of wheat, maize and vegetable oils, causing increases of between 5 and 19%.<sup>95</sup> It warns that 'proposed EU initiatives could further increase commodity prices by a similar magnitude'.<sup>96</sup>

It will be clear from these examples that, though the impact of biofuel production on food prices is recognised, estimates as to its precise role differ widely. The AIV would point out that, though this is difficult to assess as world food prices are affected by a large number of variables, the fact that biofuel production has an impact is undeniable. Clearly, there are several reasons behind the rising food prices, including rapid economic growth in Asia and other regions, the growing world population, the rise in meat consumption worldwide, extreme weather conditions, the agricultural policies of various countries, the low dollar exchange rate and perhaps speculation as well.

#### **V.4 Possible policy implications**

The potential contribution that first-generation biofuels can make to combating worldwide climate and energy problems seems to be limited, on both technical and social grounds. Although the EU has recently made decisions and issued policy plans on biofuels, the AIV believes that the design and implementation of Dutch and EU policy on biofuels should be adjusted. The first change should be a swift transition from first- to second-generation biofuels. The latter are expected to make a much greater contribution to international efforts to improve the climate and secure sustainable energy supplies than their first-generation counterparts. Since second-generation fuels are made from residual products and agricultural waste, they have no direct impact on the food market and therefore only indirectly affect food prices. Nor will production of these fuels place a direct burden on agricultural land. The production of biomass for second-generation biofuels is therefore a potential source of development for many developing countries, without entailing any major risks to biodiversity and the environment. It is even possible that it would enhance ecological value, though it is important that there be no changes in land use.

However, several factors are delaying the introduction of second-generation biofuels. The biggest of these is still technology. R&D is therefore essential if we are to make

92 Donald Mitchell, 'A note on rising food prices', The World Bank Development Prospects Group, July 2008.

93 OxfamNovib, 'Another inconvenient truth: how biofuel policies are deepening poverty and accelerating climate change', Briefing Paper No. 114, June 2008, p. 3.

94 Ibid.

95 OECD, *Biofuel Support Policies*, op.cit., p. 9.

96 Ibid.

the needed technological advances within the foreseeable future. It should be recognised, however, that the technical and economic feasibility of projects to promote second-generation biofuels depend on local circumstances. This is also worth considering when setting up demonstration installations and other kinds of experiments designed to introduce second-generation biofuel technologies.<sup>97</sup> The AIV is in favour of expanding Dutch development cooperation policy to include support for these kinds of pilot programmes and demonstrations.

Another obstacle is the cost structure of second-generation biofuels, which differs from that of the first generation. Unlike first-generation biofuels, where raw material costs account for over 70% of the cost price, 60% of the cost price of second-generation biofuel production is accounted for by the costs of investing in installation. This therefore requires a relatively large initial investment, with no guarantee of a return, given the major fluctuations in the biofuel market. The AIV believes that additional measures (such as investment grants, risk-bearing cofinancing and accelerated depreciation) to increase the security of investments in large-scale installations are needed to benefit the development of second-generation biofuels.

In this connection, the AIV would point out that, without targeted support measures, it is quite likely that no investments will be made in the technology needed for the second generation of biofuels because of the competing demand for biomass for more profitable applications in other sectors, including green electricity generation.

Until the second generation of biofuels is commercially available on a large scale, the emphasis will remain on first-generation biofuel production. On 23 January 2008, the European Commission set out a number of sustainability criteria in its proposed directive on renewable energy.<sup>98</sup>

- Above all, biofuels must cause lower CO<sub>2</sub> emissions than fossil fuels. The European Commission's target is a 35% reduction.
- Production must not adversely affect areas with a large degree of biodiversity or large carbon stocks.

The Presidency Conclusions of 14 March 2008 also underline the importance of such criteria.<sup>99</sup>

Ministers Jacqueline Cramer of the Environment and Spatial Planning and Bert Koenders of Development Cooperation notified the House of Representatives in a letter of May 2008 of how they intend to develop policy on sustainable development up to 2011.<sup>100</sup> They will press for the production of biofuels to be made more sustainable and for more international cooperation in this field, highlighting the need for sustainability criteria to be laid down at European level. The letter also calls for innovation to be focused mainly on the second generation of biofuels and on new crops. By enhancing the sustainability

97 ECN recently commissioned a pilot installation with a capacity of 150 kg of biomass per hour.

98 Commission Staff Working Document, Package of implementation measures for the EU's objective on climate change and renewable energy for 2020, SEC(2008) 85/3, 23 January 2008, p. 13.

99 Council of the European Union, Presidency Conclusions, 7652/08, 14 March 2008.

100 Letter to parliament on a government-wide strategy on sustainable development, DGM/BREM2008050615, 16 May 2008.

of biofuel production, the government hopes to 'exploit the potential [of biofuels] while avoiding any negative effects, and to support the developing countries in doing the same'.<sup>101</sup>

The AIV supports these objectives. It also believes that the policy, particularly with respect to developing countries, should focus primarily on supporting the production and use of second-generation biofuels. This should be one of the cornerstones of Dutch development cooperation policy, not only because it dovetails with the Netherlands' strong position in this field in terms of know-how and trade, but also because it offers opportunities for strengthening the agricultural and forestry sectors in developing countries, sparking new economic development and reinforcing local energy supplies, mainly on a small scale.

As a result, the role of biomass production for first-generation biofuels in developing countries is no longer supported by Dutch development cooperation policy. This is the right course of action in the opinion of the AIV. There will also be less of an emphasis on sustainability requirements for biomass, as now being developed at European level. This is significant because the AIV foresees a number of problems with the large-scale imposition of these kinds of requirements in economic relations with developing countries. Such requirements necessitate monitoring, validation and certification systems, but experience shows that getting them off the ground is a slow and difficult process due to the need to acquire sufficient public support. Moreover, it is risky for importing countries to introduce sustainability requirements for only a certain segment of internationally traded goods and services. Such actions could be seen as provocative, prompting questions like: 'Why is biomass subject to certification while food isn't?' Furthermore, the introduction of certification standards for imported biomass gives rise to the risk that exporting countries will not only call for worldwide enforcement, but also that they will demand the right to certify commercial flows going in the opposite direction, on the basis of their own criteria, or introduce certification requirements for other imported goods and services. The risks of escalating protectionism should be clear.

The AIV would also point to the fact that a sustainability test could be introduced for CDM projects in so far as they generate credits acquired by the national government. The principle under the Kyoto Protocol and the Marrakech agreements has always been that the host countries themselves should establish whether CDM projects on their territory meet national sustainable development objectives. However, countries that import CDM credits could equally take responsibility for applying sustainability criteria to the projects whose credits they buy. There is no active and consistent policy of testing in the sense that there are no clear, transparent, systematically tested and monitored principles, criteria and indicators.<sup>102</sup>

Considering the possible reproach that sustainability standards are being selectively and unilaterally imposed and considering that the CDM Executive Board has no facilities for monitoring the contribution of CDM projects to sustainable development, the AIV is in favour of introducing a sustainability test for credits to be acquired by means of CDM projects, parallel to the development of a similar test for biomass, preferably at EU level.

<sup>101</sup> Ibid.

<sup>102</sup> See: IOB, *Clean and Sustainable?* op.cit.

If the above recommendations are incorporated into Dutch and EU policy, the production and use of biofuels could play a positive role not only in international efforts to improve the climate and energy supply, but also and especially in enhancing economic development and stability, food supply and energy security in developing countries.

## **V.5 Biofuels policy in developing countries**

The debate on the use of biofuel can also be seen in the context of poverty reduction. The production and use of biofuels could in fact offer major opportunities for developing countries. Biofuels constitute a sizable new market for the agricultural sector, and farmers are currently benefiting from the demand for food and high market prices they can command. The biofuel market could therefore act as an engine of economic growth in developing countries. However, such developments are hampered to a significant extent by the EU policy of charging import duty on bioethanol.

The AIV would also highlight the fact that large-scale biofuel production for export could jeopardise local food security. Using crops for biofuel can give rise to competition with food cultivation: for land, water and nutrients. Large-scale biofuel refineries have so far been successful only in Brazil, and the Brazilian situation is exceptional. Brazil has huge amounts of usable farmland, biofuel production does not conflict with the production of food, and the country already has 30 years' experience of producing fuel from sugar cane, the most sustainable of the first-generation biofuels. Given that the situation in most developing countries is very different, it would not be wise to seek to produce biofuels on a large scale elsewhere. However, many developing countries already have biofuel programmes, most of them set up at the instigation of industrialised countries. Such programmes cannot simply be abandoned, so the focus should be on improving them.

Having said that, the AIV believes that biomass does offer opportunities for a number of developing countries in specific circumstances, especially if it can be produced on a small scale and for the purpose of generating energy locally. In this way countries that are dependent on energy imports could meet some of their own energy needs and relieve their balance of payments.

The AIV takes the view that developing and implementing biomass production for second-generation biofuels would mark a major step forward in the development of the biomass option for the transport sector. At the moment, it offers developing countries good opportunities, with limited risks in terms of sustainability. Dutch development policy should therefore press for the further, accelerated development and application of this option, combined as far as possible with a strengthening – in the context of international cooperation – of policy designed to promote and improve agricultural and forestry activities in developing countries and the transfer of the necessary technology and knowledge. The combination of agriculture and forestry with the – partly related – production of second-generation biofuels could help meet local energy needs.

If there is a major expansion in the role of developing countries in the production and possible export of biomass for second-generation biofuels, the Netherlands could benefit economically thanks to its strong position in terms of know-how and technology, its ports and its biomass processing capacity.<sup>103</sup>

103 General Energy Council, Advisory letter on biofuels, 10 April 2008, p. 5.

The geographical spread in the supply of these raw materials currently makes the large-scale collection of raw materials for second-generation biofuels logistically difficult. The Netherlands could play a pioneering role by setting up logistics chains and production systems for the raw materials from which second-generation biofuels are derived. In part through its development cooperation policy, the Netherlands could also be a trendsetter in supporting the development of local processing in developing countries.

## VI Summary and recommendations

### ***International climate policy, adaptation and responsibility***

Up till now, there has been a strong emphasis in international climate policy and research on reducing emissions and capturing/storing greenhouse gases. Collectively, these processes are typically referred to as mitigation. Even if we were to embark on a global mitigation programme today, the temperature in various parts of the world would continue to rise over the next few decades, allowing the other effects and manifestations of climate change to continue unabated. This means that in addition to alleviating climate change in all its myriad forms, we need to adapt to its effects. Adaptation entails devising a comprehensive set of facilities (including infrastructural facilities) and other measures – not in order to *prevent* the manifestations of climate change, but rather to *respond* to their harmful effects, both present and future.

There is a broad realisation that adaptation should be addressed with the same sense of urgency as mitigation. At present, the effects of climate change are mainly making themselves felt in vulnerable developing countries, which have contributed the least to the problem. These effects impede our progress towards the Millennium Development Goals.

Under international law, industrialised countries have a responsibility to aid vulnerable developing countries in their fight against the effects of climate change and the damage it causes. This responsibility arises from the general duty of international cooperation, the principle of common but differentiated responsibilities, and the principle of intergenerational equity (i.e. the obligation to take account of the interests of future generations). These principles are all firmly anchored in international law.

The ‘polluter pays principle’, which has been accepted by the countries of the OECD, is also enshrined in the Treaty on the Functioning of the European Union (article 191, paragraph 2). In the opinion of the AIV, this principle, which also appears as principle 16 of the 1992 Rio Declaration on Environment and Development, cannot yet be regarded as legally binding. A general basis for the responsibility of industrialised countries to help reduce climate change can be found in principle 7 of the Rio Declaration, and in articles 3 and 4 of the United Nations Framework Convention on Climate Change (UNFCCC), which refer to countries’ duty ‘to protect the climate system to the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capacities’.

Taking these provisions into consideration, the AIV believes that the Netherlands is right to feel a sense of responsibility for the future of the planet and its inhabitants. Bearing in mind this responsibility, the disproportionate responsibility of wealthy countries for the climate problem, and the difference in prosperity between this country and the developing world, the AIV believes that the Netherlands should be prepared to undertake certain obligations with regard to funding adaptation in developing countries. The actual amounts involved will have to be specified in the course of future negotiations. This does not alter the fact that emerging economic powers like India and China are also responsible for a substantial and rapidly growing proportion of global greenhouse gas emissions and should therefore also be involved in the new climate agreement.



With respect to financing adaptation in developing countries, there is reason for concern, given that '[...] the multilateral aid response to adaptation financing in developing countries [...] has been characterised by chronic under-financing, fragmentation and weak leadership'. Recent financial and economic developments in the industrialised countries are unlikely to improve the situation. With this in mind, the AIV would advise the Minister for Development Cooperation to concentrate on not only pushing for more clarity about financial burden sharing in this area, but also making an appropriate contribution to the financing.

### ***Estimating adaptation costs and raising funds***

Adaptation costs include not only expenses pertaining to new activities but also additional expenses for existing processes and infrastructure. (Here the word 'additional' refers to the relationship to baseline costs, i.e. spending that would already be occurring if there were no climate change.) The World Bank is currently working on a systematic projection for adaptation costs. Until this projection is complete, we will have to make do with existing estimates, which vary from USD30 to 70 billion annually.

It is expected that industrialised countries will make a serious financial or in-kind contribution to the international Adaptation Fund linked to the Bali Action Plan. Given the magnitude of the estimated cost of climate change in the developing world, the annual contribution for each committed party could mount up over time to a proportional share (on the basis of as yet undetermined criteria). In the opinion of the AIV, the Netherlands should also strive towards this goal, provided there is sufficient international support and commitment.

On the basis of the Netherlands' share in global CO<sub>2</sub> emissions, Oxfam has estimated that this country would be responsible for just under 2% of the aforementioned costs. This is only an approximation, and a slightly high one at that. It is based on orders of magnitude, in the absence of internationally accepted formulas. If the costs are spread evenly over public and private sources, the public-sector contribution would fall somewhere between EUR200 and 450 million annually, drawn from the Homogeneous Budget for International Cooperation (HGIS) (ODA and non-ODA). Adding this amount to the private-sector contribution results in a total of between EUR400 and 900 million a year. These non-public funds will be raised mainly through extra taxes and other regulations imposed on companies and consumers. For the most part, these funds are not expected to come from private investment in adaptation projects, whether domestic or foreign. Indeed, in the view of the AIV, this component will make up only a tiny share of the total private contribution.

### ***Mitigation***

The AIV would observe that, regardless of the scale of the mitigation measures taken and the resources spent over the next few decades, adaptation measures (and thus a significant financial outlay) will remain necessary, due to the manifestations of climate change that are already taking place. Over time, however, mitigation can halt far-reaching changes to the climate system, rendering adaptation measures less urgent. Although mitigation and adaptation are often seen as two independent strategies in the fight against climate change, they are actually complementary. In a number of areas, such as optimising land use, they behave synergistically, reinforcing each other to the greater good. Obviously, this interaction has implications for overall costs: if mitigation efforts fall short, the costs of adaptation will rise. For that reason climate policy should always consist of both mitigation and adaptation.

Developing countries, where there are major opportunities for mitigation, must also be involved in mitigation policy. Many of these opportunities are in the agricultural sector. The transition from traditional farming techniques to more advanced ones could significantly reduce various types of emissions, including methane. This could be achieved by improving land management, introducing supplementary irrigation and reorganising existing farmlands. Better management of livestock and manure could also reduce emissions. Of course, regardless of what is decided next year in Copenhagen, the Dutch government could amend its development cooperation policy to reflect these considerations, by investing more in advanced agricultural methods in developing countries.

### ***Policymaking in industrialised countries: various components***

It is time for the industrialised countries to be more specific about their future adaptation policy for developing countries. The AIV would like to see the Netherlands take the initiative in clarifying these plans. This standpoint is based on a number of factors: the Netherlands has traditionally played an important role in international climate policy and, more generally, development cooperation as a whole. Given the country's low elevation, it will have to implement quite a few adaptation programmes of its own. The Netherlands also has several comparative advantages in typical adaptation sectors like agriculture, infrastructure, water management and coastal defences.

With regard to shaping adaptation policy, the AIV is in favour of distinguishing between three components of adaptation support, depending on the nature of the climate change processes.

#### Component 1:

One of the principal manifestations of climate change will be an increase in extreme weather conditions: floods, hurricanes, sudden extreme drought, heat waves, unusually heavy rainfall, etc. These conditions can give rise to natural disasters that require an immediate humanitarian response. Efforts designed to provide such a response are typically part of the development programmes of bilateral and multilateral donors, and for that reason require no new policy frameworks. It may, however, be advisable to restructure existing budgets so as to direct more resources towards humanitarian aid. This will have to be done on a case-by-case basis, depending on the climatological situation. The AIV would note that extensive budget restructuring will have to be financed with traditional development cooperation resources or in some other way. Better international coordination is also crucial in this connection.

#### Component 2:

The second component has to do with the gradual changes in the average values of the main climate variables (e.g. temperature, rainfall or wind force). This means that while certain regions will gradually become drier, others will grow wetter, and so on. The AIV assumes that, barring certain exceptions, the impact of slow climate shifts can be accommodated by a development cooperation policy which is already designed in part to help societies that are undergoing dramatic (and sometimes quite rapid) changes in many other areas.

#### Component 3:

New adaptation initiatives are most clearly visible in the third component. The most important such initiative is climate-proofing current and future development cooperation activities, and the sum total of all measures aimed at building adaptation capacity (component 3).

The AIV feels the new initiatives designed to build up current and future adaptation capacity (component 3), preferably in the context of the Bali Action Plan, should be seen as a new, supplementary area of development cooperation policy and indeed foreign policy in general, including international security and reconstruction policy. These international obligations can have major consequences for the Netherlands. For instance, such initiatives may result in a further increase in total HGIS expenditure, depending on the political decisions made. Deciding whether such an increase is advisable will entail consultation with international partners. It will also require a significant measure of support from the Dutch public. It is important to allow for the possibility that a failure to tackle adaptation promptly could cause many resources that had been earmarked for adaptation support to be swallowed up by emergency aid, which could in turn jeopardise other parts of the ODA budget.

#### ***The choice of channel with regard to possible adaptation support***

In building up adaptation capacity and climate-proofing existing development efforts by way of both the public and private sectors, the Netherlands should not act alone, but rather direct its efforts via incipient EU, Bali and post-Bali channels, depending on the degree of progress made in international negotiations.

#### ***Setting priorities***

The AIV believes that any action taken by the Netherlands to influence the adaptation agenda should be informed by the following considerations, particularly point (a):

- f) meeting the needs of the relevant developing countries themselves, as expressed in (independently reviewed) National Adaptation Programmes of Action (NAPAs) and elsewhere;
- g) the relevance of these needs with respect to the poorer segments of the population, the number of citizens involved and the economic values to be protected;
- h) the impact on poverty reduction (MDG1);
- i) the absorption capacity of the relevant developing countries or regions;
- j) the relevant priorities in international cooperation and development cooperation policy, in terms of not only sectors and countries/regions, but also human rights;
- k) the relative expertise of and/or within Dutch society.

Bilateral adaptation support should, in the opinion of the AIV, be limited in principle to the 40 existing partner countries (36, plus four in post-conflict situations).

#### ***Global and national adaptation programmes***

NAPAs identify developing countries' most urgent needs in relation to the *current* threats posed by climate change. These programmes of action also include responses to current climate variability based on existing knowledge.

The AIV believes that NAPAs should be used to address developing countries' *future* adaptation needs as well. The Netherlands should actively work to develop NAPAs or similar policy plans in the most vulnerable of the 40 development cooperation partner countries. The AIV is therefore in favour of establishing an international think-tank that can take the lead in devising the necessary 'Delta plans' (comprehensive master plans with a long-term horizon). In addition to national NAPAs, a global adaptation master plan for developing countries (a kind of worldwide NAPA coordinated by the UN) should be drafted for developing countries to offer an integrated framework for: defining the extent and urgency of adaptation problems in the various developing countries, setting priorities for future actions, and facilitating the development and application of national NAPAs on the basis of technical and economic knowledge.

### ***Climate and global energy supply***

The AIV has identified a number of possible conflicts of interest at the intersection of climate and energy. These stem primarily from threats to the global energy supply. The current concerns associated with worldwide energy consumption thus centre on the following problems: energy supply security; access to energy; the increasing demand for energy; the high cost of essential investments in the energy infrastructure; and finally, environmental damage caused by fossil fuels.

It is the position of the AIV that meeting limited basic energy needs of approximately 50 kWh per person per year by means of renewable energy contributes next to nothing to achieving global climate objectives. It is therefore ineffective, in the short term, to use renewable energy on a large scale to meet the energy needs of the two billion energy poor, because that course of action does little to bring us closer to global climate change objectives. Nevertheless, depending on local conditions, there are still major opportunities in this area, not all of them involving renewable energy. In short, providing for the energy needs of the very poorest requires a differentiated approach, which will vary as to country and region.

The AIV takes issue with the suggestion that stabilising climate change and reducing poverty are somehow fundamentally incompatible, as a result of the increase in emissions that is thought by some to be an inevitable corollary of economic growth. To begin with, this increase in energy consumption is likely to be relatively minor. But even if it should turn out to be larger than expected and even if only a fraction of it consists of renewable energy, the AIV cannot imagine that this would lower poverty reduction objectives in the Millennium Development Project. The AIV supports the recent policy memorandum on the environment and renewable energy in development cooperation, with respect to promoting the introduction of renewable energy in the poorest countries in Africa. However, it is important to ensure that projects to promote the use of renewable energy do not derail efforts to improve energy access for the very poorest.

### ***Biofuel: energy for the future?***

The AIV finds it encouraging that Dutch and presumably also European targets for the use of biofuels are being lowered, as it is uncertain if the current target can be achieved without compromising sustainability requirements with respect to biofuel production. This concern relates primarily to the production of first-generation biofuels in vulnerable developing countries, given the drawbacks associated with this production process. For example, the emissions caused by cultivating and distributing biomass and biofuel can negate any environmental advantage of biofuel vis-à-vis fossil fuels (especially in the case of biodiesel and ethanol produced from maize). Biofuel production can also have an adverse effect on biodiversity, world food prices and food supplies. The potential contribution that first-generation biofuels can make to combating worldwide climate and energy problems is therefore limited, on both technical and social grounds.

Although the EU has recently made decisions and issued policy plans on biofuels, the AIV believes that the principles underlying Dutch and EU policy on biofuels should be re-evaluated. The first change should be a swift transition from the use of first- to second-generation biofuels.

It should be recognised, however, that the technical and economic feasibility of projects to promote second-generation biofuels depends on local circumstances. This is also worth considering when setting up demonstration installations and other kinds of experiments designed to introduce second-generation biofuel technologies. The AIV is in favour of expanding Dutch development cooperation policy to include support for these

kinds of pilot programmes and demonstrations.

The AIV believes that taking additional measures (such as investment grants, risk-bearing cofinancing and accelerated depreciation) to increase the investment security of large-scale installations could benefit the development of second-generation biofuels.

The Netherlands could play a pioneering role by setting up logistics chains and production systems for the raw materials from which second-generation biofuels are derived. In part through its development cooperation policy, the Netherlands could also be a trendsetter in supporting the development of local processing, in developing countries and elsewhere.

The AIV feels that the policy, particularly with respect to developing countries, should focus primarily on supporting the production and use of second-generation biofuels. This should be one of the cornerstones of Dutch development cooperation policy, not only because it dovetails with the Netherlands' strong position in this field, with respect to knowhow and trade, but also because it offers opportunities for strengthening the agricultural and forestry sectors in developing countries, sparking new economic development and reinforcing local energy supplies, mainly on a small scale.

As a result, the role of biomass production in first-generation biofuels and developing countries is no longer supported by Dutch development cooperation policy. This is the right course of action in the opinion of the AIV. There will also be less of an emphasis on sustainability requirements for biomass, as now being developed at European level. This is significant because the AIV foresees a number of problems with the large-scale imposition of these kinds of requirements in economic relations with developing countries. Such requirements necessitate monitoring, validation and certification systems, but experience shows that getting them off the ground is a slow and difficult process due to the need to acquire sufficient public support. Moreover, it is risky for importing countries to introduce sustainability requirements for only a certain segment of internationally traded goods and services. Such asymmetrical policy could be seen as provocative, prompting questions like: 'Why is biomass subject to certification while food isn't?' Furthermore, the introduction of certification standards for imported biomass gives rise to the risk that exporting countries will not only call for worldwide enforcement, but also that they will demand the right to certify commercial flows going in the opposite direction, on the basis of their own criteria, or introduce certification requirements for other imported goods and services. The risks of escalating protectionism should be clear.

Considering the possible reproach that sustainability standards are being selectively and unilaterally imposed and considering that the CDM Executive Board has no facilities for monitoring the contribution of CDM projects to sustainable development, the AIV is in favour of introducing a sustainability test for credits to be acquired by means of CDM projects, parallel to the development of a similar test for biomass, preferably at EU level.

Having said that, the AIV believes that biomass does offer opportunities for a number of developing countries in specific circumstances, especially if it can be produced on a small scale and for the purpose of generating energy locally. In this way countries that are dependent on energy imports could meet some of their own energy needs and relieve their balance of payments. Large-scale biofuel production for export purposes, however, can pose a danger to local food security. Using crops for biofuel can give rise to competition with food cultivation: for land use, water and nutrients, etc.

## **Annexes**

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Re: Request for advice on climate change, energy and poverty reduction

Dear Mr Korthals Altes,

I am writing to request an advisory report from the Advisory Council on International Affairs on the subject of climate change and sustainable energy, and how they relate to poverty reduction.

#### Background

Under the 'polluter pays' principle, the Netherlands bears a share of the responsibility for combating climate change in developing countries. Africa is a poignant example of a continent that has barely contributed to historical greenhouse gas emissions, but which is nevertheless facing the consequences of climate change.

The adaptation to climate change in developing countries is estimated to cost between 20 billion and 100 billion euros per year. The global development budget obviously will not cover costs of this magnitude. According to the polluter pays principle, those who are responsible for historical and future emissions should bear the cost of adaptation, as this provides an incentive for emissions reduction. Through the World Bank, the Ministry of Foreign Affairs and the British government have commissioned a study into the costs of climate policy. An AIV advisory report would complement this study by focusing on the distribution of costs among the different parties.

Climate change is a given. Although we do not yet have a complete understanding of the phenomenon, we cannot do nothing simply because more research is needed. This means, however, that some measure of uncertainty will be inherent in any adaptation policy. It is therefore crucial to establish priorities based on existing knowledge, incorporating new information as it becomes available, in order to ensure resources are used effectively. In addition, we must estimate the capacity of developing countries to adapt to climate change and find a way of embedding this information in instruments like PRSPs and the Paris Agenda. This builds on our previous analyses of the climate-related risks of programmes, supported by the Netherlands, in Bangladesh, Bolivia and Ethiopia. We need to gain insight into the entire process, from identifying effects and estimating the attendant risks to evaluating whether or not those risks are acceptable and – if not – devising adaptation options and calculating their cost-effectiveness.

The issue of climate change must be seen against the backdrop of the two billion poor who currently lack basic access to clean energy, in particular electricity and natural gas or biogas. The energy policies of most developing countries have failed to improve energy access for the poor in the last two decades. A certain percentage of the global poor have even seen their situation deteriorate: obtaining fuel has become more time-consuming and costly; burning low-quality fuels has caused severe air pollution, and the energy supply has become unreliable. This situation has a tangible impact on poor people's opportunities for development.

Energy security has become a major geopolitical issue. Competition for limited energy resources has only recently become serious, now that China and India are enjoying robust economic growth. The high volatility that characterises the oil and gas market is also due to extreme weather events and regional political instability. Purchasing power and the ability to act quickly are evidently becoming essential on the energy market now and in the future, and may leave two billion poor people without energy access in the cold and in the dark.

A simple calculation reveals that using fossil fuels to meet these two billion people's basic energy needs would increase global emissions by a mere 1%. The expedient choice might therefore be to opt for a 'full menu of options' rather than a strict focus on renewable energy, especially in view of the latter's high investment costs.

#### Issues to be addressed by the AIV

The government would appreciate answers to three main questions.

1. How could the Netherlands most effectively fulfil its responsibility in this matter? How could the polluter pays principle be applied to Dutch society?
2. Climate change is a relatively new issue on developing countries' political agenda. Until now, there has been little research into which segments of society will feel the effects of climate change most, and this forms an obstacle to effective adaptation policy. In view of the limited knowledge available on adaptation, what should be the Netherlands' priorities in order to ensure an effective use of resources?
3. What is the relationship between climate change and global energy security for the two billion people with limited energy access? How could the Netherlands find a good balance between possibly conflicting interests? To what extent should the Netherlands and other donors, driven by long-term environmental interests, restrict their energy sector support programmes for the two billion poor to renewable energy?

I look forward to receiving your advisory report as soon as possible.

Yours sincerely,

(signed)

Bert Koenders  
Minister for Development Cooperation



**List of abbreviations**

<b>AER</b>	General Energy Council
<b>AIV</b>	Advisory Council on International Affairs
<b>CEI</b>	European Integration Committee
<b>CERs</b>	Certified emission reductions
<b>CDM</b>	Clean Development Mechanism
<b>COS</b>	Development Cooperation Committee
<b>CMR</b>	Human Rights Committee
<b>ECN</b>	Energy Research Centre of the Netherlands
<b>EU</b>	European Union
<b>FAO</b>	Food and Agriculture Organization
<b>FDI</b>	Foreign Direct Investment
<b>GATT</b>	General Agreement on Tariffs and Trade
<b>GCCA</b>	Global Climate Change Alliance
<b>GDI</b>	Gross Domestic Investment
<b>GDP</b>	Gross Domestic Product
<b>GEF</b>	Global Environment Facility
<b>GNP</b>	Gross National Product
<b>HGIS</b>	Homogeneous Budget for International Cooperation
<b>IEA</b>	International Energy Agency
<b>IMF</b>	International Monetary Fund
<b>IOB</b>	Policy and Operations Evaluation Department
<b>IPCC</b>	Intergovernmental Panel on Climate Change
<b>KEA</b>	Climate, Energy and Poverty Reduction Committee
<b>LDC</b>	Least Developed Countries
<b>LEG</b>	LDC Expert Group
<b>LLDC</b>	Landlocked Developing Countries
<b>MDG</b>	Millennium Development Goal
<b>NAPA</b>	National Adaptation Programme of Action
<b>NC</b>	National Communication
<b>NGO</b>	Non-governmental organisation
<b>ODA</b>	Official Development Assistance
<b>OECD</b>	Organisation for Economic Cooperation and Development
<b>REDD</b>	Reducing Emissions from Deforestation in Developing Countries
<b>R&amp;D</b>	Research and Development

<b>SER</b>	Social and Economic Council
<b>SIDS</b>	Small Island Developing States
<b>UN</b>	United Nations
<b>UNDP</b>	United Nations Development Programme
<b>UNEP</b>	United Nations Environment Programme
<b>UNFCCC</b>	United Nations Framework Convention on Climate Change
<b>US</b>	United States
<b>WMO</b>	World Meteorological Organisation

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