



# Clean and sustainable?

An evaluation of the contribution of the Clean Development  
Mechanism to sustainable development in host countries

Buitenlandse Zaken  
**Ontwikkelings  
samenwerking**





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Printing OBT, The Hague

Design Corps, The Hague

Cover design Eindeloos, The Hague

Lay-out Eindeloos, The Hague

Cover picture Painting of the Tejona Wind Park in Costa Rica (2006)

ISBN 978-90-5328-356-1

Ordercode OSDR 6616/E

[www.minbuza.nl/iob-en](http://www.minbuza.nl/iob-en)

April 2008

# Preface

At this moment, climate change is in the spotlight. The negative effects of climate change may be devastating, especially in the developing countries. There is a growing consensus that especially greenhouse gases contribute to climate change and the resulting problems. In 1997, most industrialised countries signed the Kyoto Protocol and agreed to limit or reduce their emissions of greenhouse gases (GHGs). The protocol introduced several mechanisms to help these countries lower the overall costs of achieving their emissions targets. One of them is Clean Development Mechanism (CDM). The CDM allows industrialised countries to implement or support projects that reduce emissions in countries without reduction targets, in practice developing countries, in return for certified emissions reductions (CERs). A condition is that these projects contribute to sustainable development in the host countries. Before CDM was implemented, several countries had started pilot projects under the umbrella of the 'Activities Implemented Jointly'. The Directorate-General for International Cooperation of the Netherlands Ministry of Foreign Affairs started a number of these pilot projects. The Ministry of Housing, Spatial Planning and the Environment (VROM) is responsible for the Dutch CDM policy and portfolio.

This evaluation analyses the (expected) contribution of projects in the Netherlands CDM portfolio to sustainable development in host countries. The report synthesises the findings of two background studies. The Institute for Environmental Studies at the Vrije Universiteit Amsterdam has conducted the first study. This study evaluates five pilot projects that were implemented as a part of the pilot phase of Activities Implemented Jointly (AIJ). The study evaluates projects in Vietnam, China, India, South-Africa and Costa Rica. The study is based on research conducted by Harro van Asselt, Tjasa Bole, Luke Brander, Sebastiaan Hess, Kim van der Leeuw from the Netherlands and Anandya Bhattacharya, Phung Thanh Binh, James Blignaut, He Guizhen, Ma Hua, Rakesh Jha, Han Jingyi, Steve Mack, Pham Khanh Nam Franz Rentel, Mariamalia Rodriguez, Shirish Sinha, Tran Vo Hung Son Shi Yajuan Sun Yamei, Lu Yonglong from the case study countries.

The Foundation Joint Implementation Network (JIN) in Groningen has conducted the second study. That study gives an assessment of the expected contribution of CDM projects to sustainable development in host countries.

Joyeeta Gupta, Pieter van Beukering (IVM), Wytze van der Gaast and Friso de Jong (JIN) have written this synthesis report. Antonie de Kemp, evaluator at the Policy and Operations Evaluation Department (IOB) supervised the project for IOB, while Jan van Raamsdonk and Otto Hospes (IOB) provided comments on the draft versions of the background studies and the synthesis report. A reference group, consisting of Henri Jorritsma, deputy director of IOB, Lucy Naydenova of the Ministry of Housing, Spatial Planning and the Environment (VROM), Ton Boon von Ochssee, Ambassador for Sustainable Development and Christine Pirennne and Ton van der Zon from the Environment and Water Department of the Ministry of Foreign Affairs, provided comments and advice on the report.

IOB is responsible for the contents of the report.

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# Abbreviations

AEC	Agricultural Extension Centre
AIJ	Activities Implemented Jointly
CAAS	Chinese Academy of Agricultural Sciences
CAF	Corporación Andino de Fomento
CAS	Chinese Academy of Sciences
CBA	Cost Benefit Analysis
CD4CDM	Capacity Building for CDM
CDCF	Community Development Carbon Fund
CDM	Clean Development Mechanism
CERs	Certified Emissions Reductions
CERUPT	Certified Emission Reduction Unit Procurement Tender
CMM	Coal Mine Methane
CO <sub>2</sub>	Carbon dioxide
Crore	Ten million or 100 lakh (Indian unit of measurement)
DA	Department of Agriculture (within MARD)
DAFE	Department for Agriculture and Forestry Extension
DARD	Department for Agriculture and Rural Development
DESI Power	Decentralised Energy Systems India Private Ltd.
DGIS	(Netherlands) Directorate General for International Cooperation
DMW	(Netherlands) Environment and Water Department
DNA	Designated National Authority
ECN	Energy research Centre of the Netherlands
EIA	Environmental Impact Assessment
ERPA	Emission Reduction Purchase Agreement
EU ETS	European Union Emissions Trading Scheme
FFI	Flora and Fauna International
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse gas

Gol	Government of India
GoN	Government of the Netherlands
GWP	Global Warming Potential
HFC-23	Trifluoromethane
IBRD	International Bank for Reconstruction and Development
ICE	Instituto Costarricense de Electricidad
ICJ	International Court of Justice
IEP	Integrated Energy Policy
IFC	International Finance Corporation
IRPP	Independent Rural Power Producer
ITCR	Instituto Tecnológico de Costa Rica
JI	Joint Implementation
KP	Kyoto Protocol
KWh	Kilowatt hour
Lakh	One hundred thousand (Indian unit of measurement)
LoA	Letter of Approval
LULUCF	Land Use, Land Use Change and Forestry
MARD	Ministry of Agriculture and Rural Development of Vietnam
MCA	Multi-criteria analysis
MoU	Memorandum of Understanding
Mt	Million (metric) tonne
MW	Megawatt
NBSC	National Biogas Steering Committee
NPV	Net Present Value
OCIC	Oficina Costarricense de Implementación Conjunta
ODA	Official Development Assistance
OECD	Organisation for Economic Cooperation and Development
PBPO	Provincial Biogas Project Office
PCF	Prototype Carbon Fund
PCN	Project Concept Note
PDD	Project Design Document
PIN	Project Idea Note
PLF	Plant Load Factor
PPAIJ	Activities Implemented Jointly Pilot Programme
PPP-JI	Programme on Pilot Projects for Joint Implementation
RCEES	Research Centre for Eco-Environmental Sciences
RDAC	Rural Development Assistance Centre
REP 2006	Rural Electrification Policy 2006
RGVY	Rajiv Gandhi Grameen Vidyutikaran Yojana

RMB	Renminbi - Chinese currency
Rs	Indian Rupees
RVEP	Remote Village Electrification Programme
RZQ	Rijkszwaan Qingdao
SAHDP	Shouguang Agricultural High-tech Demonstration Park
SDERI	Shandong Academy of Sciences / Energy Research Institute
SMAC	Shouguang Municipal Agricultural Committee
SNAC	Foundation for Shandong - North-Holland Agricultural Cooperation
SNV	The Netherlands Development Organisation
UICN	Unión Mundial para la Naturaleza
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
VND	Vietnamese Dong
VROM	Netherlands Ministry of Housing, Spatial Planning and the Environment



# Executive summary

## Introduction

At the moment, climate change is in the spotlight, but this interest is not new. The recognition of the problems of climate change led to an intergovernmental negotiating process, which concluded two treaties: the United Nations Framework Convention on Climate Change (UNFCCC) in 1992 and the Kyoto Protocol in 1997. Under the Kyoto Protocol, most industrialised countries agreed to limit or reduce their emissions of greenhouse gases (GHGs) *vis-à-vis* a base year (in most cases 1990). The Protocol introduced three mechanisms to help these countries lower the overall costs of achieving their emissions targets. The first is international emissions trading. The second mechanism, called Joint Implementation (JI), gives industrialised countries an opportunity to partly fulfil their obligations through projects in other industrialised countries (in practice Eastern European countries). The investing countries may acquire the GHG reductions realised in these projects. By means of the third mechanism, the Clean Development Mechanism (CDM), countries with an obligation to reduce GHGs may, in return for certified emissions reductions (CERs), implement projects that reduce emissions in countries without reduction targets. However, the latter projects must contribute to sustainable development (social, economic and ecological) in the host countries. CDM projects can thus help industrialised countries comply with their Kyoto Protocol commitments and at the same time can help developing countries achieve a path of sustainable development (SD), by transferring clean energy and energy efficient technologies. The concept of emissions trading on the basis of GHG- emission reducing projects in third countries was first implemented through a pilot phase of Activities Implemented Jointly (AIJ). In 1996, in the build-up to the Kyoto Protocol, the Netherlands Ministry of Foreign Affairs had already created the Netherlands AIJ Fund. Intended as a pilot, the fund was meant to show if and how development and emission reduction goals could be served concomitantly.

In order to meet its commitments under the Kyoto Protocol (a reduction of about 200 Mt CO<sub>2</sub>-eq.), the Netherlands has the objective to acquire approximately 100 Mt CO<sub>2</sub>-eq. emission reduction credits from other countries. Over half (67 Mt) are to be purchased from projects in developing countries via the Clean Development Mechanism (CDM).<sup>1</sup> In the Netherlands, the Ministry of Housing, Spatial Planning and the Environment (VROM) is responsible for the Dutch CDM policy and the acquisition of emission reduction credits. The Ministry has started at an early stage the process of buying these credits.

This study evaluates the Netherlands AIJ projects implemented under the Netherlands pilot project programme of 1994-2000 and examines the 'expected' contribution to sustainable development of the portfolio of CDM projects the Netherlands is currently engaged in. The AIJ projects were part of a pilot; their dual aim was simultaneously to contribute to development and to reduce GHGs. The evaluation seeks to improve the understanding of what may be expected from such projects and to elucidate the relation between expectations and actual outcomes. The AIJ projects evaluated were in Costa Rica (wind power), Vietnam (biogas), South Africa (mini-hydro plant), China (sunny greenhouses) and India (Biomass gasifier). In addition, 44 projects in the Dutch CDM portfolio were analysed.

The focus is on the contribution of these projects to 'sustainable development' in the host countries. Sustainable development can be defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains two key concepts. The first is the concept of 'needs': in particular, the essential needs of the world's poor, to which overriding priority should be given. The second is the idea of limitations imposed by the state of technology and social organisation on the environment's ability to meet present and the future needs (Brundtland Commission, 1987). The report discerns three dimensions of sustainable development: an ecological dimension, an economic dimension and a social dimension. Because most CDM projects are either still ongoing or have yet to be implemented, the conclusions are based on the 'expected' contribution to sustainable development and not on the actual contribution.

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<sup>1</sup> The remaining 33 Mt will be acquired through JI projects.



## Conclusions

1. *The results of the AIJ projects in terms of their contribution to sustainable development are mixed.*

An examination of the five AIJ projects undertaken in the period 1994-2007 reveals that the success rates have been variable. While one project was successful in reducing greenhouse gases and in contributing to sustainable development, another project has not performed as expected. Its contribution to reducing greenhouse gases cannot be determined, as the baseline situation is unclear and the contribution to sustainable development is negligible.

The pioneering projects have faced different types of initial hurdles. Some projects (in Costa Rica, for example) took a long time to develop. For the project in South Africa it took a long time to secure the national permits. Other projects (in China) started without a baseline. The more successful projects succeeded because the partners were proactive in ensuring that the project was well designed and well executed. The more successful projects are demand-driven. They explicitly take sustainable development into account.

The factor critical for a project's success is good design. Also essential is the maintenance of high-quality project documentation, since this enables local managers to be aware of the effectiveness of their operations, and to intervene if necessary. Finally, it should be recognised that projects to promote innovative ideas with demonstrative effect in developing countries inevitably take longer to develop. The contribution to sustainable development was not a legally binding element at the time of project development; only one of the five projects (Vietnam) explicitly took this contribution into account. Hence, this project scores very well in terms of meeting sustainable development criteria and of reducing emissions per Euro spent. This project was also the most cost-effective of the five - indicating that a well designed project can simultaneously be cost effective and meet the criteria of sustainable development.

2. *Projects in the Netherlands CDM portfolio will probably make a positive contribution to the social and economic development in the host country. This contribution, however, is not always guaranteed.*

About half of the CDM projects in the Netherlands portfolio mention sustainable social, economic and environmental effects (apart from the reduction of greenhouse gases). A wide range of benefits can be expected from these projects, although the way in which they are expected to contribute to sustainable development varies substantially depending on the technology used. About

three-quarters of the projects aim at generating electricity for on- or off-site use. The largest range of sustainable development benefits is expected to be delivered by the several small-scale renewable energy projects. The smallest benefits are expected to come from the HFC-23 reduction projects and fugitive gas capture projects. While all these projects are expected to automatically generate the direct sustainable development benefits such as technology transfer and local environmental benefits, the indirect benefits, i.e. benefits not directly related to the GHG abatement component such as those related to improving the lives of local communities cannot be taken for granted.

According to representatives of the Designated National Authorities in the host countries, the projects examined contribute to a diversification of energy supply, reduced dependence on imported fossil fuels, increased reliability of energy supply, increased access of the rural population to modern and sustainable sources of energy and improvement of the welfare in the project's region of influence. Some projects also have negative side-effects. A quantitative assessment shows that the biogas project in Nicaragua has the highest perceived contribution to sustainable development, followed by projects on wind, coalmine methane, geothermal energy and energy efficiency projects. The coalmine methane project stands out for its high cumulative score on several sustainable development criteria, in combination with a substantial GHG abatement component. By contrast, HFC-23 scores low on most criteria, although it generates the highest number of expected certified emission reductions (CERs).

Combining the assessment of the projects with the appraisal of DNA representatives, the report concludes that biogas, coalmine methane and hydro power projects will make the largest contribution to sustainable development. Landfill gas projects, wind power projects and energy efficiency projects may make a significant contribution to sustainable development as well, though this will depend on the specific implementation in the host country. For biomass, fugitive gas capture, HFC-23 and geothermal projects, the contributions to sustainable development seem to be moderate.

While some technologies may contribute more than others to sustainable development, the actual effects will depend on the implementation. They are the result of host country legislation, stakeholder consultations (mandatory under the CDM modalities and procedures) and specific requests from the Netherlands Government. Almost half of the projects studied are designed to generate CER-independent (indirect) sustainable development benefits. Examples

are reforestation activities planned in the surroundings of projects, community development programmes, and activities designed to reduce drudgery for women/children. Monitoring seems to be essential, in order to ensure that the expected benefits that are not an automatic spin-off of the generation of CERs do indeed materialise. As opposed to the monitoring of emission reductions generated by a project, such monitoring processes are not structurally incorporated in project design and neither has the CDM Executive Board arranged for the monitoring of CDM projects' contributions to sustainable development. Nevertheless, for 29 of the CDM projects studied, monitoring of the indirect benefits is either partially or fully foreseen, while a further ten projects elaborate on the procedure of such monitoring activities: for example, through a sustainable development monitoring plan. Of the emission reduction monitoring plans already published by contracted designated operational entities as of January 2007, nine (out of 22) address the project's contribution to sustainable development. Recorded negative effects were compensated for during the construction phase or covered in the project management plans.

## Challenges

1. *By more explicitly taking into account the local sustainable development priorities and the subsequent technologies that match the priorities of the host countries, the Netherlands Government can optimise the contribution of CDM projects to sustainable development.*

Although legally it is the prerogative of the host country to determine whether a project contributes to its sustainable development, the Netherlands Government has used a list of criteria in combination with the environmental and social safeguard policies of its intermediaries to steer project selection. The Netherlands Government operates its programme through intermediaries and they are allowed to apply additional criteria. However, the actual contribution of the projects to sustainable development depends to some extent on market forces and on the willingness of the parties involved to promote sustainable development. Internationally, there is no monitoring process to check the contribution to sustainable development; moreover, the purchase of credits is not conditional on the contribution to sustainable development. Reductions in greenhouse gas emission are currently being carefully monitored and verified by third parties, but the monitoring of the contribution to sustainable development is left to the voluntary initiatives of governments or non-state actors. This inevitably, and possibly inadvertently, prioritises the reduction of emissions over the achievement of sustainable development goals.

The uncertainty about the effects on sustainable development could be reduced through a) host countries taxing such projects and using the resources explicitly for sustainable development goals, b) local stakeholders being invited to explicitly demand the inclusion of sustainable development objectives, c) investor countries explicitly calling for such inclusion and d) investor countries providing a premium for the certified emission reductions achieved in projects where indirect sustainable development benefits are actually gained.

## 2. *Aid and CDM*

The Netherlands is careful about meeting the demand that investments in CDM are ‘additional’ to official development assistance (ODA). This is in line with the international agreements that prohibit the purchase of credits with ODA. This demand, however, does not preclude the linking of (for instance) capacity building to project identification and implementation. Other countries, such as Denmark, Finland, Austria, and Japan, have combined capacity building with project identification, implementation and purchase of reductions and are thus able to capitalise the potential synergies. While respecting political sensitivities and legal obligations, the responsible ministries might consider the advantages of strengthening the cooperation on CDM in the future. This would not only enhance the efficiency of the overall CDM-related expenditures, but would also help to increase and improve the sustainable development component of the CDM projects in the Netherlands portfolio by integrating development goals in demand driven CDM projects in an early stage.

## 3. *Geographical spread*

Since CDM is a market mechanism, CDM projects tend to go to countries which normally benefit from direct foreign investment because they are financially attractive, have relatively good infrastructure and markets and a stable governance system. New ideas, such as those being promoted by the Club of Rome in a forthcoming document, indicate that there is considerable potential to develop renewable energy in North Africa and certain parts of South-East Asia (e.g. Laos, Cambodia).

The Government of the Netherlands could promote a wider geographical spread of CDM activities. First, it could try to encourage potential investors to initiate such projects in Africa and certain parts of South-East Asia by offering a premium on the price of CERs from such projects. Such projects could then serve as demonstration activities for future spin-off of the technology in these countries. Second, the Netherlands Government could encourage countries in

these regions to promote investment opportunities and identify potential CDM projects through, for example, the CDM capacity-building funds. Third, investors should be encouraged to develop smaller projects in their portfolio (e.g. replacing conventional light bulbs in cities with energy-saving lights, promoting fuel-efficient stoves). The promotion of smaller projects will automatically increase the relevance of CDM for numerous African countries.



# 1 Introduction

## 1.1 Background

Global climate change has led to calls for a drastic reduction in the emissions of greenhouse gases (GHGs). In turn, the recognition of the urgency of the problem led to an intergovernmental negotiating process, which concluded in two treaties: the United Nations Framework Convention on Climate Change in 1992 (UNFCCC) and the Kyoto Protocol in 1997. Two of the most important follow-up decisions were taken in Berlin in 1995 and in Marrakech in 2001. By hosting a heads of state meeting in 1989 on climate change, the Netherlands can be considered as one of the initiators of the UNFCCC.

Under the Kyoto Protocol, most developed countries (38) have agreed to limit or reduce their emissions of GHGs relative to a baseline year (in most cases, 1990). They may do so using a number of market-based mechanisms, based on the concept of emissions trading. A key element of the UNFCCC is the principle of 'common but differentiated responsibilities', which implies that while all countries have a responsibility to address the issue of climate change, industrialised countries have to take the lead. This principle also formed the basis for the Kyoto Protocol of 1997.

An important element of North–South cooperation, both in the Climate Convention and the Kyoto Protocol, is project-based emissions trading. This concept is based on the notion that at international scale there are considerable differences between the marginal costs of GHG abatement. The cost of climate policy for the developed countries could be reduced substantially if emissions were cut in countries with relatively low marginal costs of abatement (i.e. developing countries). Relocating abatement action in this way would not reduce its effectiveness, as GHGs mix evenly in the atmosphere. Emissions trading was first implemented through a pilot phase for Activities Implemented Jointly (AIJ) which continues to this day. The concept was also officially adopted under the

Kyoto Protocol in two forms: Joint Implementation (JI) for project-based emissions trading between industrialised countries and the Clean Development Mechanism (CDM) for project-based emissions trading between industrialised and developing countries. A third market mechanism is country-based emissions trading between industrialised countries.

The CDM offers many advantages. It offers investing industrialised countries the opportunity to reduce emissions cost-effectively, since emission reductions can generally be achieved at much lower costs in developing countries. It also has advantages for the developing world in terms of welfare and health improvement, as it: potentially stimulates the transfer of modern, cleaner technologies and knowledge; can stimulate greater investment in these countries and cooperation with other countries; and can lead to efficiency gains in a number of sectors – such as the energy sector. However, in order to qualify as a CDM project, a project must meet four conditions. First, the emission reductions it generates must be additional, i.e. would not have occurred in the absence of the project. Compliance with this condition is supervised by the CDM Executive Board, which controls the registration of official CDM projects, the certification of emission reductions, and the issuing of these credits to investor countries. Second, a CDM project must assist the host country to achieve sustainable development. It is the prerogative of the host country to determine whether this latter condition is met (which the host country then officially confirms in a Letter of Approval - LoA). Third, both the investor and host country must have ratified or acceded to the Kyoto Protocol and have set up a designated national authority (DNA) to manage the national participation in the CDM. Finally, as stipulated in the Marrakech Accords (2001), participation in the CDM should not lead to resources being diverted from official development assistance (ODA).

## 1.2 Importance of the CDM for the Netherlands

The above-mentioned market-based mechanisms – also referred to as flexibility mechanisms – are important for the Netherlands. Under the Kyoto Protocol, the Netherlands is committed to reducing its GHG emissions by 6% (compared with 1990 levels) during the period 2008-2012. This implies a total cumulative CO<sub>2</sub>-eq. emission reduction of approximately 200 million metric tonnes (Mt). It is envisaged that 50% of this amount will be acquired via the Kyoto Protocol flexibility mechanisms. It is the objective of the Netherlands Government to acquire 67 Mt of emission reduction credits from CDM projects and 33 Mt from JI activities. The Netherlands participates in JI and CDM projects through



tender programmes, funds established by multilateral and regional financial organisations (IBRD, IFC, CAF), and a private financial institution (Rabobank) (see Chapter 3 for details).

The CDM is of critical importance to the Netherlands for three reasons. First, the CDM is expected to substantially assist the government to achieve its GHG emission reduction commitment in a cost-effective manner. Second, the European Linking Directive, which came into force in 2005, allows EU installations (i.e. energy-intensive industries) to acquire CDM credits in order to achieve their EU emissions trading scheme (EU ETS) targets. Linking the CDM to the EU ETS like this makes it even more important that the CDM is effective. Third, the CDM has a dual role: to reduce GHG emissions and to contribute to the sustainable development of the host countries. The Netherlands Government takes both goals seriously and has reserved more than EUR 402 million funding for a governmental CDM purchase programme, which includes project acquisition through tenders, multilateral funds and financial institutions.

Several Ministries are involved in the Netherlands CDM programme. The Ministry of Housing, Spatial Planning and the Environment (VROM) is responsible for the overall climate change policy of the Netherlands and has been designated the national authority responsible for the CDM. The Ministry of Agriculture is responsible for Land Use, Land-Use Change and Forestry (LULUCF) under the CDM, particularly in relation to approval of CDM projects, while the Directorate-General for International Cooperation of the Ministry of Foreign Affairs supports CDM-related capacity building. The Ministry of Economic Affairs and VROM have a shared responsibility for managing the Netherlands participation in emissions trading.

VROM does involve the Ministry of Foreign Affairs, via its Embassies, in the approval of projects, signing of Memoranda of Understanding (MoUs), and the promotion of the Netherlands CDM policy. The Environment and Water Department (DMW) of the Ministry of Foreign Affairs provides financial support from a budget of EUR 9.9 million for the period 2003-2008 for capacity development in 12 to 17 developing countries, to enhance their participation in the CDM (CD4CDM). It has also provided EUR 10 million to the SouthSouthNorth project, which aims to develop capacity for CDM project identification and management and which has been initiated by developing countries. This project has developed its own 'Matrix tool' to analyse whether projects contribute to sustainable development.

In the past, AIJ projects carried out in developing countries were initiated by the Ministry of Foreign Affairs: 19 pilot projects were executed in 12 countries in the period 1996-2004 amounting to a total investment of EUR 20 million. These funds were expected to induce a total investment of about EUR 84 million, leading to a total reduction in GHGs of 6.2 Mt. The Dutch AIJ projects in Central and Eastern Europe, have been managed by the Netherlands Ministry of Economic Affairs: this portfolio contains 18 projects.

### 1.3 Problem definition, objectives and research questions

The CDM is an important mechanism for developing countries, because of the projects' expected contribution to sustainable development. Although, as argued above, the latter aspect of the CDM is the responsibility of the host countries, the standpoint of the Netherlands Government has been that it is crucial that the sustainable development contributions initially expected and endorsed by the host countries are actually delivered. In order to analyse the latter, the Policy and Operations Evaluation Department (IOB) decided to evaluate the Dutch CDM project portfolio as part of its 2005-2009 programme, with a view to ascertaining the contribution of this portfolio to sustainable development in developing countries.

This report examines how the Netherlands has fared in its cooperation with developing countries under the UNFCCC (AIJ projects and assistance) and the Kyoto Protocol (CDM projects and assistance). The central focus of this report is how AIJ and CDM projects funded by the Netherlands have contributed or are expected to contribute to sustainable development in the countries where the projects have been carried out or are planned.

The Netherlands has been active in AIJ and CDM through capacity building and project development. Over the last ten years, this has resulted in a portfolio of projects that have been completed, or are ongoing, or are yet to be implemented. Even though the principle of sustainable development was included in the Climate Change Convention, sustainable development was not an explicit project criterion in the AIJ pilot phase. Nonetheless, the AIJ projects carried out with support from the Netherlands Government could provide useful and illustrative information about how GHG emission reduction projects could contribute to sustainable development and the factors contributing to success or failure. This information would be useful when refining new CDM projects and reviewing CDM policies. The analysis therefore provides useful insights into the performance of already completed and ongoing projects, which can be fed into the development of new

projects. Moreover, the lessons learnt from the performance of projects in terms of sustainable development could be useful for the negotiations on a future climate policy regime (to succeed the Kyoto Protocol as of 2012), in particular with respect to the design of project-based emissions trading mechanisms in such a policy.

Against this background, this report addresses the following overarching question: ‘How and to what extent do AIJ/CDM projects carried out in the context of the Netherlands UNFCCC and/or Kyoto Protocol policies, contribute to sustainable development in the host countries?’

In order to address this question, this report looks at three issues: the Netherlands CDM policies in the international context, AIJ pilot projects implemented under the Netherlands pilot project programme of 1994-2000, and the portfolio of CDM projects with involvement of the Netherlands. These three issue areas led to three sets of questions.

### 1. *The Netherlands approach to AIJ/CDM*

*How does the Netherlands approach of assessing the contribution of projects to sustainable development compare to that of other countries and what are the implications of this approach in terms of policy effectiveness?*

This question has been answered by addressing the following sub-questions:

- a) Which criteria do host countries, the Netherlands Government, and intermediaries use for assessing the contribution of AIJ/CDM projects to sustainable development?
- b) Is there a clear coherence between these different sets of sustainability criteria used by the various organisations involved in these projects?
- c) What role do the Netherlands Embassies play in CDM project development?
- d) Are there differences between the Netherlands approach towards procurement of certified emission reductions from CDM projects (CER) and the approaches of other countries?

### 2. *Appraisal of AIJ projects*

Ideally, if projects are monitored well and they perform according to plan, the emission reduction and sustainable development benefits actually achieved will be those planned in the project design. In practice, however, this may not always be the case. The analysis of the implemented AIJ projects in the Dutch portfolio provides a first impression of how project performance might deviate from the

project plan. For the analysis, the AIJ projects were examined in the light of the following main question:

*Have the AIJ pilot projects contributed to the sustainable development of the host countries?*

This question was answered by addressing the following sub-questions:

- a) Have the goals as listed in the AIJ project documents been achieved?
- b) Which factors have contributed to the failure or success of the projects?
- c) What is the contribution of the projects to sustainable development in the host countries?
- d) What lessons can be learnt from an analysis of these projects about the design of such projects in the future?

### 3. Appraisal of CDM projects

Whereas most AIJ projects started well before the year 2000 and have been operational for at least seven years, most of the currently operational CDM projects did not begin until around 2004.<sup>2</sup> Moreover, most of the CDM projects are still in the pipeline. Some projects aim at a crediting lifetime for GHG emission reductions of 21 years and will thus last until after 2025, whereas others have a crediting lifetime of 10 years and are also scheduled to generate emission reductions and contributions to sustainable development probably beyond the year 2012. Therefore, unlike AIJ projects, most CDM projects must be assessed on what they *expect* to deliver in terms of GHG emission reductions and sustainable development. With this in mind, the report explores the expected contribution to sustainable development of projects in the Dutch CDM portfolio; this entailed analysing what is envisaged in the project plans on the basis of what the participants and countries involved in the projects have agreed. The analysis was driven by the following main question:

*How does the Netherlands portfolio of CDM projects rate in terms of the projects' potential contribution to sustainable development?*

This question was addressed by answering the following sub-questions:

- a) What contribution to sustainable development can be expected from CDM projects in the Dutch portfolio according to the preparatory documents, such

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<sup>2</sup> The first CDM projects in the Netherlands portfolio were submitted to the CDM Executive Board for approval of their GHG accounting methodologies in 2003.

- as the project identification notes (PINs), project concept notes (PCNs), and project design documents (PDDs)?
- b) What contribution to sustainable development can be expected from CDM projects according to the host country DNAs?
  - c) Given the answers to these two questions, what is the total expected contribution to sustainable development in the host countries from the CDM projects in the Dutch portfolio, provided that all projects are fully realised?

## 1.4 Approach

The report is based on research undertaken by two Dutch organisations in 2006 to analyse the actual or expected contribution to sustainable development of the Netherlands AIJ projects and the CDM. The Institute for Environmental Studies (IVM) evaluated the contribution of five AIJ pilot projects amounting to 90% of the Netherlands AIJ budget spent.<sup>3</sup> The Foundation Joint Implementation Network (JIN) analysed a representative sample of the Netherlands CDM projects in the pipeline, to ascertain their expected contribution to sustainable development.<sup>4</sup> The two reports can be downloaded from the websites of the respective organisations or from the IOB-website.

In order to answer the key questions set out in this report, three approaches were used:

- 1) ‘Policy and literature assessment’: Before focussing on the AIJ and CDM projects themselves, the international policy context of the projects is explained by presenting the history of the international climate regime and the role of sustainable development in this. This evaluation is based on literature research and analysis of policy documents.
- 2) ‘AIJ project appraisal’: The evaluation of the results achieved by five AIJ projects, which represent 90% of the total AIJ investment of the Netherlands Government, is typically case-study based and draws on a number of research methods. A literature review was used to develop specific sustainability indicators. The assessment method applied is mainly based on CDM-specific criteria of sustainable development developed by various organisations and

3 Gaast, W. and F. de Jong (2007). *The Netherlands CDM Portfolio and Sustainable Development: on the Expected Contribution to Sustainable Development of the Netherlands CDM Projects in Developing Countries*. Paterswolde: Foundation JIN.

4 Gupta, J., H. van Asselt and P. van Beurking (eds.) (2007). *Pilot Projects in the Climate Change Regime and Sustainable Development*. Amsterdam: IVM.

networks, such as the CDM Gold Standard. The indicators were measured by analysing the content of project documents, interviewing stakeholders in the projects and making site visits. The assessments were conducted jointly with research teams from the host countries.

- 3) 'CDM project appraisal': The evaluation of the expected performance of the Netherlands portfolio of CDM projects is based on various documents developed during the projects' design stages: PINs, PCNs and PDDs. For the assessment, a set of 44 representative projects were selected from the portfolio. These projects were also assessed in terms of how the CDM host country DNAs perceive their contribution to local sustainable development. The latter assessment is based on interviews with representatives of DNAs in countries in which the Netherlands is represented by an Embassy.

## 1.5 Structure of the report

Before focussing on the Netherlands portfolio of AIJ and CDM projects, Chapter 2 addresses the evolution of the climate regime and sustainable development. In Chapter 3, the emphasis is on the role and position of the Netherlands Government in this regard, and a brief comparison is made with the approaches followed by other donor countries. Chapter 4 presents the results of the *ex-post* assessment of the five AIJ projects studied. Chapter 5 summarises the *ex-ante* evaluation of the 44 projects in the Netherlands CDM portfolio, on the basis of information found in the project documentation and gleaned from the local DNA. Chapter 6 presents the main conclusions.

## 2 The international context of the flexibility mechanisms

### 2.1 Climate change policy regime and flexibility mechanisms

The UNFCCC focuses on the need for developed countries to take the lead in combating climate change by reducing their own emissions and at the same time giving financial and technological assistance to developing countries to enable them to follow a path of sustainable development while also reducing the rate of growth of their emissions. The Climate Convention includes five principles, among them the need for precautionary action and the recognition of the common but differentiated responsibilities of the participating countries (UNFCCC, 1992; Bodansky, 1993; Gupta, 1997).

#### 2.1.1 Evolution of the flexibility mechanism - from 1990-1995

According to Article 3 (para.3) of the Climate Convention: 'policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at the lowest possible costs.' In addition, UNFCCC Article 4.2a states that '[developed country] Parties may implement such policies and measures jointly with other Parties.' During the climate policy negotiations that followed the adoption of the UNFCCC (which officially took place at bi-annual meetings of the UN Intergovernmental Negotiating Committee (INC) held during 1992-1995) this passage resulted in a debate on 'joint implementation' as a possible emissions trading mechanism to enable developed countries to achieve emission reduction targets through investments in developing countries and in countries with economies in transition. This led to widespread debate on the advantages and disadvantages of such cooperation. It was, for instance, welcomed that JI would lead to North-South transfers of modern clean technologies that would otherwise not have been available to developing countries. In sum, the projects would provide developed countries with cost-effective emission reduction options and developing countries with a cost-effective way to improve their technological base.

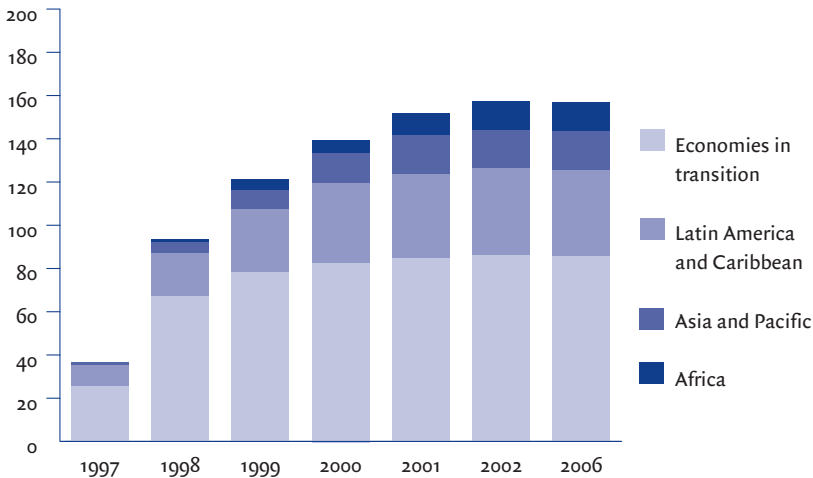
On the other hand, many in the South were afraid that a consequence would be that the developed countries would invest less in new technologies and would use up the cheaper options available in the South.

Ultimately, it was during the first meeting of the Conference of the UNFCCC Parties (COP-1) in 1995 that a decision was adopted to start a pilot phase for joint implementation, which was called Activities Implemented Jointly (AIJ). The aim of the pilot phase was to provide evidence on the usefulness of such a flexibility mechanism. Based on lessons learnt, the scheme could eventually move into an operational phase (Michaelowa, 2002), although no clear timeframe was agreed upon for the operationalisation. The AIJ pilot phase was also launched to give developing countries an opportunity to see if the mechanism could be useful for technology transfer. Participation was voluntary, but the pilot phase did not allow for credits for GHG emission reductions achieved in AIJ projects to be transferred to the investment partners to meet UNFCCC objectives. To promote the sharing of experiences with AIJ projects, participating countries were encouraged to submit project reports to the Secretariat of the UNFCCC, using a uniform reporting format submitted by a National AIJ Focal Point. In accordance with the COP 1 Decision on AIJ, projects were not funded with money reserved for ODA and they had to be endorsed by the governments of the host and investor countries. The ultimate goal of the projects was to create 'real, measurable and long-term environmental benefits'.

As shown in Figure 2.1, AIJ projects were gradually developed in the post-1995 period; the programme is still ongoing. By September 2006, there were 157 registered AIJ projects, most of them in East and Central Europe. Only 13 of the projects were in the 53 countries of Africa; there were 18 projects in Asia and the Pacific and 40 in Latin America. Not all the projects have been implemented: some did not succeed in acquiring the necessary funding.



**Figure 2.1** Regional distribution of AIJ projects as of September 2006



Source: UNFCCC, 2006.

### 2.1.2 The Kyoto Surprise: From AIJ to the CDM

The Kyoto Protocol (KP 1997), adopted as a follow-up agreement to the UNFCCC in 1997, emphasised the quantitative commitments for the developed countries. These commitments could partly be achieved through a number of flexibility mechanisms: JI, CDM and International Emissions Trading (Oberthür & Ott, 1999; Grubb *et al.*, 1999). The adoption of quantitative commitments further increased the pressure to generate credits for the developed country investors.

During the second week of COP 3 in Kyoto, the disparate negotiation tracks became more integrated. For instance, industrialised countries proved willing to adopt emission reduction targets (e.g. the US negotiation proposal moved from 0% to -7%) – but only if they were allowed more flexibility in terms of timing and geography. Flexibility in timing was provided by adopting a five-year commitment period (2008-2012) instead of a specific target year. Geographical flexibility was offered through the flexibility mechanisms, including the option to allow trading in national emission surpluses and deficits between developed countries (International Emissions Trading, IET-KP Art. 17), project-based cooperation among industrialised countries (JI-KP Art. 6) and project-based cooperation between industrialised and developing countries (CDM-KP Art. 12). Arguably another manifestation of flexibility was to include a further five greenhouse gases in the Kyoto Protocol, in addition to CO<sub>2</sub> (the gas which has the largest share in anthropogenic GHG emissions).

The CDM was basically a transformation of the Brazilian proposal for a Clean Development Fund, under which industrialised countries in default of their commitments should pay fines which could be used to finance technology transfer to the developing world. In its final form the CDM resembled JI as a mechanism to implement projects, the main differences being the host country regions and the explicit objective of sustainable development in the CDM. The manner in which the CDM was introduced in the Kyoto Protocol led observers to refer to it as the 'Kyoto Surprise'. Nonetheless, it must be noted that although the G-77 & China had agreed on the CDM, some developing countries continued to resent this type of project cooperation (Werksman, 1998; Yamin, 1998; Gupta 2001).

### **2.1.3 Marrakech: Providing the details**

Introduced as one of the last-minute articles at Kyoto, the operational details of the CDM (as well as of JI and several other aspects of the Kyoto Protocol) still had to be articulated. This took place at COP-7 in 2001 and became part of the Marrakech Accords, which contained various decisions, including some detailing the modalities and procedures for the CDM. Important aspects of this articulation were the criteria for project selection and CDM participation, the procedures for keeping accounts of the GHG emission reductions from projects (such as an assessment of the additionality of the emission reductions claimed from projects), and the CDM governance structure; all these referred both to the UN level (the CDM Executive Board) and to the level of the participating countries (the need to establish a DNA for project approval). The CDM was an important topic at Marrakech because, the Kyoto Protocol stated that CDM projects could already be generating CERs in the year 2000. However, as the Protocol had not yet come into force in 2001, the Marrakech Accords arranged that projects begun before the start of the Kyoto Protocol could claim CERs retroactively ('prompt start'). This was an important decision for the Netherlands Government, which was in the process of preparing a CDM project tender. Finally, and of great relevance for this report, at Marrakech it was decided that sustainable development is a context-relevant issue and that only the host countries are in a position to determine whether the CDM projects contribute to their sustainable development.

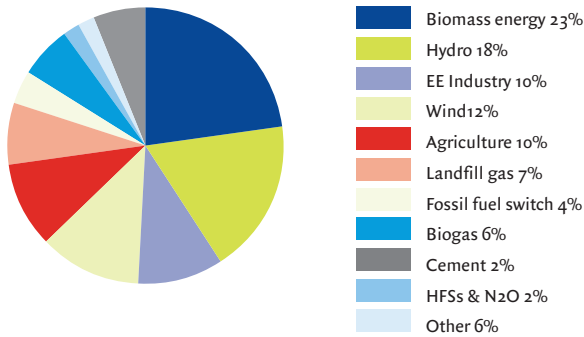
### 2.1.4 Implementation of CDM

As of February 2007, 1571 projects were in an advanced stage of development (see Figure 2.2).<sup>5</sup> Just over half of the projects focus on alternative modes of energy production or energy saving:

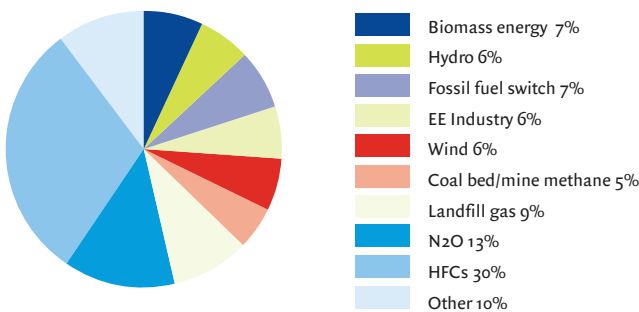
- Biomass energy (249 projects);
- Hydro power (191);
- Wind power (140);
- Energy efficiency in the industrial sector (138) and
- Methane extraction from landfills (88).

**Figure 2.2** CDM project categories as of February 2007

CDM projects (based on number of projects)



CDM projects (based on CERs expected)



Source: Fenhann, 2007.

<sup>5</sup> As presented monthly by the UNEP Risø Centre in the context of the CD4CDM capacity building programme. This pipeline contains all CDM projects in an advanced stage of development (that is at least at the validation stage at the Execution Board of the UNFCCC).

## 2.2 Sustainable development

In order to explore whether the CDM can meet its sustainable development objective, it is important to understand what is meant by this concept. This section therefore briefly reviews:

- the evolution of the concept of sustainable development;
- the evolution of sustainable development in policy and legislation;
- the climate regime's interpretation of sustainable development.

### 2.2.1 The concept of sustainable development

The concept of sustainable development has come a long way since its roots in the theory of sustainable society (Brown 1981). The extensive literature on the subject (Begg *et al.*, 2002; Cohen *et al.*, 1998; Schneider *et al.*, 2000; Banuri *et al.*, 2001; Markandya & Halsnæs, 2002; Metz *et al.*, 2002; Morita *et al.*, 2001; Munasinghe & Swart, 2000; Najam *et al.*, 2003; Smit *et al.*, 2001; Swart *et al.*, 2003; Wilbanks, 2003) shows that it incorporates the need to protect resources for future needs, while still meeting current needs. Sustainable development is generally discussed in terms of social, economic and environmental criteria. Nonetheless, it is inherently a vague concept, albeit very important (similar to inherently broadly defined, but important concepts like democracy and legitimacy (Lafferty, 1996)). Sustainable development has a strong North-South stance with three dimensions (cf. Chatterjee & Finger, 1994): first, it does not have a universal meaning and its interpretation will change from context to context; second, it may only be possible to achieve sustainable development after a certain critical development threshold has been passed; and, third, meeting the needs of present generation should not be compromised by meeting the needs of future generations.

The literature treats sustainable development either as a goal to strive for, or as a process (Dovers & Handmer, 1993; Mebratu, 1998; Sachs, 1999; Dasgupta, 1993; Sen, 1999). In both approaches, criteria are formulated for balancing four aspects of development: economic, energy, social, and environmental. Strong sustainability focuses on meeting all criteria (economic, environmental and social), although in reality, trade-offs are made in favour of economic and/or environmental criteria, leading to weaker forms of sustainability (Barnett, 2001; Lehtonen, 2004; Robinson, 2004).

### 2.2.2 The evolution of sustainable development in legislation

Sustainable development has not remained merely a theoretical concept - it has also been embraced by the policy community. The report of the World Commission on Environment and Development - Our Common Future (WCED, 1987) placed the concept at the centre of global attention. It was followed by the Rio Declaration on Environment and Development in 1992<sup>6</sup>, the UNFCCC, the Convention on Biological Diversity and Agenda 21<sup>7</sup> at the UN Conference on Environment and Development. While economic and environmental principles had been adopted and articulated in a number of policy documents and legal agreements, the social and development principles were seen as a neglected element of international law (Garcia-Amador, 1990; Schrijver, 2001). The new concept of sustainable development was seen as offering an opportunity to bring different elements together. However, neither the legal instruments nor the judgements of the International Court of Justice have made the application of the concept any clearer (Sohnle, 1998; Dupuy, 1997: 886; Gabcikovo-Nagymaros ICJ case of 1997).<sup>8</sup>

In 2002, following years of research, the International Law Association adopted the 'New Delhi Declaration on Principles of International Law relating to Sustainable Development at its 70<sup>th</sup> Conference.<sup>9</sup> This Declaration states that the Law of Sustainable Development makes it the duty of states to ensure sustainable use of natural resources, on the basis of a number of principles:

- the principle of equity and the eradication of poverty;
- the principle of common but differentiated responsibilities;
- the principle of the precautionary approach to human health, natural resources and ecosystems;
- the principle of public participation and access to information and justice;
- the principle of good governance;
- the principle of integration and interrelationship, in particular in relation to human rights and social, economic and environmental objectives.

6 UN Doc. A/CONF.151/26/Rev.1 (Vol. I) (1992).

7 UN Doc. A/CONF.151/26 (1992).

8 Case concerning the Gabcikovo-Nagymaros project (Hungry/Slovakia), par. 140, Judgment of 25 September 1997, ICJ: Reports of Judgments, Advisory Opinions and Orders, at 78.

9 Resolution 3/2002 of the International Law Association: The New Delhi Declaration of Principles of International Law Relating to Sustainable Development.

### 2.2.3 The climate change regime and sustainable development

Though the Climate Convention has also embraced the concept of sustainable development,<sup>10</sup> it does not define it (Arts & Gupta, 2005). It states that sustainable development is both a right and a goal,<sup>11</sup> but also argues that economic development is essential for adopting mitigation and adaptation measures.<sup>12</sup> In later documents (e.g. the Marrakech Accords), the negotiators decided that sustainable development is a context-related issue and that it is up to national governments to decide how it should be defined in national situations, especially with respect to the CDM.<sup>13</sup>

This section has shown that the concept of sustainable development has evolved both in theory and in the policy sphere. It has highlighted some of the key challenges inherent in the concept and defined the principles that are seen as part of legislation on sustainable development. It has argued that there is a tendency in the literature and policy worlds to make trade-offs in favour of economic and environmental goals at the cost of social goals, which might be repeated in the CDM, as the climate change regime provides no significant clarity on the subject except for making the determination of sustainable development the national responsibility of the countries hosting projects.

## 2.3 The literature on CDM and sustainable development

### 2.3.1 Initial opposition from developing countries

The potential of project-based emissions trading between industrialised and developing countries, such as the CDM, was identified at an early stage. In particular, the potential of the CDM to transfer modern technologies to developing countries in return for relatively cheap emission credits was emphasised as an advantage of this type of cooperation (Jepma and Van der Gaast, 1999). However, as mentioned earlier, during the early 1990s many developing countries were opposed to the idea and their initial reactions varied widely (Gupta 1997; Maya and Gupta 1996; Yamin and Depledge 2004). Critics of CDM within the developing countries as well as within the developed countries feared that:

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10 Article 2 of the UNFCCC.

11 Article 3.4 of the UNFCCC states '[t]he Parties have a right to, and should promote sustainable development'.

12 Article 3.4 of the UNFCCC.

13 UNFCCC, 'Decision 17/CP.7, Modalities and procedures for a clean development mechanism as defined in Article 12 of the Kyoto Protocol', FCCC/CP/2001/13/Add.2 (21 January 2002), preamble ('it is the host Party's prerogative to confirm whether a clean development mechanism project activity assists it in achieving sustainable development'), and para. 40(a).

- searching for relatively cheap emission reduction options in developing countries would ‘slow down the development and implementation’ of more expensive technology options in the industrialised world;
- the costs were assumed to be undervalued and the benefits exaggerated; it was anticipated that the transaction costs, the capacity-building costs and the costs of matching up with national goals would be minimised, while project partners would have an incentive to ‘overstate the benefits’;
- the opportunity costs, especially in relation to long-term forestry projects, were assumed to be ignored by proponents of CDM;
- there was fear that such investments would not be financed by ‘new and additional’ money, especially as official development resources were far below the internationally agreed level of 0.7% of gross national income; instead of meeting their obligation to reach the 0.7% target, developed countries might divert available ODA resources;
- enabling developed countries to invest in the cheapest emission reduction options would leave developing countries with only the *relatively expensive investment* options later on;
- developing countries feared that project cooperation would ‘not necessarily lead to transfers of state-of-the-art technologies’.

Although there were many critics in developing countries and NGOs, within Central and European Europe there was less criticism on the concept of project-based emissions trading. There are several possible reasons for this difference in response. First, these countries were undergoing a process of economic transition and were in need of financial and technological support. Second, unlike developing countries, Central and Eastern European countries were included in the UNFCCC group of industrialised countries (the so-called Annex I group). As a result, transfers of emission reduction credits within this group would leave the overall, aggregate emission reduction effort of industrialised countries unchanged. Emission reductions from possible projects in developing countries would allow the total emission level of the group of industrialised countries to increase. Third, unlike the developing countries, who negotiated through a consortium (the G-77 and China) with an annually rotating chair, the Central and Eastern European countries were poorly organised.

Within the context of these deliberations, both within scientific circles and at UN-led INC negotiating sessions, in 1995 the developing countries agreed to start with a number of pilots (AIJ). Two years later, in 1997, they agreed to the CDM. Since then the literature has focused more on the actual challenges of implementation rather than focusing on the political considerations of the early 1990s.

### 2.3.2 Implementation of the CDM

The contribution of CDM projects to sustainable development can be analysed from two perspectives. On the one hand, it could be argued that the large share of renewable energy and biomass energy projects in the CDM portfolio might make a major contribution to sustainable development in developing countries, as such projects could potentially improve the security of the energy supply to local, rural communities and thus could support other goals, such as poverty alleviation and infrastructure improvement in rural areas. But a project's local impact on sustainable development does not necessarily depend on the number of CERs it generates (Sterk and Wittneben, 2006). Large amounts of CDM money have been invested in only a relatively few projects reducing HFC-23 emissions. Though these projects are generally expected to deliver very large amounts of CERs (given the large global warming potential of HFC-23, which is 11,700 times that of CO<sub>2</sub>), their direct contribution to sustainable development is considered rather small. This is supported by Sutter and Parreño (2005), who conclude that the largest projects in terms of CERs often contribute little to sustainable development. So, the large amount of CDM money spent on CERs generated through HFC-23 emission reduction projects, could be considered to have crowded out investments in renewable energy projects.

Some experts argue that sustainable development should be seen more in terms of whether a project enables a 'fuel switch to renewables'. For example, Pearson (2005: 12) states that '[t]he question of whether the CDM is promoting sustainable development can be framed primarily in terms of whether it is promoting renewables in developing countries and thus assisting in the transition away from fossil fuels'. Yet, though focusing on a fuel switch may meet environmental criteria, it does not necessarily mean the other economic development and social criteria will be met. Other experts argue that non-renewable energy projects do not always score well in terms of sustainable development criteria (e.g. Cosbey *et al.*, 2005: 14-15).

A final criticism of CDM is to do with its effect on the behaviour of project developers. Since defining targeted contributions of projects to the economic and social aspects of sustainable development in the host country may result in extra transaction costs (on top of the inevitable GHG accounting costs), project developers have an incentive to minimise the activities - and thus related transaction costs - to support sustainable development in the host country - including side-investments for local communities and monitoring protocols for sustainable development (Baumert, 2006; Ellis *et al.*, 2004; Kolhus *et al.*, 2001).



## 3 The CDM policies of the Netherlands

### 3.1 Introduction

The Netherlands aims to achieve 50% of its cumulative CO<sub>2</sub>-eq. emission reduction of approximately 200 million metric tonnes (Mt) through the flexibility mechanisms. This makes JI and CDM crucial instruments for the Netherlands. The various organisations involved in the approval, implementation and monitoring of projects within the flexibility mechanisms are described below.

### 3.2 The Government

To be included in the Netherlands CDM portfolio, a project must meet a number of criteria. First, the project participants should demonstrate that the project does not have large-scale adverse effects on society or biodiversity in the host countries. Moreover, the Netherlands Government expects project participants to observe the ‘OECD Guidelines for Multinational Enterprises’ (adopted at the OECD ministerial meeting on 27 June 2000). Finally, the Netherlands will not endorse nuclear projects, and all hydropower projects submitted to the Netherlands Government for approval must comply with the criteria included in the recommendations of the ‘World Commission on Dams’.

Although the Netherlands Government recognises that it is the prerogative of host countries to determine whether and to what extent projects contribute to sustainable development, specific mechanisms have been put in place to emphasise the sustainability aspects of CDM projects. VROM tries to enhance the contribution to sustainable development of the projects from which it purchases CERs: for instance, projects that contribute relatively strongly to sustainable development could be eligible for a higher CER price. In its 2003 CDM policy document, VROM identified as priority projects those that were considered

to deliver relatively strong contributions to sustainable development (VROM, 2003). Project categories were ranked in order of their expected contribution to sustainable development (from large to small) as follows:

- 1) renewable energy projects;
- 2) clean, sustainable biomass projects;
- 3) energy efficiency improvement projects;
- 4) transport projects;
- 5) fossil fuel switch and methane recovery projects;
- 6) carbon sequestration through the creation and enhancement of sinks.

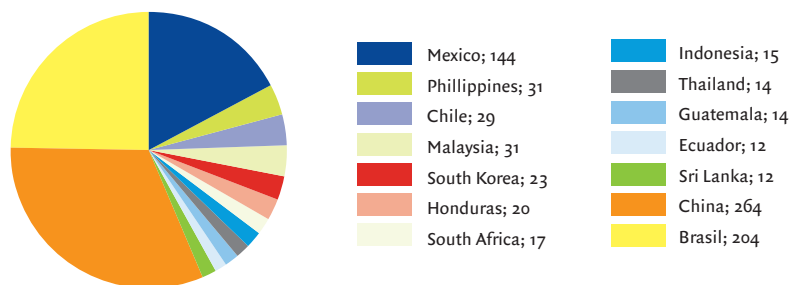
Despite the existence of this priority list, in 2005 the Netherlands Government changed its method of project selection. It did so because after the Kyoto Protocol came into force in that year, the market forces changed: demand for CERs increased. Prior to 2005, the CDM market was characterised by low demand from a relatively small number of industrialised countries. As a result, investors could be rather choosy in selecting only those projects that generated large contributions to sustainable development. When international competition for CERs increased in 2005, the Netherlands also began purchasing CERs from projects outside its priority categories, such as HFC-23 reduction and fugitive gas capture projects with large GHG reduction potential but a potentially smaller contribution to sustainable development. Despite this, the Netherlands Government has kept to its policy of paying more for sustainable development benefits in the host countries - for instance, through participation in the Community Development Carbon Fund (CDCF). CDCF projects have a strong focus on local community development within developing countries and may receive a premium on top of the CER market price. In addition, at the request of the Netherlands Government, EUR 1.375 million is to be allocated to a community development fund as part of a HFC-23 reduction project in India. Another example is the reservation of 65% of the CER payments from a HFC-23 project in China (mandatory under Chinese tax legislation). However, it remains unclear whether these funds are subsequently channelled into a clean energy/SD fund managed by the Chinese Government or whether they are claimed by the national treasury for the general budget of China.

As well as cooperating with a large number of host countries, the Netherlands is also involved in projects in countries outside the group of host countries that presently receive the largest share of the CDM market (i.e. China, India, Brazil, Chile and Mexico). As a result, its experience and knowledge gained in the field of CDM is also geographically scattered. Each region and CDM project category

has its specific characteristics, requiring specialised knowledge. The Netherlands Government has mobilised this knowledge by opting to draw on the specific expertise of various entities in developing countries (e.g. CAF in Latin America and the Rabobank in India) and by using these entities as intermediaries.

This approach of diversification has both advantages and disadvantages. On the one hand, the Dutch strategy of diversification involves relatively large overheads. On the other hand, diversification leads to risk spreading, implying that non-compliance of one country or project category does not necessarily jeopardise the Netherlands CDM portfolio. The Dutch strategy of diversification has contributed to the development of a CDM market in those countries that otherwise might have lost such an opportunity (e.g. Moldova, Nicaragua, Nepal). Despite the large geographical spread of its CDM portfolio, the Netherlands has not invested in sub-Saharan Africa (except for South Africa). In this respect, the Dutch investor profile does not deviate from the overall global CDM project pipeline, in which sub-Saharan Africa presently has a very small share (see Figure 3.1). The suggested reasons for these countries having such a small share range from the limited CDM business opportunities to insufficient capacity for hosting projects in these countries and consequently perceptions of higher risk (Theuri, 2006). To support sub-Saharan Africa in hosting more CDM projects, the Nairobi Framework was adopted at COP/MOP 2, convened in Nairobi, Kenya during 6-17 November 2006. Following this adoption, the Netherlands Government announced that it would set up more CDM projects in the region.

**Figure 3.1** Number of CDM projects under validation



Source: Fenhann, 2007.



Baharbari, India (2006)

### 3.3 Host countries

Host countries generally use different methods to assess the contribution of projects to sustainable development. These methods can be classified as follows:

- **Operational sustainable development approach:** Applied by countries using specific lists of sustainable development criteria when judging proposed CDM projects.
- **Context-specific approach:** Applied by some countries assessing whether projects meet the needs and priorities in terms of energy service and economic welfare improvement. This category resembles the first category but does not contain straightforward checklists with sustainable development criteria.
- **Compliance approach:** Applied by countries when assessing projects with a view to avoiding possible negative environmental impacts and to ascertaining whether they are in accordance with national and/or local government legislation.

Table 3.1 summarises how the host countries' assessment of CDM projects analysed in this study (see Chapter 5) can be classified within these categories. Listed on the left side of the table are the countries found to have the most

comprehensive policies; those on the right side have the least comprehensive approach to sustainable development.

**Table 3.1** Host countries' assessment of CDM projects

<b>Sustainable development criteria</b> <i>(sustainable development approach in operation)</i>	<b>Needs &amp; Priorities</b> <i>(Context-specific)</i>	<b>Environmental Impact Assessment / national legislation</b> <i>(Compliance-driven)</i>
Brazil China Colombia India Indonesia Philippines South Africa Sri Lanka	Costa Rica Honduras Jamaica Moldova Nepal Nicaragua Peru	Argentina Chile Ecuador

### 3.4 Intermediaries

The intermediary funds and institutions selected by VROM to generate CERs are required to apply the Dutch eligibility criteria for CDM projects when generating CERs on behalf of the Netherlands Government. In addition, they may apply their own sustainable development criteria and policies, such as ‘safeguard policies’ (e.g. World Bank-based funds) and ‘codes of conduct’ (e.g. Rabobank), in terms of environmental protection, socio-economic impacts of projects, etc. The only projects Corporación Andino de Fomento (CAF) develops are those that help increase biodiversity in the host countries. When it comes to the monitoring of the sustainable development benefits achieved, each intermediary is responsible for the performance of the projects in its own portfolios. It is therefore the responsibility of the intermediaries to apply monitoring procedures. The Netherlands Government does not oblige the intermediaries to monitor sustainable development.<sup>14</sup> It remains unclear what will happen if the CERs are being delivered according to plan but the performance in terms of sustainable development is below the level promised in the contract. Formally, non-delivery of the sustainable development benefits could lead to breach of the contract, but

<sup>14</sup> Note that the monitoring of the GHG emission reductions is a necessary prerequisite for certification by the CDM Executive Board.

that is unlikely to happen within the present international CDM policy context, because it would also jeopardise the future delivery of CERs.

### 3.5 Embassies

The Netherlands Embassies are generally involved in the appraisal of projects proposed to the Netherlands DNA and the project participants. After the Netherlands DNA has approved a project's PIN, the Embassy in the host country concerned is requested to provide advice on the project, with special attention to:

- whether the proposed project is in accordance with local and national policies;
- whether the project is supported by local communities;
- the standing or reputation of the project participants.

The request for advice is part of the standard procedure in the Netherlands DNA's project appraisal, but the reply from the Embassy is non-committal/informal. The communication between the Netherlands DNA and the Embassies serves to enhance confidence in the proposed project in terms of its local acceptability and whether it is in line with national policies. The Embassies are regularly informed about CDM developments, among others through annual meetings in the Netherlands for Embassy specialists in the areas of trade and environment. Box 3.1 gives an example of the potential role of Netherlands Embassies in CDM project development. Unlike the embassies of several other countries (such as Denmark), Netherlands Embassies do not as a rule become involved in project development and implementation. Some of the embassy officials interviewed for this study stated that they would prefer to have a more active role in the CDM project cycle, as this would also enlarge the exposure of the Netherlands CDM and climate policy in the host countries.

**Box 3.1**      *Communication from the Netherlands Government on the possible contribution of Netherlands Embassies to implementing the CDM*

#### **How Netherlands Embassies in developing countries can contribute to the implementation of the Clean Development Mechanism**

*Under the instructions issued in April and May 2002, the Embassies in CDM host countries may be requested by VROM to become involved in a project and in the appraisal of project participants. Such requests would be made for projects at a fairly advanced stage*

of development (i.e. with a PCN). The four stages of development VROM uses to classify CDM projects are: Project Idea Note (PIN), Project Concept Note (PCN), Project Design Document (PDD), and Emission Reduction Purchase Agreement (ERPA). A PIN is short (1-4 A4 pages), whereas a PDD is a complete project proposal of approximately 20-60 pages. A PCN is similar to a PDD. After validation of the PDD, a project must be registered by the UN CDM Executive Board. A private-public purchase contract, ERPA, is concluded with the project developer before or after registration. The registered project ultimately results in the issuing of tradable Certified Emission Reductions (CERs) that the Netherlands can use to fulfil its Kyoto obligations to reduce emissions.

The Embassies may communicate with VROM about projects that are up and running or at an advanced stage of implementation.

Embassies in countries with CDM projects are advised to maintain contact with the local Designated National Authority for CDM.

Embassies in host countries may organise CDM events or give presentations on the Dutch CDM approach at important local events, for which they receive full cooperation from VROM/DGM/IMZ/CDM in the form of model presentations, speeches, publicity brochures, etc.

Embassies may be asked to attend the signing ceremony of ERPAs (such as the one that took place on 1 December 2004 in Peru).

Embassies may be asked to sign a CDM MoU on behalf of VROM.

Embassies may be asked to assist in arranging official state visits to CDM project sites where projects have been developed with help from the Netherlands.

Embassies may assist the local CDM Designated National Authority (DNA) office with small projects, especially in countries that have concluded MoUs with the Netherlands (i.e. projects in Costa Rica and Bolivia).

Embassies may proactively provide information on local CDM and Climate Change developments via e-mail groups (as in Japan).

If project developers, national government or others approach Embassies for information on the Netherlands CDM approach, they should be referred to the VROM CDM website [www.cdminfo.nl](http://www.cdminfo.nl). In addition, when the questions are political or policy related, the Embassy may send out the CDM fact sheet and the CDM brochure (both are published on the [cdminfo](http://cdminfo.nl) website), or divulge the e-mail address of the Netherlands Designated National Authority for CDM (VROM): [CDM.DNA@minurom.nl](mailto:CDM.DNA@minurom.nl). Details of all project developers should be forwarded to the CDM intermediaries mentioned in the CDM fact sheet.

Source: VROM communication to Netherlands Embassies in developing countries.

### 3.6 Other Annex I countries

Investor countries in CDM projects have generally acknowledged that in order to procure CERs, there must be CDM capacity building in the host countries. Yet, especially during the early years of the CDM (2000-2005) when there was much uncertainty about the status of the Kyoto Protocol and there were limited numbers of players in the CDM market, many potential CDM host countries did not have adequate information about:

- the CDM modalities and procedures;
- how projects could contribute to the sustainable development priorities of host countries;
- which projects would qualify as CDM activities;
- how the requirement of approving CDM project ideas could be fleshed out.

The Netherlands was among the first countries to establish both a CDM procurement and a CDM capacity building programme. Other investor countries with an early activity record in these areas were Austria, Japan, and Finland. One group of countries (e.g. Finland) offers capacity building support via 'project cooperation'. A second group of countries (e.g. the Netherlands and Germany) clearly separate CER procurement from CDM capacity building tasks (which means that it is possible for the Netherlands to provide support to building CDM capacity in countries where it does not purchase CERs). Finally, the largest group of Annex I Parties active in both CER procurement and CDM capacity building have clearly 'linked' capacity building to the prospect of acquiring CERs from the host countries concerned. The CDM programmes of Austria, Japan, and Denmark focus on the countries from which they expect to purchase the most CERs. The capacity building programmes of these countries therefore explicitly include project identification and development of PINs.

The separation of CER procurement from CDM capacity building in the Netherlands is also reflected in the separation of responsibilities between departments within the Netherlands Government (see Section 1.2). The Ministry of Foreign Affairs carries out the capacity building programme while the Ministry VROM manages the CER procurement programme. An important reason for this separation is the desire of the Netherlands Government to avoid creating the impression that CERs have been procured through projects that have partly been developed by development cooperation funds under the ODA programme. The sharp line between both programmes implies that the Netherlands support to the capacity building programme Capacity Building for CDM (CD4CDM), which



is managed by the UNEP Risø institute in Denmark, does not contain the facility to finance feasibility studies for potential CDM projects that could be included in the Netherlands portfolio at a later stage. Consequently, the Netherlands CER procurement programme benefits to only a limited extent from the CD4CDM activities.

### 3.7 Inferences

This Chapter has examined the Netherlands policy on AIJ and CDM, contrasting it with the approaches of other countries. This has been done by addressing several sub-questions (see chapter 2).

- a) *Which criteria do host countries, the Netherlands Government, and intermediaries use for assessing the contribution of AIJ/CDM projects to sustainable development?*

Three categories of diminishing comprehensiveness can be distinguished through which CDM host countries determine a project's contribution to sustainable development (see Table 3.1): 'sustainable development approach in operation', 'context-specific approach', and 'compliance-driven approach'. It is the prerogative of the host country to determine whether a project contributes to its sustainable development, but the Netherlands Government acknowledges at the same time that it can influence the sustainability of its CDM portfolio during or prior to the selection phase. For instance, projects with a relatively strong potential contribution to sustainable development (e.g. renewable energy projects) could be eligible for a higher CER price. The intermediaries contracted to purchase CERs on behalf of the Netherlands Government must apply its minimum sustainable development criteria for CDM projects. They may also apply additional safeguard policies and codes of conduct for environmental and socio-economic impacts. In addition, different intermediaries have different priorities. CAF, for example, only develops projects that contribute to an increase in biodiversity in the host countries, while CDCF provides finance to projects in the poorer areas of the developing world and provides support to projects that deliver benefits to poor local communities and their adjacent environment. It should be noted, however, that assessment of a project's achieved contribution to sustainable development relies fully on the willingness and policies of the project participants and countries involved. There is no international, CDM Executive Board-governed, protocol to monitor the contribution to sustainable development.

b) *Is there a clear coherence between these different sets of sustainability criteria used by the various organisations involved in projects?*

In principle, each CDM project established with support from the Netherlands Government could be subject to the following three sets of sustainable development criteria: those determined by the host country, the minimum requirements with respect to sustainable development set by the Netherlands Government, and the criteria applied by the intermediaries. However, only the host countries can approve a project as a contribution to sustainable development, but the Netherlands Government and the intermediaries can decline to become involved in a project if they consider it to be unsustainable. For instance, if a project seems likely to have significant adverse effects, the Netherlands Government may request an Environmental Impact Assessment (EIA).

c) *What role do the Netherlands Embassies play in CDM project development?*

As a result of the different-track approach adopted by the Netherlands Government, the extent to which Netherlands Embassies are involved in CDM project development is limited. The intermediary organisations make use of their own networks in various countries. However, VROM may request the Embassies to advise on whether a particular project matches the host countries' needs and priorities and on the project participants' standing or reputation. Some of the Embassy officials approached for their views indicated that a more coordinated approach with respect to CDM project development would improve the outreach and exposure of the Netherlands in developing countries.

d) *Are there differences between the Netherlands approach towards procurement of certified emission reductions from CDM projects and the approaches of other countries?*

Investor countries have acknowledged that capacity building (knowledge transfer and institutional CDM support) is a prerequisite for the success of the CDM. There are clear differences in how various important investor countries that pioneered the CDM (such as Denmark, Finland, Austria, the Netherlands, and Japan) established their CER procurement and CDM capacity-building process. The Netherlands has strictly separated its CDM capacity development programme (the responsibility of the Ministry of Foreign Affairs - DGIS) from its CER procurement programme (the responsibility of VROM). Denmark, Austria and Japan, however, focus their capacity building more on the countries from which they expect to purchase CERs; hence their capacity building involves project identification and the development of PINs. Such a combined approach might result in valuable

synergies, for example through the integration of the experience of development assistance Ministries and/or agencies with host countries' needs and priorities (demand-driven), and the acquisition of CERs resulting from projects developed under such cooperation. On the other hand, there is a risk of creating the impression that development cooperation resources are being used to subsidise CERs.



# 4 Assessment of the Pilot Projects

## 4.1 Introduction

The Netherlands government has invested in a number of Activities Implemented Jointly Projects since 1995. This chapter assesses five pilot projects focusing on renewable energy and financed by the Ministry of Foreign Affairs. These projects are located in Latin America, Africa and Asia. Table 4.1 sums up some of the key aspects of each of these projects. It shows that the Netherlands contribution ranges from a small fraction of EUR 0.7 million in the case of India (there are six gasifiers financed in India and only one is the focus of this research) to EUR 3.5 million in the case of Costa Rica. The projects reveal a very large range in the emissions reductions and in the cost/efficiency of each project, ranging from EUR 1.9 per tonne CO<sub>2</sub> in Vietnam to EUR 27.5 per tonne CO<sub>2</sub> in Costa Rica (no data are available for China and India).

**Table 4.1** Background information

Host country	Costa Rica	Vietnam	South Africa	China	India
Location	Tejona	Across country	Bethlehem	Shandong	Bihar
Foreign investor	Essent, B.V. & NL Govt. (PPP/JI)	SNV (PPP/JI)	Nu Planet with offices in both countries	ECN & PPP/JI	NICIS & PPP/JI
Host investor	ICE	Ministry of Agriculture and Rural Development	E3	Ministry of Science and Municipality of Shougang	DESI Power and Development Alternatives
Investment	Wind power	Small-scale biogas	Mini-Hydro	Sunny greenhouses	Biomass gasifier
Total project cost (in EUR mln)	21.9	2.1	6.4	0.8	n.a.
NL contribution (in EUR mln)	3.5	2.0	0.8	0.5	0.7
CERs per year (KtCO <sub>2</sub> )	40	55	33	None	36
Investment (EUR/tCO <sub>2</sub> )	27.5	1.9	9.7	n.a.	n.a.

The assessment of the five projects revealed that the time taken to develop new and innovative projects in developing countries could be quite long. Table 4.2 sums up the timeline of the projects. Delays often occur as project developers search for suitable partners, have to design the project so that it meets project goals, have to ensure government support as well as licences for such projects and have to raise the resources. Only after all this has been achieved, can a begin be made with project implementation. The Costa Rica project seems to have been delayed in anticipation of the formal rules and the establishment of appropriate authorities. The South Africa project was delayed because so many different licences had to be acquired.

**Table 4.2** The timeline of projects

	Costa Rica	Vietnam	South Africa	China	Bihar
Initial idea	1992		1997	1997	1997
Developed where	Costa Rica	Vietnam	South Africa	ECN, Netherlands	Joint*
Contract negotiated	2000	2002	2000	2002	1999
Project implemented	2001	Phase 1 implemented (2003-2005)	In 2006; as approval process took time	Expected to be implemented by 2004; still not implemented properly	The last of the six gasifiers was completed in 2001
Current status	Functioning for four years	In Phase 2	Construction completed	Construction complete; non-functional	Provides electricity and supports development

\* In the initial years; now the project is largely 'owned' by Indians.

In the Costa Rica project, by the time the idea was developed into a project, wind power had become commercially viable, making additionality a problematic issue. In the China project, project partners changed and lost some of their motivation in adjusting the project so that it would meet its goals.

## 4.2 Methodology

### 4.2.1 Key characteristics

The key characteristics of the method used when preparing the present report draw on:

- 'general research' on sustainability indicators (Kuik and Verbruggen, 1991; Munasinghe, 2001; Markandya and Halsneas, 2002; Boulanger, 2004; Munasinghe and Swart 2000);
- CDM-specific sustainable development criteria developed 'by different organisations and networks' (the WWF CDM Gold Standard<sup>15</sup>, see also Kenber *et al.*, 2004; the Gold Standard criteria of the SouthSouthNorth and Helio International, see also SouthSouthNorth, 2005; Thorne & Lebre La

<sup>15</sup> See [www.cdmgoldstandard.org](http://www.cdmgoldstandard.org) (last accessed 15 November 2006).

Rovere, 2002; Thorne & Raubenheimer, 2001 and the World Bank’s criteria for its Prototype Carbon Fund (PCF), see also Huq, 2002);

- sustainable development criteria developed for CDM by experts (Begg et al., 2000; Beuermann et al., 2000; Brown et al., 2004; Sathaye et al. 1999).

Sustainability assessments generally take the form of guidelines, checklists, negotiated targets or multi-criteria analysis (MCA) (Sutter, 2003). We opted to use multiple criteria analysis because it allows us to assess the projects on the basis of criteria and weights assigned to each criterion. Table 4.3 shows how each effect considered in the assessment has been rated at five levels.

**Table 4.3** Assessment of projects evaluated on the contribution to sustainable development

Score	Explanation
-2: Major negative contributions	Significant damage to ecological, social and/or economic systems that cannot be mitigated through preventive (not remedial) measures.
-1: Minor negative contributions	Measurable contribution but not one that stakeholders consider will militate against the implementation of the project activity or cause significant damage to ecological, social and/or economic systems.
0: No or negligible contributions	The stakeholders consider the contribution to be zero or negligible.
+1: Minor positive contributions	Discernable benefit to ecological, social and/or economic systems.
+2: Major positive contributions	Significant benefit to ecological, social and/or economic systems.

Source: SouthSouthNorth Sustainable Development Appraisal and Ranking Matrix Tool. Available at: [www.southsouthnorth.org](http://www.southsouthnorth.org).

#### 4.2.2 Comparative framework

To facilitate comparison, each case study systematically presents background information on the host country, the history of the case study, analyses the project documents, the host government’s sustainability criteria and then assesses the project on the basis of the MCA. To ensure that the case studies were compatible and comparable, and to minimise the risks of incorrect assumptions and interpretations of the views of local stakeholders, the assessment was carried out jointly by a researcher from the Netherlands and researchers from the host country on the basis of guidelines for the assessment. Qualitative assessments of documents and interviews were combined with quantitative techniques in a



scoring system that had originally been developed by SouthSouthNorth. This scoring system allows a project's relative contribution to sustainable development to be assessed; it requires expert judgement when weighing the information in order to assess these projects. A two-stage process was carried out to ensure that the differences between the projects were captured as well as the difference between a particular project and its baseline.

#### 4.2.3 Sustainability criteria, data collection and MCA

Based on the literature, sustainability criteria were identified and classified into one of three groups - environmental, economic and social; within each group, six sub-categories were identified. Details on each sub-category are available in Bole and Rentel (2007). To collect the data, teams were set up for each project. The teams examined the project documents acquired from project partners and kept in the archives of the Ministry of Foreign Affairs and also the relevant internet-based publications; they also visited sites and made personal observations and, where possible, examined relevant literature. Stakeholders identified through the snowball method were interviewed on the basis of a questionnaire and the results were triangulated with other sources.<sup>16</sup>

### 4.3 The case studies

#### 4.3.1 Tejona wind power project (Costa Rica)

The AIJ wind power project in Tejona in Costa Rica involves a partner from the Netherlands - Essent Energie B.V. and the Costa Rican public sector power company - ICE. Although the Costa Rican partner initially developed the project in 1992, the contract with Essent was not signed until 2000 and at the time of research in 2006, the project was in its fourth year. At present the wind park is functioning and providing electricity; however, the plant is not operating optimally as maintenance has been poor because of confusion about who is responsible for such maintenance. The project has reduced the emissions of greenhouse gases by comparison with the baseline situation and has minimal other negative environmental impacts; it has also made a limited contribution to social aspects. Its potential contribution to the economy is higher. All in all, its contribution to sustainable development is limited. The project was accepted as a CDM project on 23 March 2007.

<sup>16</sup> The data collected was then analysed and the case studies were scored. Subsequently, a multi-criteria analysis was applied, using the software package DEFINITE (Janssen et al., 2006).

#### **4.3.2 Small-scale biogas technology (Vietnam)**

In Vietnam, the AIJ project aims to promote the use of biogas technology on a large scale in 12 provinces. The partners in this case are the Vietnamese Ministry of Agriculture and Rural Development and the Netherlands Development Organisation in Vietnam (SNV-VN). The project was negotiated in 2002 and its first phase was completed in 2005; at the time of research in 2006, the project was in its second phase. The project uses technology developed and used in a previous project in Nepal and which has been adapted to local circumstances. Farmers have been provided with subsidies via the post office to install and use the biogas technology. The project is very successful and many farmers are participating in the programme. The two problems are that richer farmers have also been able to access the subsidies and that there has not been optimal use of the gas and slurry. The first problem can be addressed by providing scaled subsidies and the second through capacity building to help farmers sell or give other local potential consumers the surplus gas and slurry. The project has been combined with training and capacity building and has focused on meeting the social, environmental and economic needs of local stakeholders; it therefore scores quite well on the criteria of sustainable development.

#### **4.3.3 Mini-hydro plant in Bethlehem (South Africa)**

In Bethlehem, South Africa, the AIJ project aimed to develop a mini-hydro plant. The project was developed by E3, an engineering company, in collaboration with NuPlanet, which has offices in both countries. The idea was developed in 1997 and the contract signed in 1990. However, because of the complex nature of the legal permissions required, the project only became operational at the end of 2006. The project demonstrates that the private sector should in the future be able to successfully develop small hydro projects. It is difficult to evaluate the success of this project, because it has been running for so short a time, but one can argue that since it meets the requirements of most national regulations, it must automatically be making some contribution to sustainable development in South Africa.

#### **4.3.4 Sunny greenhouses (China)**

The solar technology for greenhouses AIJ project developed in Shandong province in China is one of the less successful projects. The project principally involved the Energy Research Centre in the Netherlands, the Ministry of Science and Technology in China, and the Municipality of Shougang in Shandong province. Demonstration greenhouses have been set up, but the on-site visit in 2006 revealed that these are not being used optimally, there are no reductions

of greenhouse gases as baseline emissions are close to zero, and there is no real dissemination of the technology. Because of the low involvement of local stakeholders in the design and implementation of the project, and the poor design of the project in terms of taking into account the baseline situation, the project is failing to reduce greenhouse gases and to contribute to sustainable development.



Maintenance in the biomass gasifier in Baharbari, India (2006)

#### **4.3.5 Biomass gasifier in Baharbari, Bihar (India)**

An AIJ project promoting the use of a biomass gasifier has been launched in one of the poorest corners of India, in Baharbari; it is one of the six biomass gasifiers promoted in the total project. The project has a partner from the Netherlands (the company NICIS), and was initiated by DESI Power and Development Alternatives. The contract was signed in 1999. The project reduces greenhouse gases by comparison with diesel generators in the baseline situation, and has made some contributions to the local economy and social context, but to a very limited extent.

### **4.4 Comparative assessment of the case studies**

To draw generic conclusions on the success and failure factors of the five case studies, we compare the pilot projects on a number of project characteristics.

#### **4.4.1 Sustainable development in project documents and national policies**

Since AIJ projects did not explicitly have to meet sustainability criteria, most project documents did not explicitly refer to such criteria. In the Costa Rican case, the Netherlands grant called for capacity building, environmental education and technology transfer. The Vietnamese project developed in 2002 explicitly took into account sustainable development, probably because by that time this was seen as a critical aspect of CDM projects, and possibly because the project developers intended eventually to submit the project for recognition as a CDM project. Although the South African project did not include sustainable development criteria, the licensing process in South Africa implied that many criteria had to be taken into account ultimately. The Chinese project documents did not refer to sustainable development, but it was expected that the project would contribute to economic growth and technology transfer. The Indian project focused on employment and meeting national standards. Thus, in the project designs, only the Vietnamese project explicitly considered sustainable development.

Most of the host countries analysed have officially supported the promotion of the concept of sustainable development; South Africa, Vietnam, China and India have some guidelines in place, while Costa Rica is in the process of developing guidelines. There are marginal differences in the definitions: where China focuses more on technology transfer, Vietnam focuses on job creation, poverty alleviation and hunger elimination.

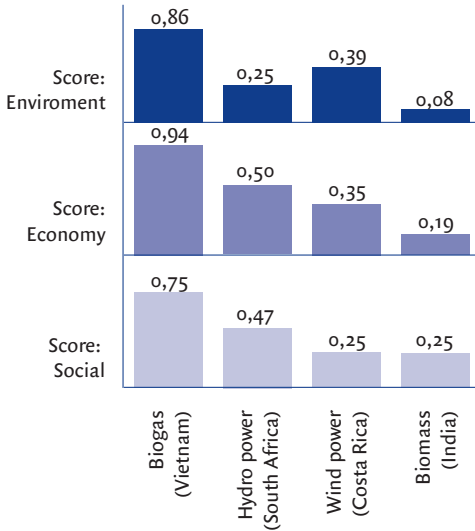


Consultant in discussion with workers of the biomass gasifier in Baharbari, India (2006)

#### 4.4.2 Contribution to host country's sustainable development

The assessment reveals that the project in Vietnam has made the most efforts to contribute to sustainable development; while the project in China is presently seen as a failure and hence not included in the figure below. The other three projects have made some contributions to other social, economic and environmental criteria, with the South African project scoring the best (although this is perhaps premature, as the project is not yet in its operational phase). Figure 4.1 compares the contributions to sustainable development based on the assumption that all three criteria are equally weighted. Some countries and researchers may attach more weight to one or other of the categories. However, a sensitivity analysis proved that the actual ranking of the projects does not change much with variation of the weighting system. The results are therefore robust.

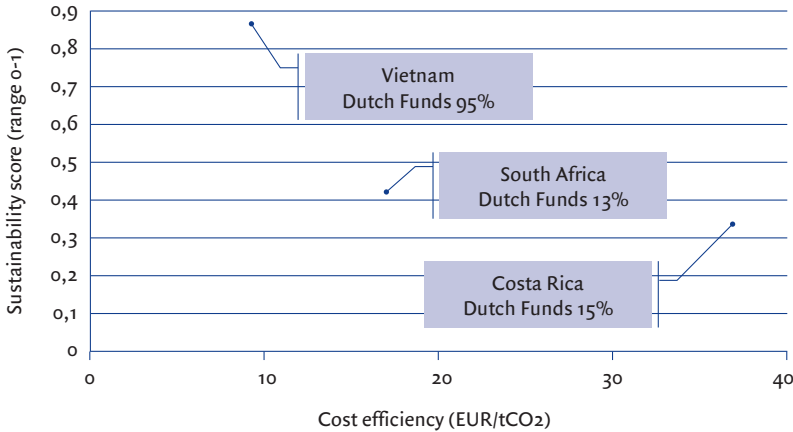
**Figure 4.1** Scoring and ranking of four case studies on the basis of equal weights for environmental, economic and social impacts



Although it is difficult to generalise on the basis of five studies only, the case studies challenge Sutter and Parreño’s (2005) contention that projects that score on sustainability score less on cost-effectiveness (see Figure 4.2). The Vietnam case is the most cost-effective and yet is the most sustainable. On the basis of all five AIJ projects it seems that higher investments and hence lower cost-effectiveness in terms of reducing greenhouse gas emissions do not necessarily lead to better contributions to sustainable development. This may be because the Netherlands Government provided 95% of the total investment; but it may also be because only in the Vietnam project was sustainable development explicitly taken into account.

There are two other possible reasons for the counterintuitive result. The first is the low involvement of the host governments at the time the projects were designed. The second is that renewable energy projects are seen as scoring well on environmental impacts and their lack of major contributions on the social and economic field are then accepted as a trade-off. However, the research shows that at least four of the five projects contributed – to varying extents – to reducing greenhouse gas emissions and that all projects had low environmental impacts or were proactive in addressing other environmental problems.

**Figure 4.2** Relationship between cost efficiency and sustainable development



Note: India has been excluded from the graph due to lack of data.

While the Vietnamese project did take local factors into account, the other four projects had limited local participation and as such made few positive contributions to the local communities where the projects were located. The interests of women were taken explicitly into account in the South Africa case, but more because this is mandatory under South African law. Due to their small scale, none of the five projects generated much local employment; four of the five projects made some contribution to the local economy, with the Vietnamese project scoring the best.

#### 4.4.3 Evolution to CDM projects

One of the AIJ projects have already been registered as CDM projects, while another three are expected to be developed into CDM projects in the near future. In such preparatory processes, it will become vital to redesign the projects somewhat to give more emphasis to the sustainable development angle, and to get host country approval for this.

### 4.5 Inferences

This chapter studied whether and how the five AIJ pilot projects contributed to the sustainable development of the host countries. Several sub-questions have been answered to shed light on the effectiveness of these five AIJ projects.

a) *Have the goals as listed in the AIJ project documents been achieved?*

On the basis of a multi-criteria analysis applied to the five (non-registered) AIJ pilot projects, this chapter concludes that four of the five projects have succeeded or are likely to succeed in reducing greenhouse gases by comparison with a clear baseline.

b) *Which factors have contributed to the failure or success of the projects?*

The only clearly unsuccessful project, the sunny greenhouse project in China, did not have a clear baseline and has very few users. Typically, the earliest projects (Costa Rica) took the longest time to develop, because they were the earliest and were conceived long before the rules of the game had been settled. In the meantime, the project type had become commercially viable and exploitable.

c) *What is the contribution of the projects to sustainable development in the host countries?*

Although, four of the five projects contributed to sustainable development in one way or another, only one of the five projects explicitly took sustainable development into account: Vietnam. This project scores very well both in terms of meeting sustainable development criteria and in reducing emissions per Euro spent. The others have contributed to sustainable development in varying degrees. The contribution of the project in India to sustainable development is marginal.

d) *What lessons can be learnt from an analysis of these projects about the design of such projects in the future?*

The projects show that demand-driven projects that explicitly take sustainable development into account are more successful. Good design is critical for the success of a project. The maintenance of high quality project documentation is also essential, since this enables local managers to be aware of the effectiveness of their operations, and to intervene if necessary. Finally, one should recognise that if such projects are expected to promote innovative ideas with demonstrative effect in developing countries, there will inevitably be a time lag in developing them.



# 5 Assessment of the CDM Portfolio of the Netherlands

## 5.1 Introduction

To comply with its commitments under the Kyoto Protocol, the Netherlands has decided to acquire approximately 100 Mt CO<sub>2</sub>-eq. emission reduction credits from abroad through project-based emissions trading (see Section 1.1). Of this amount, 67 Mt is planned to be acquired from CDM projects.

The performance of CDM projects in terms of GHG emission reduction is carefully verified by designated operational entities that apply the rules of the Marrakech Accords and the CDM Executive Board. Since the Conference of the Parties (COP) decided in 2001 that sustainable development is a country context-specific issue, this aspect of CDM is to be assessed by the host countries only. The Netherlands may nevertheless still wish to evaluate the effects of CDM projects on host countries' sustainable development from its own perspective, for a number of reasons. First, the Government may need to justify and explain CDM investments to taxpayers in the Netherlands, and to demonstrate that the projects it invests in comply with host country standards and principles. Second, the Netherlands Government is in a position to influence the 'sustainability' of its CDM portfolio. For instance, it may pay a premium on top of the market price for projects that deliver a relatively large contribution to sustainable development, e.g. local community development, poverty alleviation, *etc.* Third, the host country judgement on a project's contribution to sustainable development takes place during the project design phase (before issuing a letter of approval), while it is not always clear whether the host country monitors the actual performance of the project later on.

Within the Marrakech context, investor countries do have the freedom to carry out an assessment of whether 'their' projects perform in line with the agreed

sustainable development framework. This implies that CDM projects can be looked at from two perspectives: the perspective of the host country and the perspective of the investor country, in this case, the Netherlands.

This Chapter explores how CDM projects in the Netherlands portfolio are expected to contribute to sustainable development in the host countries, should all projects be successfully implemented and completed over time. As explained earlier, the focus is on *expected* contributions, as some projects are yet to be implemented or have only recently started operations. A representative sample of 44 CDM projects has been compiled on the basis of geographical spread, variation in technologies, and timing of project implementation (negotiation or implementation stage). As explained in Section 1.3, the expected performance of the Netherlands CDM projects has been assessed on the basis of 1) preparatory documents, 2) the CDM Designated National Authorities (DNA) in the host countries and 3) a combined evaluation by the research team.

## 5.2 Expected contribution based on project documents

The first assessment of the expected performance of the Dutch portfolio of CDM projects is based on various documents developed at the inception of the project. The team analysed the PINs, PCNs, and PDDs of the 44 projects included in the assessment. To obtain an impression of the projects in terms of their abatement potential and energy production, Table 5.1 shows the average amount of CO<sub>2</sub>-eq. emission reductions that the sample projects (per project category) are expected to generate per annum. It also gives the average electricity generation capacity, if applicable. The variety of projects within the Netherlands CDM portfolio, and thus within the sample, is substantial. An overview of the main findings per project category is provided below.

**Table 5.1** Expected yearly average of CERs per project type

	Projects in sample	Average of CERs/project/year (KtCO <sub>2</sub> -eq.) <sup>1</sup>	Capacity (MW)
Biogas	3	52	15 <sup>2</sup>
Biomass	5	27	24 <sup>3</sup>
Coalmine methane	1	2,877	120
Energy efficiency	6	102	n.a.
Fugitive gas capture	1	220	n.a.
Geothermal	1	81	20
HFCs	2	5,706	n.a.
Hydro	12	107	35 <sup>4</sup>
Landfill gas	7	265	5 <sup>5</sup>
Wind	6	63	36
<b>Total</b>	<b>44</b>		

n.a = Not Applicable.

<sup>1</sup> It should be noted that the Netherlands is not necessarily the only procurer of the emission reductions ensuing from a single project. This overview merely serves to illustrate a project type's potential contribution to reducing GHG emissions.

<sup>2</sup> Based on 2 biogas projects, weighted average.

<sup>3</sup> Based on 5 biomass projects, weighted average.

<sup>4</sup> Based on 12 hydropower projects, weighted average.

<sup>5</sup> Based on 4 landfill gas projects, weighted average. The other 3 projects involve flaring of captured methane.

Source: UNFCCC/Fenhann, 2007.

### 5.2.1 Categories in the portfolio

**Biogas:** Three biogas projects have been assessed in the sample. The two Nepalese biogas projects are small scale and aim to produce biogas from animal waste for on-site use. The biogas project in Nicaragua is of a larger scale than the Nepalese projects; it, too aims at producing energy for on-site use based on improved wastewater treatment. All three projects thus supply energy users with modern, reliable, and affordable energy. This reduces the need to purchase relatively expensive fossil fuels or the need to collect firewood. Collecting firewood takes up much of the time of women and children, who are traditionally entrusted with such tasks while also being affected by indoor air pollution as a result of burning e.g. wood and kerosene for cooking, which may cause respiratory diseases. The availability of sustainable energy technology to the rural populations is thus expected to contribute to poverty alleviation (as more time will become available for work and education) and health improvement. The project in Nicaragua expects to reduce soil and water contamination, as well. Table 5.2 shows, as an example, a summary of the positive and negative sustainable development

aspects related to the projects. For a more elaborate overview, the reader is referred to Van der Gaast and De Jong, 2007.

As can be seen, a distinction has been made between sustainable development aspects in line with host countries’ needs and priorities possibly evolving from the project, and a so-called project-specific category, i.e. possible benefits from the project without a clear link to implementation of the energy project itself (e.g. community development programmes).

**Table 5.2** Example of assessment summary  
(i.e. contribution of biogas projects to sustainable development)

	<b>Nepal</b>	<b>Nicaragua</b>
<b>SD benefits in line with host country's SD needs and priorities</b>	GHG emission reduction Availability of fertilisers from bio-slurry Increased access to affordable/clean energy Poverty alleviation Improved sanitary conditions Reduced drudgery for women and children Improved health conditions due to smoke reduction Forest conservation (less firewood)	GHG emission reduction Production of better quality fertiliser Production of energy Energy supply diversification Reduced dependency on fossil fuels for power generation Reduction of soil and water contamination Cleaner local air Development of renewable energy Conservation of non-renewable resources Promotion of the business as the project participant joins the group of Clean Production Industries Technology transfer Job creation
<b>Project-specific SD benefits</b>	Development of the CDM market in Nepal (first of its kind in Nepal)	Development of the CDM market in Nicaragua (first of its kind in Nicaragua)
<b>Possible negative impact</b>	Breeding of pathogens Breeding of mosquitoes	Noise during construction work Possible health risk to lab workers if adequate measures are not taken

**Hydropower and wind power:** For this study, twelve hydropower projects in seven countries have been evaluated together with six wind power projects in five different countries. The hydro and wind power projects are expected to enhance the security of energy supply in the respective countries because they will deliver power to the national or local grids, thus ensuring that growing demand for electricity can be met while grid reliability is increased. Some of the hydropower projects have a forestry and river basin improvement component. This involves, for example, replanting trees if local biodiversity has been negatively affected by the required construction work.

**Landfill gas:** Seven projects recovering methane from landfills have been assessed in five countries. The landfill-gas capture projects claim to offer a broad range of environmental aspects, in particular improved waste management leading to a reduction in possible soil and water contamination from landfilling, cleaner local air, and reduction of odour in the surroundings of the landfill sites. Some of the projects contain plans to create parks around the landfill sites and aim to establish small tree-planting projects. In terms of social benefits, landfill gas capture projects aim to improve the living conditions of the adjacent areas. Moreover, in four out of seven cases, electricity will be produced. However, it is doubtful whether the nearby communities will benefit.

**HFC:** Two HFC projects have been selected in China and India. The main benefit from HFC-23 projects (HFC-23 is a by-product of HCFC-22 production, which is a refrigerant) is the GHG emission reduction component, because HFC-23 is a very powerful GHG, with a global warming potential of 11,700 times that of CO<sub>2</sub>. In addition, in the case of the HFC-23 project studied in China, 65% of the CER revenue will be taxed by the Chinese Government. However, it remains unclear whether the moneys collected will be allocated to the development of clean energy in China or whether the national treasury will claim the revenues for the central budget of China. Through this money, the Chinese CDM projects thus indirectly contribute to sustainable development objectives in China - although at the time of writing it was unclear how this money would be administered. The Chinese Government applies differential tax rates to projects. Projects that deliver major contributions to sustainable development by their very nature (energy efficiency, renewable energy projects) are taxed at a lower rate. In India, the Netherlands Government has agreed with the project participant on a fund that diverts part of the CER revenues (i.e. EUR 1.4 million) to local communities (e.g. water management, education, employment, hygiene improvement, medical health, etc.).

**Methane capture:** Two methane-capturing projects have been assessed. The anticipated improvements in the efficiency of the fugitive gas capture project in Brazil will increase the competitiveness of the country's wood-processing industry. The coalmine methane project in China claims to have two benefits: electricity generation from the methane removed from the mine, and substantially improved safety conditions for the miners.

**Biomass:** Five biomass energy projects in Brazil (3) and India (2) have been assessed. These projects claim to contribute to several economic aspects of sustainable development, such as diversification of energy supply, reduced dependency on fossil fuels, and cost-savings for manufacturing industry. The environmental contribution mainly stems from GHG emission reduction and forest conservation.

**Energy efficiency:** The six projects selected in the category 'energy efficiency' vary widely. They are in the field of industrial production and construction and are reported to improve waste management (combustion of industrial waste), improve the living conditions in buildings, increase economic efficiency in industry, and improve local air quality (less burning of fossil fuels in homes and factories).

### 5.2.2 General findings from project documents

Assessing the projects' contribution to sustainable development requires a careful methodology that does justice to the political reality that the CDM host countries approve projects on the basis of their own, domestic criteria. Therefore, in contrast to the analysis of the AIJ projects in Chapter 4, the analysis of CDM projects based on project documentation did not use a uniform list of sustainable development criteria to score the projects on their contribution to sustainable development. Such an approach would in effect have assessed whether host country DNAs take correct decisions in terms of projects' contribution to sustainable development. That would not have accurately reflected the political reality of CDM. Instead, the analysis focused on how project participants expect the projects to contribute to sustainable development in the host countries, as these expectations formed the basis for host country DNAs to approve of the projects. Since host countries use different methods - and different lists of criteria - to assess sustainable development (see Chapter 2), the descriptions of the expected contributions to sustainable development made by projects from the same category differ from country to country. The result was a broad range of sustainable aspects per project category and country, from which the Policy and Operations Evaluation

Department (IOB) of the Ministry of Foreign Affairs was able to infer a number of general trends and main findings. These are described below.

*Projects' objectives:* The main objective of the majority of projects studied (31 out of 44) is to generate electricity for on- or off-site use. As such, these projects are expected to have a direct impact on a country's fossil fuel dependency and/or security/reliability of energy supply.

It is difficult to make supra-national generalisations about projects. The project descriptions have shown that there can be huge differences between projects from the same project category carried out in different countries. For instance, HFC-23 projects in China are heavily taxed, whereas similar projects in India can become the subject of negotiation on sustainable development programmes. Also, to give another example: in some countries, biogas projects have the largest potential in agriculture, whereas in other countries this potential lies in waste water treatment. It was therefore decided to only generalise across project types per country, e.g. hydropower in Brazil, hydropower in Chile, biogas in Nepal, etc. This enables generalisations to be made about the projects' contributions to sustainable development, while keeping the specific country contexts in mind.

The range of the contributions to sustainable development varies substantially, depending on the project category: Analysing the list of sustainable development aspects per project category revealed that biogas, hydro power, landfill gas capture and wind power projects aim to contribute the broadest range of aspects, whereas HFC-23, fugitive gas capture, and coalmine methane (CMM) projects contain the fewest sustainable development aspects.

Some benefit types are much more common than others. The most common sustainable development benefit mentioned is employment generation, which is expected for 31 projects in the sample; then follow diversification of energy supply and security of energy supply. The latter can be explained by the large share of electricity generation projects in the Netherlands portfolio.<sup>17</sup> The third most frequently mentioned benefit is cleaner local air and/or reduction of non-GHG emissions; this is mentioned by several projects. Other sustainable development aspects identified are: provision of energy for cooking (only biogas projects in Nepal); foreseen increase in tourism (wind energy projects in Jamaica and China); improved river basin management (some of the hydropower projects); improved sanitary conditions (biogas projects in Nepal); reduced drudgery for women/

<sup>17</sup> Electricity generation activities were identified to be among the priority project categories in the Netherlands.

children (biogas projects in Nepal); and a foreseen 'peace pact' that might serve as an instrument for stability in a region torn apart by guerrillas (run-of-river hydro power project in Colombia).

Almost half of the projects generate sustainable development benefits that are not directly related to CER generation. As explained above, most of the contributions to sustainable development claimed in the project documents studied are *expected*. Nonetheless, there is an implicit incentive to monitor the performance of CDM projects in order to be able to generate CERs; the CDM EB can only register a project if the emission reductions are additional (i.e. would not have occurred without the CDM). Therefore, it can be argued that this incentive to carry out CDM projects according to plan also increases the likelihood that the anticipated contributions to sustainable development contributions will be delivered.

It would be incorrect to conclude that all expected contributions to sustainable development will be delivered automatically if a project reduces GHG emissions according to plan. For instance, it is obvious that local air quality will improve if a project brings about a switch from fossil fuels to a renewable energy source and thus reduces GHG emissions. Similarly, the transfer of state-of-the-art GHG abatement technology will also contribute to the sustainable development objective of technology transfer. Other aspects, however, are less dependent on the success of the GHG emission reductions: for instance, the reduction of drudgery for women and children in the biogas projects studied will only take place if their firewood collection activities are neither reduced nor replaced by an equally burdensome chore. And though several local community development efforts have been proposed by the project plans, they will have little effect on reducing GHG emissions.



**Table 5.3** Expected SD aspects mentioned in project design documents, project concept notes and project identification notes

	Biogas	Biomass	CMM	Energy efficiency	FGC	Geothermal	HFCs	Hydro	LFG	Wind
<i>Direct effects</i>										
- GHG reduction	x	x	x	x	x	x	x	x	x	x
- Energy for cooking/lighting	x									
- Cleaner local air/ reduced non-GHG	x			x		x		x	x	x
- Job quality improvement		x	x	x				x	x	x
- Improved (indoor) health conditions	x			x				x	x	x
- Improved waste management				x					x	
- Energy supply diversification/security	x	x	x	x		x		x	x	x
- Reduced dependency on fossil fuels	x	x				x		x		x
- Technology transfer (incl. FDI)				x			x	x	x	x
- Improved energy efficiency				x						
- Reduced soil and water contamination	x								x	
<i>Indirect effects</i>										
- Job creation	x	x	x	x	x	x	x	x	x	x
- Local community improvement		x		x				x	x	x
- Job quality improvement		x	x	x				x	x	x
- Forest conservation/reforestation	x	x						x	x	x
- Improved (indoor) health conditions	x			x				x	x	x
- Improved competitiveness of industry		x			x					
- Poverty alleviation	x					x		x		x
- Useful by-products	x				x					
- Improved sanitation conditions	x									
- Reduced drudgery for women/children	x									
- Peace pact								x		
- Improved river basin hydrology								x		
- Forest conservation/reforestation	x	x						x	x	x
- Improved waste management				x					x	
- Benefits to local community		x		x				x	x	x
- Tourism										x
- Improved biodiversity								x		

Clean and sustainable?

The team's assessment of which of the sustainable development aspects found in the project documentation are directly or indirectly related to successful GHG emission reduction (see Table 5.3) revealed that when the CERs are successfully generated, the aspects directly related to GHG emission reduction will be achieved, but aspects with an indirect link are less likely to follow on automatically. So to increase the likelihood of achieving the indirectly linked aspects, additional monitoring procedures are needed.

'Negative effects occur but are compensated for': Some projects have negative impacts: the one quoted most often in the consulted project documentation is noise pollution during construction. Hydropower projects are most often associated with such negative impacts, notwithstanding the fact that all the hydropower projects studied were 'run-of-river' plants. Nevertheless, to create the necessary head of water to power the generator, it is necessary to construct a diversion channel, possibly a reservoir, and certainly a pipeline. To compensate for these negative impacts, project developers generally make agreements with the local authorities to carry out afforestation and biodiversity enhancement activities, infrastructure improvements, etc. Moreover, the use of river water must be monitored, to prevent dangerously low river levels during dry periods: this is particularly important for local communities downstream who are dependent on river water.

### 5.3 Host Country Perspectives on Sustainable Development

The second type of assessment of the 44 Dutch CDM sample projects addressed their contribution to sustainable development as perceived by the CDM Designated National Authorities (DNA) in the host countries. The assessment was carried out through interviews with representatives of the host country DNAs with the help of the Netherlands Embassies (see Box 5.1 for the questionnaire used). Consequently, the set of host countries was limited to those countries in which the Netherlands is represented by an Embassy. Moreover, the analysis was hampered by the fact that in some host countries the DNAs were unwilling to cooperate. For this reason, the overall assessment was unable to address the biomass energy and fugitive gas capture projects in the sample.

The interviews with the DNA representatives focused on two topics (see also Box 5.1):

- 1) the host country's sustainable development *needs* and *priorities* in terms of energy service and sector development (e.g. electricity, heating, cooking, lighting, energy efficiency, and municipal solid waste management) to which the projects are predominantly expected to contribute;

- 2) the identification of the economic, environmental and social sustainable development aspects of each project, including negative ones. To do so, sustainable development criteria within each category were incorporated, derived from the Gold Standard methodology. Host country DNAs were requested to score each aspect from 1 (very low contribution) to 5 (very high contribution).

A comprehensive list of sustainable development criteria was used for the interviews with the DNAs. Via closed-answer questions, the DNA representatives identified the aspects of sustainable development aspects they considered to be important or unimportant when approving a project.

### Box 5.1 The questionnaire

#### **Question 1: Sustainable technology needs and priorities**

What are the main sustainable technology needs and priorities (e.g. to demonstrate concordance with national strategies and development plans) within <Country> for the short (up to 2012) to medium term (2012-20)? Please indicate for each project to what extent it contributes to the identified needs and priorities. Please indicate relevancy using the following ranking scale:

1 - very low, 2 - low, 3 - medium, 4 - high, 5 - very high

#### **Question 2: Sustainability benefits from the projects**

What sustainability benefits would you expect from the projects? Please use the following ranking scale:

1 - very low, 2 - low, 3 - medium, 4 - high, 5 - very high

#### **Question 3: DNA procedures and project performance**

- a) To what extent has the project performed during its operational lifetime according to the initially expected contribution to sustainable development?
- b) Does the DNA of <country name> have in place measures or procedures in case a project does not deliver the sustainable development benefits as agreed upon?
- c) When, according to your (i.e. DNA) view, does a project yield 'significant environmental impacts'?

#### **Question 4: Spin-off potential in a non-CDM context**

In your judgment, how well could the technologies (used by the project(s)) be replicated widely within <Country> in the future without the support of the CDM? Please use the following ranking scale and please explain your view:

1 - very low, 2 - low, 3 - medium, 4 - high, 5 - very high

### 5.3.1 Categories in portfolio

Before drawing general conclusions about the assessment, more details on the DNAs' evaluation of specific categories of projects is presented below.

**Biogas:** The Nicaraguan DNA was very positive about the biogas project's contribution to sustainable development, as it is fully in line with the country's identified sustainable development needs and priorities. Moreover, the project's contribution to poverty alleviation and improvement of the livelihood of biogas energy consumers is highly appreciated.

**Methane capturing:** The Chinese DNA representative awarded high scores to the coalmine methane project for its provision of electricity, energy efficiency and provision of heat for industrial use. Of the project categories studied, this was the one that the Chinese DNA rated highest, because of its excellent fit with identified development needs and priorities.

**Energy efficiency:** The DNA of Indonesia rated that country's energy efficiency projects highly, because energy efficiency is one of the Indonesian government's priorities. Both projects initiated in Indonesia are expected to deliver a medium to large contribution to sustainable development.

**Geothermal:** The geothermal power project in the Philippines received a mixed evaluation from the DNA with respect to its expected contribution to sustainable development. Although the project is fully in line with the country's priority of improving electricity supply, the project is also expected to have negative impacts in terms of loss of vegetative cover when drilling the boreholes and the possible interference of the water used in the project with groundwater in the surroundings of the site.

**HFC:** The abatement of HFC-23 in China does not coincide with the sustainable development needs and priorities identified by the DNA representative of China. With one exception, the project's contribution to the various aspects of sustainable development was evaluated in the range from very low to medium. The exception was the project's contribution to economic sustainable development in terms of the improvement of the balance of payments as a result of the large CER revenues.

**Hydropower:** Hydropower projects were assessed by the DNAs in Chile, Colombia, Ecuador and Peru. In general, it was concluded that these projects will contribute



*Hydropower project in South Africa (2006)*

to the countries' needs and priorities such as energy supply enhancement, and in some cases energy efficiency<sup>18</sup> and energy for cooling. The hydropower projects in Chile are expected to contribute mostly to economic and social sustainable development. The DNA singled out one project in which soil erosion and air quality degradation (as a result of tunnel excavation) are adversely affecting environmental sustainable development. Statutory mitigation measures are required to lessen such impacts. Examples of such mitigation measures are water quality management and mandatory reforestation programmes if forest is lost due to the project. The highest-scoring project in the four countries was the hydropower project in Colombia; this project is fully endorsed by the local community and the host country DNA. The hydro project in Ecuador was awarded lower scores for the respective sustainable development indicators and the Ecuador DNA explicitly mentioned the negative impacts from construction works. This negative assessment contrasts with the assessments from the other countries in which hydropower projects are being initiated. Finally, although the Peru project contributes to electricity supply, as do the other hydropower projects,

<sup>18</sup> Strictly speaking, hydropower projects do not involve an energy efficiency component. However, some host country DNAs may have interpreted energy efficiency in this context as making better use of available (renewable) resources in the country and thus evaluated hydropower projects with respect to energy efficiency accordingly.

the DNA in Peru awarded it moderate scores for economic, environmental and social sustainable development.

**Landfill gas:** Landfill gas capture projects were analysed by the DNAs in Argentina, Costa Rica, Peru and South Africa. Obviously, projects of this type mainly contribute to the identified needs and priorities of municipal solid waste management and electricity generation, if applicable. Nevertheless, the DNA of Argentina expects that the sustainable development contribution of the two landfill gas capturing projects will be of medium importance, as the technology incorporated by the projects is not particularly innovative, as no energy is to be generated. The Costa Rican DNA was more positive on the contribution of the one landfill gas project selected for analysis, mainly because of its electricity generation component. The landfill gas project in Peru is to generate electricity as well and this component was highly valued by the Peruvian DNA representative. A medium to high impact is expected for the other sustainable development indicators. In South Africa, the landfill gas project is in line with the national priorities to increase energy efficiency, generate electricity from renewable sources, and improve management of municipal solid waste. Because cheap electricity is readily available to industry and middle-class households, electricity generation as such was not mentioned explicitly: the improvement of electricity generation systems is not considered a high priority or need in South Africa, which is why the project's contribution to sustainable development was evaluated less positively. Both the economic and environmental sustainable development are expected to be low, with a medium score for social sustainable development. Although the project partners have agreed to pay USD 0.20/tCO<sub>2</sub>-eq. into a community development fund<sup>19</sup>, this financial contribution of USD 13,600 per year is considered too small to impact significantly on the livelihood of the poor.

**Wind energy:** Wind energy projects were evaluated by the DNAs in China, Colombia, Costa Rica, and the Philippines. In all cases, this renewable energy category is expected to enhance the country's energy supply. In the case of China, the two wind power projects are expected to make large to very large contributions to sustainable development, but were awarded only a medium score for social sustainable development. Wind energy serves three of the country's sustainable development needs and priorities: renewable energy supply, energy for heating, and contribution to energy efficiency. In Colombia, wind energy scored highly on economic and social sustainable development but the score for environmental

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<sup>19</sup> In this specific case, the World Bank purchases carbon credits on behalf of the Netherlands.

sustainable development was only medium. In Costa Rica, the DNA was less positive about the contribution of wind power to sustainable development. Although wind power is in line with the electricity supply priority of the country, the project's environmental and social sustainable development contributions are expected to be low to medium. The wind energy project in the Philippines is expected to be in line with the national priority of electricity supply, and it scores well on the expected contribution to sustainable development.

### 5.3.2 General findings of DNA interviews

For the countries for which completed questionnaires were available, it can be concluded that the DNA representatives believe that the project portfolio predominantly contributes to:

- diversification of energy supply;
- reduced dependence on imported fossil fuels;
- increased reliability of energy supply;
- increased access of the rural population to modern energy sources;
- job creation;
- reduction of non-GHG pollutants;
- improvement of the social livelihood in the project region of influence;
- improved energy efficiency in industrial production and the built environment.

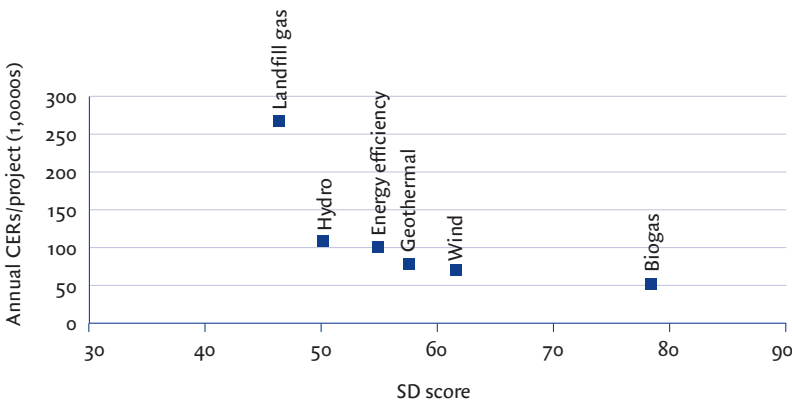
The main lesson from the above is that the Netherlands Government could optimise the contribution to sustainable development of its CDM projects by explicitly taking account of the local sustainable development priorities and the subsequent technologies that match the priorities of the host countries. For example, if electrification of the rural communities is a priority, this can be achieved by considering the introduction of micro-hydro power technologies. CDM projects can play an important role by removing possible barriers to the implementation of these desired technologies. The role of the Netherlands Government could be such that DGIS, as part of its CDM capacity-building programmes, explores the development needs and priorities of potential host countries, so that VROM would have better information about whether a proposed CDM project fits in with the host country's development strategy.

In chapter 2 it was noted that some literature sources have raised the question of whether GHG abatement and the contribution to sustainable development of CDM projects are supplementary or complementary. Figure 5.2 shows how, on the basis of the DNA answers, the concepts of projects' GHG abatement

and contribution to sustainable development interrelate. The sustainable development score on the horizontal axis has been calculated by totalling the scores given by the host country DNAs per sustainable development category (excluding the project’s contribution to the mitigation of climate change). The project’s contribution to GHG abatement, expressed in CERs, is given on the vertical axis. Because of the very high GHG emission reductions of the HFC-23 and the coalmine methane projects, these categories have not been included in the graph, since they would make the distinction between the other project categories imperceptible. HFC-23 would be positioned in the upper left corner and the CMM projects slightly lower on the vertical axis with a cumulative sustainable development contribution of 59.

Based on Figure 5.2, the inverse correlation suggested in the literature (see Chapter 2) that the larger a project’s contribution to sustainable development the smaller the project’s GHG abatement potential, or vice versa, seems to be supported by the sample of projects analysed. However, the sample is too small to be able to draw robust conclusions.

**Figure 5.2** Trade-off between a project’s contribution to sustainable development (SD score) and GHG emission reduction (CERs/project)



Note: Based on 24 CDM projects.

Source: UNFCCC data and Sustainable Development score as given by host country DNAs.

## 5.4 Comparative Analysis

The assessment of project documentation and the interviews with local DNAs yielded a number of valuable insights that could assist the Netherlands Government in its future investments in CDM projects. Since the projects have



only recently begun or are yet to start, both evaluations are limited by the fact that the conclusions are based on expectations rather than on actual field observations and measurements. Despite this, several conclusions can be drawn with regard to the assessment.

#### 5.4.1 Are certain project categories performing better than others?

Based on the findings of both the project documentation and DNA interview assessments, an overall score has been calculated per project category and host country. Table 5.4 shows 29 combinations of project categories and host countries (some host countries host more than one project within the same project category). Scores have only been given to project-country combinations in order to reflect the country-specific contexts for sustainable development (e.g. biogas may make a very large contribution to sustainable development in country x but only a small contribution in country 'y').

The main observations in Table 5.4 (see next page) include:

- For seven combinations, representing 10 CDM projects, a large 'contribution' is expected: all biogas projects, the coalmine methane project in China, three energy efficiency projects initiated in Moldova, both projects in Colombia (hydro and wind power), and the landfill gas project in Costa Rica.
- A medium 'contribution' is expected for 10 cases, representing 18 CDM projects. The projects scoring 'strong' but not 'very strong' seem particularly to be those focussing on biomass, hydropower, landfill gas and wind energy.
- For 12 cases a small 'contribution' is expected, which represents 16 CDM projects. This category includes both the HFC-23 CDM projects analysed, where sustainable development is arranged for in separate funds and programmes, as well as the geothermal power project in the Philippines, the biomass projects in Brazil, the hydro power projects initiated in Ecuador and Honduras, the landfill gas projects in Argentina and South Africa, and the wind power projects in Costa Rica and the Philippines.

#### 5.4.2 How important is monitoring in realising sustainable development benefits?

Earlier in this Chapter a distinction was made between aspects of sustainable development that are directly related to the GHG emission reduction component of projects and those aspects that are indirectly related to a project's GHG abatement activities. Direct contributions 'automatically' follow on from CER monitoring and verification procedures, but in order to ensure that indirect sustainable development benefits are delivered, it is important to carry out

monitoring. The project documentation revealed that only a few projects provide for the monitoring of these indirect benefits to sustainable development. Even if the monitoring of sustainable development is in place within the projects, a dilemma may arise once a project is able to meet its CER requirements but fails to accomplish the projected or 'promised' aspects of sustainable development. One of the stakeholders interviewed indicated that in the CDM it remains difficult to abandon a project when it is delivering the agreed amount of CERs but not all of the indirect sustainable development aspects. Current CDM contracts do not spell out the procedure to follow in such circumstances. An important reason for this potential dilemma is that the CER procedures have been arranged internationally under the supervision of the CDM Executive Board, whereas in practice, both the assessment of a project's expected sustainable development benefits and the benefits it has actually achieved are mainly the responsibility of the host country governments, which do not apply internationally coordinated procedures to deal with projects that fall behind in delivering all of the benefits (as communicated in the PDD).



Tejona Wind Park, Costa Rica (2006)

**Table 5.4** Overall assessment of expected SD contribution based on project documentation and DNA expectations

	Biogas	Biomass	Coal mine methane	Energy efficiency	Fugitive gas capture	Geothermal power	HFCs	Hydro	Landfill gas	Wind
Argentina					+				+	
Brazil		+			+			++	++	
Chile								++		
China			+++				+			++
Colombia								+++		+++
Costa Rica									+++	+
Ecuador								+		
Honduras								+		
India		++		+			+			
Indonesia				++						
Jamaica										++
Moldova				+++						
Nepal	+++									
Nicaragua	+++									
Peru								++	++	
Philippines						+				+
South Africa									+	
Sri Lanka								++		

Small +

Medium ++

Large +++

There are several ways of dealing with the abovementioned problem. First, some of the projects in the study sample (e.g. projects in Peru, the Philippines and South Africa) have developed their own standard monitoring protocol. These protocols could serve as models for a more coordinated approach to the monitoring of sustainable development. Second, it should be recognised that CDM host country governments could use particular instruments to ensure proper project implementation. For example, one way to achieve specific sustainable development benefits is to link them to existing legislation in the host country. This seems the best guarantee to ensure that the project complies with the project aims. Yet, thus far, this has only happened under very specific circumstances and – most often – merely relates to the mitigation of identified adverse environmental impacts.

## 5.5 Inferences

This Chapter focused on the expected contribution to sustainable development from CDM projects in the Netherlands portfolio. The sub-questions formulated to address the expected performance of the Netherlands' CDM projects were:

a) *What contribution to sustainable development can be expected from CDM projects in the Dutch portfolio, according to the preparatory documents?*

A wide range of sustainable development benefits can be expected from the CDM projects analysed, although how CDM projects are expected to contribute to sustainable development varies substantially by project category. It is noteworthy that three-quarters of the projects analysed aim at generating electricity whether for on- or off-site use. The largest range of benefits is expected to be delivered by the several small-scale renewable energy projects. The smallest range of sustainable development benefits is expected to come from the HFC-23 reduction and fugitive gas capture projects. Overall, a distinction can be made between whether the sustainable development benefits are directly and/or indirectly related to a project's GHG abatement component. The direct benefits most often cited are a reduced dependency on fossil fuels or non-renewable biomass, energy supply diversification/security of supply, cleaner local air, and transfer of technology. Those benefits will be realised (automatically) once GHG emissions are being reduced, and have been verified and certified. Indirect benefits (e.g. job creation, local community improvement, and improved waste management) would not automatically materialise, as they are not directly related to the project's GHG abatement component.

b) *What contribution to sustainable development can be expected from CDM projects according to the host country DNAs?*

The survey of the DNAs in the host countries in which the Netherlands is represented by an Embassy revealed that CDM projects initiated by the Netherlands Government generally contribute to a diversification of energy supply, less dependence on imported fossil fuels, increased reliability of energy supply, increased access of the rural population, and improvement of the social livelihood in the project region of influence. Nevertheless, possible negative aspects were also highlighted, especially in relation to hydropower projects. Adding up the scores given by host country DNAs to a wide range of sustainable development criteria (economic, environmental and social) revealed that the highest-scoring project was the biogas project in Nicaragua, followed by wind, coalmine methane, geothermal and energy efficiency projects, in that order. The

coalmine methane project stands out because of its rather high cumulative score for several sustainable development criteria, in combination with its substantial GHG abatement component. HFC-23, however, scored low on most criteria, although it generated the highest number of expected CERs.

- c) *Given the answers to these two questions, what is the total expected contribution to sustainable development in the host countries from the CDM projects in the Netherlands portfolio, provided that all projects are fully realised?*

A large contribution to sustainable development is expected for seven cases (i.e. project categories), representing ten CDM projects. Among this group of 'highly sustainable' CDM projects are all the biogas projects, the coalmine methane project in China, the three energy efficiency projects initiated in Moldova, both projects analysed in Colombia (hydro and wind power), and the landfill gas project in Costa Rica. A medium contribution to sustainable development is expected for ten cases, representing eighteen CDM projects. For twelve cases a small contribution to sustainable development is expected, representing sixteen CDM projects. Both HFC-23 projects are part of this category, as well as the geothermal power project in the Philippines, the biomass projects in Brazil, the hydropower projects initiated in Ecuador and Honduras, the landfill gas projects in Argentina and South Africa, and the wind power projects in Costa Rica and the Philippines. Important to note in this respect is that the overall results thus obtained are very context-specific. As this part of the study has shown, projects within a project category can differ hugely from country to country, especially in relation to the project's contribution to sustainable development.

Driven by host country legislation, stakeholder consultations (mandatory under the CDM modalities and procedures) and specific requests from the Netherlands Government, almost half of the projects are designed to generate CER-independent sustainable development benefits. Examples are reforestation activities, community development programmes, and reduced drudgery for women/children. As opposed to the monitoring of emission reductions generated by a project, the monitoring of the sustainable benefits is not structurally incorporated in project design. Nevertheless, for 29 CDM projects studied, the monitoring of indirect sustainable development benefits is foreseen either in full or in part, while another ten projects give details on the procedure of such monitoring activities: for example, through a sustainable development monitoring plan. Of the emission reduction monitoring plans already published by contracted DOEs as of 18 January 2007, nine projects (out of 22) address the project's contribution to sustainable development. In these projects,

recorded negative effects were compensated for during the construction phase or covered in the project management plans. It remains to be seen, however, what the consequences would be for project participants if a project meets its GHG emission reduction objectives but underperforms in terms of sustainable development.

# 6 Conclusions

## 6.1 Summary

The central question of this study was how and to what extent do AIJ/CDM projects carried out in the context of the Netherlands' UNFCCC and/or Kyoto Protocol policies contribute to sustainable development in the host countries. It was addressed by looking at three specific areas:

- Netherlands policies in the international context;
- AIJ projects implemented under the Netherlands pilot programme in the late 1990s;
- the portfolio of CDM projects in which the Netherlands is currently investing.

### 6.1.1 The Netherlands AIJ/CDM policies in the international context

Although it is the prerogative of the host country to determine whether a project contributes to sustainable development, the Netherlands Government can influence the selection of CDM projects in its portfolio by offering a higher CER price for projects with a relatively strong contribution to sustainable development. Moreover, the intermediaries contracted to purchase CERs on behalf of the Netherlands Government must apply the Dutch minimum sustainable development criteria for CDM projects. Yet a project's achievement can only be assessed if the project participants and countries involved are willing to share information on the project's impact on sustainable development, so therefore the Netherlands Government does not automatically have full control over the sustainable development impacts of its projects.

Since the Netherlands invests in CDM via intermediaries, the involvement of the Netherlands Embassies in CDM project development is rather limited. However, VROM may request advice from its Embassies on, for example, whether a particular project is in accordance with host countries' needs and priorities. Some of the Embassy officials interviewed indicated that a more coordinated approach

to CDM project development would benefit the outreach and exposure of the Netherlands in developing countries.

The Netherlands differs from other countries in its approach for procuring certified emission reductions from CDM projects and capacity building. The Netherlands has strictly separated its CDM capacity development programme from its CER procurement programme. Denmark, Austria and Japan, however, focus their capacity building on the countries from which they expect to purchase CERs, so therefore the capacity building involves project identification and the development of PINs. Such a combined approach might result in valuable synergies, for example by integrating the experience of development assistance Ministries and/or agencies with host countries' needs and priorities (demand-driven), and by acquiring CERs resulting from projects developed under such cooperation.

### **6.1.2 AIJ project assessment**

Overall, the Netherlands contribution to sustainable development via AIJ proved to be positive. Four of the five AIJ case studies are genuinely attempting to contribute to the sustainable development of the host country. Of these four projects, the biogas project in Vietnam scores very well both in terms of sustainable development and in reducing emissions per euro spent. This project is the only one of the five that explicitly took sustainable development into account. The project that has not performed as expected, the sunny greenhouse project in China, did not have a clear baseline and has very few users. The assessment shows that the more successful projects are those demand-driven ones that explicitly take sustainable development into account. Good design is critical for the success of a project. The maintenance of high-quality project documentation is also essential, since this enables local managers to be aware of the effectiveness of their operations, and to intervene if necessary. Finally, one should recognise that if such projects are expected to promote innovative ideas with demonstrative effect in developing countries, they will inevitably take longer to develop.

### **6.1.3 CDM project assessment**

The assessment of a representative sample of 44 Netherlands CDM projects showed that apart from direct benefits to sustainable development (i.e. benefits that automatically accrue once the project is generating emission reductions), about half of the CDM projects studied are designed explicitly to generate sustainable development benefits which are not directly related to the greenhouse gas (GHG) abatement component of the projects. Such indirect benefits are



the result of applicable host country legislation, stakeholder consultations and specific requests made by the Netherlands Government if a project's contribution to SD appears marginal.

One of the main findings of the study is the variation in the uncertainty surrounding the achievement of the direct and indirect effects on sustainable development. Because certified emission reductions have an important economic value (which enables the project to be implemented), there is little uncertainty about their materialisation. Much more uncertainty surrounds the indirect effects, for three reasons. First, the international rules do not provide any holdfast in the event that a project does not deliver in accordance with earlier pledges. So, it is uncertain what can be done to make a project compliant in this respect, as often such project characteristics are not dealt with in the contract. Even though host country governments have expressed their willingness and intention to look after such projects, they may lack the means to do so. Second, the monitoring of indirect benefits to sustainable development is not structurally incorporated in project design. Third, the Netherlands has invested in HCF-23 and fugitive gas emission reduction projects that score high on greenhouse gas emission reductions but relatively low on contribution to sustainable development. To increase its contribution to sustainable development, the Netherlands has established separate funds, based on a project's CER revenues for community development programmes and green energy investment. However, to date, it remains unclear exactly how such funds will be used.

## 6.2 Issues and dilemmas

The study has generated a wide range of insights with regard to the actual or expected contribution to sustainable development of AIJ and CDM projects in the Dutch portfolio of projects, which could prove useful for future Dutch involvement in project-based flexibility mechanisms. The main issues and dilemmas that will face Netherlands decision makers in the near future with respect to CDM project involvement are the following:

### 1) *Reduction of uncertainties*

The present set-up of the CDM under the Marrakech Accords and the CDM Executive Board implies that the GHG emission reductions are carefully monitored and subsequently verified by an independent third party, whereas the verification of projects' sustainable development contribution is left to the countries involved or to intermediaries. This could lead to a situation in which more is done to

enforce the GHG abatement than to achieve sustainable development. The description of the expected contribution to sustainable development from the CDM projects in the Dutch portfolio has shown that projects deliver benefits that directly or indirectly related to the GHG abatement and that the latter (indirect) contributions in particular remain uncertain if not specifically monitored.

The likelihood of indirect impacts on sustainable development being delivered could be enhanced through specific bilateral agreements or host country-induced measures, such as: 1) The host country imposes an earmarked tax on the project which can be used explicitly for such goals, 2) The stakeholders explicitly demand the inclusion of specific sustainable development criteria, or 3) The investor country sponsor explicitly requests such benefits to be included.

The main question (or even dilemma) for the Netherlands Government remains what to do if CDM projects deliver their promised GHG emission reductions but not the expected (indirect) benefits to sustainable development. To what extent can the Netherlands Government be considered responsible for such non-compliance, and, perhaps more importantly, what measures can the Netherlands, as investor country, take to increase the likelihood achieving the expected benefits to sustainable development? Indirect benefits on sustainable development are more likely to be achieved if investing governments 'add a premium' on top of the CER price if these benefits are achieved and verified. Or, investor governments could agree with the project participants that they will pay less for CERs if not all sustainable development benefits have been achieved. The advantage of the latter sanction-based system would be that the only sustainable development benefits promised are those that can be realistically achieved (which prevents long lists of unrealistic benefits in project design documents). Projects will subsequently only promise and deliver those benefits that they believe they can reasonably achieve and that are minimally acceptable for the host country (or required by their own, domestic law). The weak spot in this respect, however, may be that in order to acquire more CDM projects, the host countries may be less choosy when judging the sustainable development component of a project.

## 2) *Aid and CDM*

At the moment, there is no link between CDM projects and Dutch development aid. For instance, the CD4CDM capacity-building project does not aim to generate project ideas and test the feasibility of these ideas under the CDM. This study considered the pros and cons of linking aid and CDM. On the one hand, it was found that a number of other industrialised countries have established

a closer link between CDM and aid activities (see above). The synergy between these activities has led to these countries having portfolios of possible CDM projects that are closely linked to the sustainable development priorities of the host country. On the other hand, there remains a need for aid to be separated from CDM to ensure that development assistance does not get diverted for CER acquisition, especially given the limitations imposed on this by the Marrakech Accords.

Ultimately, within the limitations of the Marrakech Accords, it is possible to have a more integrated approach for offering CDM capacity building and CER acquisition. Such an approach has the benefit that projects can be identified that are fully in line with the sustainable development needs and priorities of the developing host countries. The capacity- building project could contain an assessment (involving local stakeholders and governments) of what the country needs, which technologies would best fit with these needs (including supply chain requirements such as feedstock delivery, availability of spare parts, etc.), and how the CDM could remove investment barriers to their implementation. This information could then be offered to the Ministry VROM for consideration in relation to CER acquisition. Although this approach is no guarantee that all identified project opportunities will be implemented, it might reduce several project risks in the country and ensure that the project technologies are demand-driven.

### 3) *Geographical spread of CDM*

In the literature there is growing concern that the CDM, if left to market forces, will go to countries that are already *favoured by foreign direct investments*. In practice, only four countries (India, China, Brazil and Mexico) account for more than eighty percent of the projects. New ideas, such as those being promoted by the Club of Rome in a forthcoming document, indicate that there is considerable potential for developing renewable energy in North Africa and certain parts of South-East Asia (e.g. Laos, Cambodia), and that such ideas could benefit strongly from the CDM. There are several explanations for the current underinvestment in these regions: financially attractive options for CDM may be lacking, the capacity to attract investors may be absent, and the types of available projects do not match with the typical CDM portfolio.

If the Government of the Netherlands sees the underinvestment in these regions as a problem, it could promote a wider geographical spread of CDM activities in ways that are closely linked to the above bottlenecks. First, it could try to encourage potential investors to initiate CDM projects in Africa and certain parts of South-East Asia. Such projects could then serve as demonstration activities for future spin-off of the technology in these countries. Second, the Netherlands Government could encourage countries in these regions to promote themselves more actively as potential CDM target countries. The CDM capacity-building funds can serve as an important source of funding to assist local governments in identifying and promoting financially attractive CDM options. Third, investors should be encouraged to include smaller projects in their portfolio (e.g. replacing conventional light bulbs in cities with energy-saving lights, promoting fuel-efficient stoves). The promotion of smaller projects will automatically increase the relevance of numerous African countries for CDM projects.

#### 4) *Selection criteria*

The selection procedure of CDM projects funded by the Netherlands remains ambiguous. On the one hand, VROM has applied a list of preferred project types and contracted multilateral intermediaries specialised in community development and small-scale energy service projects. On the other hand, the strong increase in international demand for CERs in 2005 prompted the Netherlands Government also to engage in projects that reduce emissions of HFC-23 and fugitive gases, which have a strong benefit in terms of CO<sub>2</sub>-equivalents, but which, by their nature, contribute little in terms of sustainable development (i.e. other than GHG reduction). There are therefore two options that the Netherlands Government could follow when using criteria for selecting projects in its investor's portfolio. The first option implies that if the Netherlands wishes to develop a priority list, the portfolio of projects should reflect those priorities. However, as stated earlier, this is difficult to implement against the backdrop of market trends. The second, more feasible, option is to develop a list of possible projects with compulsory (compensatory) elements that need to be taken into account in order to guarantee there is a minimally required contribution to sustainable development, and including a procedure to monitor and verify this. By taking more explicit account of the local sustainable development priorities and the subsequent technologies that match the priorities of the host countries, the Netherlands Government can optimise the contribution of CDM projects to sustainable development.

# Annex 1 About IOB

## Objectives

The objective of the Policy and Operations Evaluation Department (IOB) is to increase insight into the implementation and effects of Dutch foreign policy. IOB meets the need for independent evaluation of policy and operations in all policy fields falling under the Homogenous Budget for International Cooperation (HGIS). IOB also advises on the planning and implementation of the evaluations for which policy departments and embassies are responsible.

Its evaluations enable the ministers to account to parliament for policy and the allocation of resources. In addition, the evaluations aim to derive lessons for the future. Efforts are accordingly made to incorporate the findings of evaluations into the Ministry of Foreign Affairs' policy cycle. Evaluation reports are used to provide targeted feedback, with a view to improving both policy intentions and implementation. Insight into the outcome of implemented policy allows policymakers to devise measures that are more effective and focused.

## Approach and methodology

IOB has a staff of experienced evaluators and its own budget. When carrying out evaluations, it calls on the assistance of external experts with specialised knowledge of the topic under investigation. To monitor its own quality, it sets up a reference group for each evaluation, which includes not only external experts but also interested parties from within the Ministry.

## Programme

IOB evaluations form part of the Ministry's evaluation programme (set annually by the Senior Management Board) that appears in the Explanatory Memorandum to the Ministry of Foreign Affairs' budget.

## An organisation in development

Since IOB's establishment in 1977, major shifts have taken place in its approach, areas of focus and responsibilities. In its early years, its activities took the form of separate project evaluations for the Minister for Development Cooperation. Around 1985, evaluations became more comprehensive, taking in sectors, themes and countries. Moreover, IOB's reports were submitted to parliament, thus entering the public domain.

1996 saw a review of foreign policy and a reorganisation of the Ministry of Foreign Affairs. As a result, IOB's mandate was extended to the Dutch government's entire foreign policy. In recent years, it has extended its partnerships with similar departments in other countries, for instance through joint evaluations.

Finally, IOB also aims to expand its methodological repertoire. This includes greater emphasis on statistical methods of impact evaluation.

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April 2008  
ISBN 978 90 5328 356 1

