

# The challenge of including forests as sinks within the clean development mechanism

Forests, Forestry and Biological Diversity Support Group.



Theme study

# 4

# **THE CHALLENGE OF INCLUDING FORESTS AS SINKS WITHIN THE CLEAN DEVELOPMENT MECHANISM**

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# CONTENTS

<b>PREFACE</b>	<b>5</b>
<b>ACKNOWLEDGEMENTS</b>	<b>5</b>
<b>1. INTRODUCTION</b>	<b>7</b>
<b>2. FORESTS AND CLIMATE</b>	<b>8</b>
2.1 Role of forests in the global climate	8
2.2 Impact of climate change on forests	8
<b>3. SPECIFIC FEATURES OF SUSTAINABLE FOREST MANAGEMENT</b>	<b>11</b>
3.1 Multi-functional Forest Management	11
3.2 CDM as additional source of income to finance SFM	11
<b>4. FORESTS AS SINKS WITHIN THE CDM</b>	<b>13</b>
4.1 Arguments in favour of including sink projects within the CDM	13
4.2 Issues to be tackled in order to include sink projects within the CDM	13
4.3 General rules for CDM	15
<b>5. CONCLUSIONS</b>	<b>16</b>
<b>LITERATURE</b>	<b>19</b>



## PREFACE

In January and March 2000, the Ministry of Foreign Affairs of the Netherlands (DGIS/DML) organised a series of discussions involving representatives of the Ministry and members of the Support Groups “Energy” and “Forests, Forestry and Biodiversity” to prepare the position of the Netherlands on the possible inclusion of Forests as Sinks within the Clean Development Mechanism (CDM). The authors prepared a draft version of the present paper for the purpose of those discussions. This has now been improved by including the valuable contributions made during the meetings and the comments of a number of colleagues. The opinions expressed in this paper remain the responsibility of the authors, however, and do not reflect any official viewpoint on the part of the government of the Netherlands. The authors hope that the ideas presented in this paper will contribute to the development of an appropriate national policy regarding the issue of including sinks within the CDM and eventually lead to the development of an effective framework for such activities.

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## List of Abbreviations

ARD	Afforestation, Reforestation and Deforestation
CDM	Clean Development Mechanism
CoP	Conference of Parties of the Convention
DGIS/DML	Ministry of Foreign Affairs, Directorate General for Development Co-operation, Environment and Development Department
FCCC	UN Framework Convention on Climatic Change
FSC	Forest Stewardship Council
Gt	Gigatonne
IFF	Intergovernmental Forum on Forests
IPCC	Intergovernmental Panel on Climate Change
IPF	Intergovernmental Panel on Forests
LULUCF	Land Use, Land Use Change and Forestry
NFP	National Forest Programme
SFM	Sustainable Forest Management



## 1. INTRODUCTION

In the Kyoto Protocol, forests are recognised as potential sinks for carbon. In Article 3, it is agreed that the amount of carbon sequestered as a result of activities in the field of afforestation/reforestation may be subtracted from the assigned amount or may be transferred under Joint Implementation. At the same time, emissions resulting from deforestation have to be added to the assigned amounts.

Under the Clean Development Mechanism, (established under Article 12 of the Protocol, Parties can assist non-Annex I (developing) countries in achieving sustainable development in the field of climate change mitigation projects. Neither sinks nor forestry are explicitly mentioned in Article 12 and it is not yet clear whether projects within the CDM framework may include ARD<sup>1</sup> activities. Decisions on rules and operational criteria for the CDM are to be expected at FCCC-CoP-6, which will be held in The Hague in November 2000. The IPCC Special Report on Land Use, Land Use Change and Forestry (LULUCF, due for August 2000) will also provide useful information to assist in decision-making on project-based LULUCF activities.

Whether or not to include forests (ARD activities) within the CDM has turned out to be a rather complex and controversial question, one that has given rise to extensive debate. This has resulted in an array of arguments for and against their inclusion.

The present paper intends to summarise and review some points which are considered relevant for the discussion on forests as sinks and the possible inclusion of forests as climatic mitigation projects within the CDM.

Chapter 2 discusses the relationship between forests and climate and the important role of forests in climate regulation and mitigation.

Chapter 3 reviews the features of (multifunctional) sustainable forest management and a possible general approach is proposed to making the most effective use of climate funds in forest management activities so as to generate the optimum climatic benefit through forestry.

Chapter 4 examines the arguments for and against the inclusion of forests as sinks within the CDM. Some issues to tackle when including forests as sinks within the CDM and possible ways to solve or mitigate them are reviewed. On this basis, some general rules for the CDM mechanism are proposed.

In Chapter 5, conclusions are summarised with respect to the position the Netherlands might adopt as regards including forests as sinks within the CDM.

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<sup>1</sup> ARD: Afforestation, Reforestation and Deforestation



## 2. FORESTS AND CLIMATE

### 2.1 Role of forests in the global climate

Forests play an important role in the global climate. They contribute to environmental stability, for example by mitigating temperature extremes, increasing regional precipitation and preventing erosion and soil deterioration. Last but not least, forests play an important role in the global carbon cycle: they constitute the most significant carbon stock of all terrestrial ecosystems and function in many cases as active sinks. The large amount of CO<sub>2</sub> stored in forest ecosystems is an important buffer in the process of climate change.

The total amount of carbon stored in the world's existing forests is calculated at 1146 Gt C (46 % of the total stock in soils and vegetation; part of the carbon is stored as living biomass (359 Gt C) and some as organic matter in the soil ( 787 Gt C); the quantities of carbon stored and the ratios between living biomass and soil carbon are mainly determined by climate and forest type (WBGU 1998).

In undisturbed natural forests the quantity of stored carbon (both in biomass and soil) is very high, but in the long term the annual sequestration is zero. The quantity sequestered annually is in balance with the annual quantity of CO<sub>2</sub> released by respiration and decomposition.

Many of the world's forests have been disturbed in the past and are still re-growing towards some sort of balance; these forests act as important sinks, with net sequestration rates of about 1 tonne (Mg) C per ha per year. For new forests, planted on non-forest land, the net sequestration rate is even higher and is estimated to be 4 - 5 tonnes (Mg) C/ha /year.

Given the relative importance of the carbon stocks involved, there are two important mechanisms in the area of forests and forestry which can reduce emissions:

#### ***a. Reducing the rate of deforestation***

At the current rate of deforestation (about 13 million ha per year (FAO, 1999)), emissions from deforestation amount to 1.6 Gt C /yr. (IPCC, 1996) (compare with fossil fuel combustion and cement production 6.4 Gt C /yr.). Most of this deforestation occurs in countries that have not signed (or not yet signed) the Convention or the Protocol. Slowing down this rate of deforestation would be a cost-effective means of reducing CO<sub>2</sub> emissions into the biosphere.

#### ***b. Establishing new forests on non-forest land***

New forests established on non forest land can provide a particularly important sink for CO<sub>2</sub> for many decades.

### 2.2 Impact of climate change on forests

The impact of forests on the global carbon cycle and on global climate has another side to it. Changes in climate may lead to changes in such things as species composition, the rate of decomposition and biomass volume. Some authors fear that climate change will lead to large-scale destruction of forests (see WWF press release 30-10-98). A review of these impacts has recently been published (IPCC, 1997). Predictions of forest development during climate change are based on models which suffer not only from uncertainties as to the actual changes in climate but also from many uncertainties with respect to feed-back mechanisms in forest ecosystems. The resilience of forest ecosystems appears to be considerable; this is demonstrated, for instance, by the great capacity of forests for recovery after natural fires and by the resilience of European forest ecosystems in coping with acidification and eutrofication.

Although forests are relatively robust ecosystems, they may occasionally suffer from severe negative impacts. Reduction of the carbon stock as a result of forest fires, for instance, needs to be taken into account. However, the impact of forest fires should not be overestimated either; under natural conditions, vigorous re-growth will soon restore the level of much of the carbon which has been lost.



### **3. SPECIFIC FEATURES OF SUSTAINABLE FOREST MANAGEMENT**

#### **3.1 Multi-functional Forest Management**

In order to clarify the possible role of CDM in Sustainable Forest Management (SFM), it is necessary to explain some important features of the concept of SFM. Sustainable Forest Management is based on the belief that forests must be managed in ways which meet the social, economic and ecological needs of present and future generations. These needs are related to the following functions of the forest:

- Regulatory functions: protection of soil and water, watersheds, micro-climate and macro-climate, the atmosphere.
- Production functions: timber, non-timber forest products, trees as a capital buffer for emergencies, genetic material, tourism (including eco-tourism).
- Support functions: living environment for humans, animals and plants.
- Information and reservoir functions: forests as the venue for ecological processes and the source of species and genetic material, source of socio-cultural and spiritual values, intrinsic natural value.

In any given forest area, the forest can and will fulfil several functions simultaneously. This can be ensured by allocating several functions to the same area of forest (multi-functional forest) and/or by zoning (allocating specific functions to specific areas).

The managers or owners of the forest should derive their income from payments for all the functions the forest performs but in many cases the only income is from timber and non-timber forest products. In others, a certain amount of income can be derived from recreation/tourism and from biodiversity values (via the Global Environmental Facility, for example). The sum total of these payments is often not sufficient to finance Sustainable Forest Management. This situation generally leads to overexploitation, inadequate protection and management, degradation of the forest ecosystem and, finally, to deforestation. Deforestation is then the transition from one land-use system to another which is more profitable –at least in the short term–for local users. Developed countries tend to place a high value on the ecological and social functions of tropical forests, but in tropical countries themselves the situation is often entirely different. For many local people, converting forest into agricultural land can provide food for a number of years. Governments also often consider other types of land use to be more interesting and profitable than maintaining and managing forests.

#### **3.2 CDM as additional source of income to finance SFM**

As was argued in the previous section, deforestation and forest degradation are more profitable in many situations –at least in the short term–than Sustainable Forest Management. Although the concept of SFM has been widely accepted since the 1992 UN Conference in Rio de Janeiro, the way forward is still relatively slow, although criteria and indicators for Sustainable Forest Management have been developed, covering social, economic and ecological aspects, in order to guarantee long-term sustainability. The development and application of adequate funding mechanisms for forest services would be an important instrument with which to reduce the rate of deforestation and to promote SFM. As long as global services, such as biodiversity or protection against climate change, have no value (or insufficient value) on the local market, it is most unlikely that there will be a slowdown in deforestation and degradation. Moreover, we are experiencing a situation in which official development aid (ODA) has become considerably less important in comparison to private investment in developing countries over the past ten years. This means that forest managers/owners in developing countries can rely less and less on ODA if they wish to improve

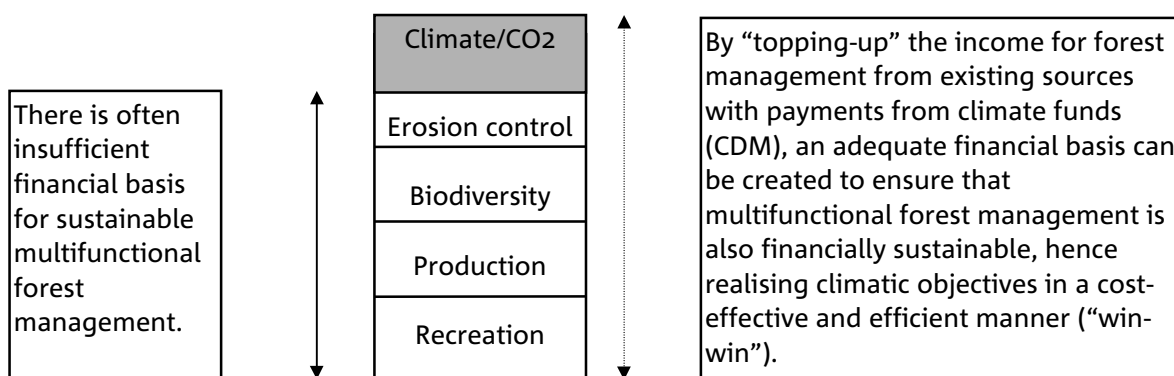
their forest management. Here, CDM could play a crucial role as one of the funding mechanisms for forest conservation and sustainable forest management.

Forests established and managed to realise climatic objectives will not be fundamentally different in appearance (structure and functioning) from forests managed in order to achieve other objectives. If they are different, their establishment and management will not be sustainable in the long term. “Climate (Kyoto) forests” simply cannot be mono-functional, focusing only on carbon sequestration. Apart from optimising biomass production and carbon sequestration, they can also fulfil production, recreation and other functions, making possible additional financial benefits. At the same time, they can contribute to the conservation of biodiversity and the protection of soils and waters. We propose that climate forests should also fulfil the internationally agreed standards (criteria and indicators) for sustainable forest management. In such a situation the financial basis for climate forests need not come exclusively from climate funds either.

Forests which are sustainably managed for other primary functions (conservation of biodiversity, product production) can at the same time –and with relatively little additional effort– ensure CO<sub>2</sub>-sequestration and other climate objectives. It is necessary to investigate how specific climatic criteria should be incorporated into the existing sustainability standards.

The use of CDM funds for forest protection and management creates a potential “win-win” situation, from the point of view of both climatic change mitigation and Sustainable Forest Management (see also Figure 1). The financial basis for sustainable and multifunctional management can be ensured by means of financial “topping-up” with climate funds (paying for carbon sequestration). For climate policy, this may be a very cost-effective way of using climate funds.

Figure 1: Towards a better financial and economic basis for sustainable multifunctional forest management, a line of thought (an example)



## **4. FORESTS AS SINKS WITHIN THE CDM**

### **4.1 Arguments in favour of including sink projects within the CDM**

We believe that there are several powerful arguments in favour of including sink projects within the CDM (see also EU Expert Groups on Mechanisms and Sinks, 2000):

- Global forest degradation and deforestation probably account for 16-20% of the total amount of carbon released annually.
- Including sinks within the CDM could remove large amounts of carbon from the atmosphere, possibly in a cost-effective manner.
- Sinks are included in other Kyoto mechanisms, and in order to avoid an imbalance between the mechanisms they should therefore be included within the CDM.
- There is no fundamental difference between normal CDM projects and CDM projects in the “sinks” sector.
- From 2000 onwards, the CDM will be promoting desirable “early action” through its “banking” provisions.
- Even though it is acknowledged that sinks can only provide a temporary solution and are not as valuable as reducing emissions, carbon stocks can be managed in a sustainable way. Temporary storage of carbon also buys time to develop new methods of reducing emissions.
- Including sinks within the CDM could prove to be one of the few CDM options for African countries in particular (although the African countries have indicated that it is not their preferred CDM option).
- Including sinks within the CDM could provide additional funds for making Sustainable Forest Management a financially viable option (see paragraph 3).
- Including sinks within the CDM could generate huge investment flows to rural areas in developing countries.

### **4.2 Issues to be tackled in order to include sink projects within the CDM**

There are several arguments against including sink projects within the CDM, some of them of a more or less political nature:

- Given that they were originally not taken into account, including sinks would represent a threat to the environmental integrity of the Protocol,.
- Annex 1 countries could considerably enlarge their (negative) ecological footprints (more natural resources in developing countries used for rich countries).
- Sinks are not mentioned in Article 12 of the Protocol. Their inclusion would therefore create an imbalance within the Protocol: cheap afforestation activities in non-annex 1 countries would not lead to a substantial reduction in fossil fuel consumption or to subsequent emission reductions in the rich Annex 1 countries.
- The only way to influence investment in sinks would be by including requirements and regulations in the Protocol. It is doubtful whether there will be sufficient political power to arrange this, given that it will probably be contrary to the wishes of major pressure groups.

We believe that these arguments do not outweigh the arguments in favour of sinks being included. The final argument set out above is particularly open to debate. It is invalid as long as the investor from the Annex 1 country remains responsible for the investment needed to create or maintain the sink. If investment is carried out in a non-sustainable manner, ignoring local social and ecological realities, the investor will ultimately need to invest again. Investors would therefore be well advised to take sustainability into account from the very outset.

However, this is a political debate which we do not wish to engage in here. In this article we would prefer to concentrate on the more technical issues to be dealt with if sinks were to be included within the CDM. A considerable number of issues need to be covered to ensure that a real contribution is made to achieving the goals of the Convention. The various issues, together with possible solutions or methods of mitigation, are set out in Box 1.

**Box 1: Issues to be tackled in order to include sink projects within the CDM, with possible solutions/mitigation methods** (See also EU Experts Group on Mechanisms and Sinks, 2000)

Issue	Possible solution or mitigation method
1. Sinks would be less sustainable and therefore less valuable than reduction of emissions. Sinks are reversible.	<ul style="list-style-type: none"> <li>• It is always the investing partner in the annex 1 country that is ultimately responsible, both now and in the future.</li> <li>• Make insurance compulsory, so that possible loss of biomass can be compensated for.</li> <li>• Certification of carbon credits, which includes SFM certification.</li> <li>• Permanent monitoring and accounting system.</li> </ul>
2. Methodological, technical & scientific issues.	<ul style="list-style-type: none"> <li>• Add a safety buffer to cover risks, uncertainties in verification etc.</li> <li>• A national monitoring system is required</li> <li>• A tax/overhead is necessary to cover the cost of developing and implementing a national policy on forests and climate.</li> </ul>
3. Leakage may be more prominent in sink projects.	<ul style="list-style-type: none"> <li>• Develop an accounting system that overestimates possible emissions and underestimates sequestration.</li> <li>• Define very wide system boundaries.</li> </ul>
4. Difficulty in determining additionality to “business-as-usual” development.	<ul style="list-style-type: none"> <li>• Develop a system of control plots to assess the direct proportion of carbon stock changes caused by human activity.</li> </ul>
5. Sinks could push “normal” projects out of the CDM.	<ul style="list-style-type: none"> <li>• Clear rules as to the complementarity position are necessary (what percentage of reduction target may be bought through CDM (especially sinks) in developing countries?)</li> </ul>
6. Sinks represent a long-term claim on land use. In the long term, this may be harmful for local populations and for the country as a whole.	<ul style="list-style-type: none"> <li>• Provide non-carbon benefits for local populations, e.g. resources for fuel-wood and agricultural production as an integral part of any forest planting and conservation project</li> <li>• Develop a participatory local planning, implementation and monitoring system to be used for all CDM projects, defining the various responsibilities and the distribution of costs and benefits between the parties involved. Such a local planning system should fit in with national land-use planning.</li> </ul>
7. Investments within the CDM focus on sequestration of carbon only. This will tend to direct investment in the direction of Eucalyptus forest, for example, instead of participatory forest management.	<ul style="list-style-type: none"> <li>• All forest planting must be socially, ecologically and economically sustainable. If not, the forest will ultimately be damaged and the investment will fail. A participatory approach will therefore need to be applied at all stages. This is in the interest of the investor (see 1).</li> <li>• Certification of both SFM and carbon sequestration (as already demonstrated in pilot projects) will contribute to ensuring sustainability and multi-functionality.</li> </ul>
8. Rules and regulations for monitoring will need to be fixed in advance.	<ul style="list-style-type: none"> <li>• Not always necessary. In the case of the Forest Stewardship Council (FSC) there is a board that meets several times a year to discuss possible supplements and changes in rules and regulations. There are also accredited private institutions that actually carry out monitoring/certification. Certification will of necessity take local circumstances into account.</li> </ul>

### 4.3 General rules for CDM

When we analyse Box 1 and compare forests as sinks within the CDM with “normal” projects forming part of CDM, we notice some general principles and rules that should be applied to any CDM project, not only to forests. These are:

1. *It is in all cases the investing partner in the annex 1 country that remains the party ultimately responsible for complying with the CDM rules, both now and in the future.* The investing partner cannot simply deny its liability if an investment within the CDM in a developing country proves to be useless because of such things as internal problems, social unrest, non-acceptance by local stakeholders etc. This is the downside of investment in a “cheap” country and the investor has to bear this risk completely.
2. *Any investment should fit into the international and national policy frameworks established for the specific sector.* It is no use establishing one or two nice “white elephant” projects within the CDM, if other industrial plants in the same sector continue to carry out processing with the same inefficiency or even increase their carbon emissions using obsolete processing methods. Despite effective local projects, the net result at national level may be negative. For forests, this principle means that any investment within the CDM needs to fit in with national land-use and environmental policies and the National Forest Programme (NFP) as defined in the IPF (Intergovernmental Panel on Forests) Proposals for Action. To prevent land-use conflicts and large-scale monocultures, the establishment of plantations and the protection and management of existing forest should follow internationally agreed criteria for sustainable forest management; at national level these activities should be based on the concept of national forest programmes as defined by and agreed upon by the IFF (Intergovernmental Forum on Forests). Here the parallel with the discussion on how to certify Sustainable Forest Management is obvious: measures have to be taken simultaneously at policy and operational levels that complement each other. Various sets of criteria and indicators have been developed for SFM, both for the national policy level (in governmental and intergovernmental processes) and for the forest management unit level (mainly in non-governmental processes, for example the principles and criteria initiated by the FSC). This distinction and the interrelationship between these two different levels also need to be clarified during the discussions on climate and within the implementation and financing mechanisms currently being developed under the terms of the climate convention.
3. *Private investment in a specific project within the CDM should include an overhead for investment directed at improving the national policy and institutional capacities in the same sector.* Sustainability of the investment can only be guaranteed in an institutional and policy environment which enables effective development of the project. In many developing countries such enabling policy environments are lacking and private investment is only credible within the CDM if these policy environments improve.
4. *A reliable and verifiable monitoring system needs to be in place for all CDM projects.* A considerable number of programmes of investment in industrial plants in developing countries have ultimately failed, for example because there was insufficient local management capacity. Investment may sometimes result in the construction of a fine industrial plant which does not in fact produce anything at all, or has only a limited output. The same may occur in the case of investment in forestry, where local people may damage a new plantation, for example by continuing cattle grazing, or where illegal logging may continue.



5. *Adequate participation by relevant stakeholders is necessary at both national and the local level in order to formulate national sector policy and implement specific local projects.* The presence of an adequate participation mechanism is a key element to guarantee the acceptance and suitability of policies and projects for the relevant stakeholders.
6. *There needs to be a balance between emission reductions at national level in Annex I countries on the one hand and investment in technical development, sustainable land use and ARD activities in non-annex I countries on the other.* This principle can prevent the focus being on “cheap” solutions for carbon sequestration which allow carbon emissions to continue or even increase.

These six rules or principles can in fact be considered as an elaboration of Article 12.2, which states that the purpose of the CDM “shall be to assist Parties not included in Annex 1 in *achieving sustainable development* and in contributing to the ultimate objective of the Convention.” (FCCC, 1997, authors’ italics).

## CONCLUSIONS

Our conclusions are as follows:

1. The inclusion of forests as sinks within the CDM should be approached within the existing frameworks of national forests programmes and international agreements (Convention on Biodiversity, Forest principles, IPF Proposals for Action, international sets of Criteria and Indicators for SFM etc.).
2. CDM funds should be considered as “topping-up” with which to make Sustainable Forest Management economically viable.
3. Certification for Sustainable Forest Management and certification for carbon sequestration should be linked as much as possible. The distinction between local level certification and national level monitoring is an important one.
4. In order to safeguard sustainability, CDM investments in sink projects should be accompanied by investment aimed at improving national policies and their implementation.
5. Participation of local and national stakeholders is vital in formulating and implementing sink projects and national policies.

These conclusions are based on general rules and principles related to the concept of sustainable development. We believe that such general rules (see section 4.3) are necessary for the development and implementation of any project within the CDM, not only those related to forests and forestry.

Where the issue of including sinks within the CDM is concerned, we would like to emphasise the conclusion reached by Stuart and Moura Costa (1998) after analysing various forestry projects: “ ..... that despite potential for abuses, the overall benefits from these types of investment transfers are worth pursuing, provided that policies and institutions emerge sufficient to foster the effectiveness and equity of the transactions.”



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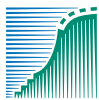
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