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MATTERS RELATED TO THE KYOTO PROTOCOL

MATTERS RELATED TO DECISION 1/CP.3, PARAGRAPH 5

LAND-USE CHANGE AND FORESTRY

Submissions by Parties

Note by the secretariat

1. At its eighth session, the Subsidiary Body for Scientific and Technological Advice (SBSTA) considered matters related to land-use change and forestry under the Kyoto Protocol, in accordance with decision 1/CP.3, paragraph 5 (a).

2. At that same session, the SBSTA invited Parties to submit information on modalities, rules and guidelines as to how and which additional human-induced activities might be included under Article 3.4 of the Kyoto Protocol, including questions and issues identified in FCCC/SBSTA/1998/INF.1, by 1 October 1998 for compilation into a miscellaneous document by approximately 15 October 1998.

3. Six such submissions have been received. Some of these submissions also contain comments relevant to Article 3.3 of the Protocol. In the interests of reducing the volume of documentation, these have also been included in this document.

4. In accordance with the procedure for miscellaneous documents, all the submissions received are attached and reproduced in the language in which they were received and without formal editing.

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* Including the ninth sessions of the Subsidiary Body for Scientific and Technological Advice and the Subsidiary Body for Implementation.

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PAPER NO. 1: AUSTRIA
(On behalf of the European Community and its member States)

Information related to modalities, rules and guidelines as to how and which additional human-induced activities might be included under Article 3.4 and questions and issues identified in FCCC/SBSTA/1998/INF.1, requested by the 1 October 1998 according to FCCC/SBSTA/1998/6 and comments on the IPCC-SR as requested according to FCCC/SBSTA/1998/6.

Introduction

Austria, on behalf of the European Community and its Member States, submits information related to modalities, rules and guidelines as to how and which additional human-induced activities might be included under Article 3.4 and questions and issues identified in FCCC/SBSTA/1998/INF.1 as requested according to para 45 (cii) in FCCC/SBSTA/1998/6 and comments to the IPCC-SR as requested according to para 45 (e) in FCCC/SBSTA/1998/6.

The information provided includes the following items:

1. General remarks
2. Information on modalities, rules and guidelines as to how and which additional human-induced activities might be included under Art.3.4
3. Issues identified in FCCC/SBSTA/1998/INF.1 relevant to Art.3.4 issues and to the IPCC Special Report

1 General remarks

The European Community and its Member States reaffirm their commitment to the promotion of management, conservation and sustainable development of all types of forests. Furthermore, the European Community and its Member States reaffirm their position at COP-3 that inclusion of sink activities should not undermine incentives for action on gross emissions mitigation. The European Community and its Member States have also always maintained that sinks require careful technical and scientific consideration before deciding how they can be included in ways to meet commitments under the Kyoto Protocol.

With respect to the inclusion of other categories under Art. 3.4 the European Community and its Member States reiterate that further methodological work by the IPCC should guide the decision-making process. The European Community and its Member States also recall that Articles 4.1 and 4.2 of the Convention and Article 2 (a)(ii) of the Kyoto Protocol require Annex I Parties to protect and enhance greenhouse gas sinks and reservoirs in general. Replacement of fossil fuels and energy intensive materials by sustainable managed biomass and wood products also offer an option for emission reductions. All decisions relating to implementation of Article 3.4 of the Protocol should take into account any relationship and interactions between sink categories concerned and other sink and reservoir categories covered by the Convention.

The European Community and its Member States emphasise the importance of the conclusions of SBSTA 8. With respect to Article 3.4 they include the following:

- Information is requested on modalities, rules and guidelines as to how and which additional human induced activities might be included under Art. 3.4.
- IPCC is requested to prepare a Special Report on land-use, land-use change and forestry in order to enable the COP to take decisions on recommendations on these issues to the COP/MOP.

The European Community and its Member States believe that the outcome of the Special Report is an indispensable basis for conclusions and decisions of COP/MOP relating to the possible addition of activities and categories under Art. 3.4.

Regarding verifiability of changes in carbon-stocks and transparency of reporting the European Community and its Member States endorse a system of full reporting which gives insight into **all** changes in **all** carbon-pools during the commitment period but limited use to meet the commitments under Article 3 (i.e. the use is limited to the activities under Art. 3.3 of the Kyoto Protocol and possible additional activities to be decided under Art. 3.4).

The European Community and its Member States emphasise that any inclusion of additional activities under Art.3.4 should not give incentives to practices which lead to a decrease of overall carbon stocks.

2 Information on modalities, rules and guidelines as to how and which additional human-induced activities might be included under Art.3.4

The European Community and its Member States welcome the request to the IPCC to prepare a Special Report (SR) on land-use, land-use change and forestry. This will enable the COP to take decisions on recommendations on these issues to the COP/MOP.

The European Community and its Member States believe that any inclusion of additional activities under Art. 3.4 should require a similar or better level of data availability, knowledge about uncertainty of data, international agreement on definitions of terms, availability of methods for independent verification and transparent reporting, knowledge about dynamics of carbon stocks, impact on emissions of other GHGs and assessment of other impacts (including socio-economic ones) to that which is required for the activities under Art. 3.3.

3 Issues identified in FCCC/SBSTA/1998/INF.1 relevant to Art.3.4 issues and to the IPCC Special Report

For the sake of clarity, the relevant paragraphs from FCCC/SBSTA/1998/INF.1 are printed in italics and then the comments provided by the European Community and its Member States are given. Comments to paragraphs 15 to 48, 50, 51, 53, 55 to 62, 68 to 73 and 76 to 83 have already been addressed by the European Community and its Member States in the information requested by the 15 August 1998 according to FCCC/SBSTA/1998/6 as those

paragraphs refer mainly to issues under Article 3.3. However, this response should be read in the context of the European Community and its Member States´ previous comments.

52 How should the "additional activities" referred to in Article 3.4 be determined? What framework should be used to guide the inclusion of additional activities? Are the accounting approaches discussed for Article 3.3 valid for additional activities?

The IPCC's SR will be critical in defining which activities are candidates for inclusion under the provisions of Art 3.4. As a basis for further discussion the implications of including additional activities under Art.3.4 will have to be assessed by the SR. The framework for including additional activities should include among others the requirements that the complete material balance with respect to all relevant source and sink processes is understood over sufficient time scales and that changes in stock can be monitored and are capable to be reported in a transparent manner and can be verified independently. Only those activities that have taken place since 1990 can be included for the first commitment period.

54 Article 3.4 of the Protocol stipulates that the COP will decide modalities, rules, and guidelines, as to how and which additional human-induced activities in the agricultural soils and LUCF categories are to be added to afforestation, reforestation and deforestation activities. A preliminary list of activities that might be considered for addition to the Protocol is provided in annex II below for consideration. Alternatively, a full accounting approach for all activities and carbon pools may need to be considered. Article 3.4 also notes that these additional activities could be used to meet a Party's assigned amount taking into account uncertainties, transparency in reporting, verifiability, the methodological work of the IPCC, and the advice provided by the SBSTA. Uncertainty, transparency and verifiability are terms that are not defined in the article.

The European Community and its Member States believe that the preliminary list of possible additional activities in Annex II of the INF.1 paper is a useful starting point for the work of the IPCC. However, on the basis of definitions of those activities it should be checked carefully if any activities are already included in another one, e.g. some aspects of activity I could be accounted for by other activities in the list. Activities included already in another one should be deleted. The SR should give an assessment of the uncertainties associated with each activity covered. The implications of a full accounting approach for all changes in carbon pools of managed terrestrial ecosystems should also be evaluated.

63 Question: Does the Article allow inclusion of both "direct and indirect" human-induced activities?
64 Unlike Article 3.3, no mention is made of the term "direct" with respect to human-induced activities in Article 3.4. This may raise a question about whether indirect results of human-induced activities, such as CO2 and nitrogen fertilisation by the atmosphere, should be included.

This is a question for COP/MOP 1 to consider. The IPCC-SR should address the problem of differentiation between direct and indirect as well as between human-induced and natural effects.

65 Question: What should guide the inclusion of additional activities?

This is a question for the Convention bodies to decide, drawing on scientific and technical data provided by the SR. The European Community and its Member States´ preliminary views are given in the response to question 52 above.

66 The last sentence of Article 3.4 appears to leave the reporting of the carbon sources and sinks from "additional human-induced" activities during the first commitment period to Parties. Countries with increased carbon stocks in the respective categories would probably tend to report this, whereas countries with a net source of carbon might choose not to report. Also, a country could choose to report only some of the activities, such as those that help it to meet its commitments, and not others.

Parties should not be selective in their choice of activities under Art. 3.4, subject to the same 'since 1990' restriction for the first commitment period that applies to the Art 3.3 activities.

67 The potential impact from "additional" activities could be large. Parties may need to give consideration to the type of information needed by the COP to make decisions. For example, would the COP need an estimate of potential national and global emission reductions or sequestration amounts?

This question is at the very heart of the Special Report to be prepared by the IPCC. It will be very important for the IPCC SR to contain an assessment of data sufficient to enable Parties to judge the consequences of the inclusion of possible activities and to take into account various methods of calculation. Data of the type indicated in the question is likely to be relevant, plus scientific assessments in the areas indicated in the European Community and its Member States´ response to question 52.

74 Question: How should the term "sustainable forest management practices" as used in Article 2, be defined? What link, if any, should be made to the consideration of these practices under other articles, for example Article 3.4?
75 Article 2 calls on Annex I Parties to "elaborate policies and measures to protect and enhance sinks ... and to promote sustainable forest management practices, afforestation and reforestation". It is the only article that refers to "sustainable forest management practices."

Although the meaning of sustainable is generally understood politically**,** a technical definition is complex and not required for the European Community and its Member States to meet in information requests called for under para 45(c) in FCCC/SBSTA/1998/6. The relevant ongoing international activities and regional initiatives, such as the Intergovernmental Forum on Forests (IFF), discussing i.a. possible elements of a forest convention, the Ministerial Conference on the Protection of Forests in Europe, which gives a concrete definition of sustainable forest management in its resolution H_1, and the Montreal process, should be taken into account in the IPCC-SR. Moreover a comparative study on the various concepts of sustainability in forestry is being prepared by the FAO in co-operation with the IUFRO (International Union of Forestry Research Organisations). The European Community and its Member States are in favour of working towards consensus on international arrangements

and mechanisms, for example a legally binding instrument which covers all relevant aspects of sustainable forest management. The European Community and its Member States expect that the SR addresses also impacts like environmental, ecological, social and economic ones.

PAPER NO. 2: CANADA

METHODOLOGICAL ISSUES RELATED TO LAND USE, LAND USE CHANGE AND FORESTRY AND THE KYOTO PROTOCOL

ARTICLE 3.4 - Modalities, Rules and Guidelines Related to Additional Human-Induced Activities

At the eighth session of the Subsidiary Body for Scientific and Technological Advice in Bonn, Germany, the Parties agreed in FCCC/SBSTA/1998/CRP.3 to submit comments on issues related to land use, land use change and forestry, to hold a workshop on issues related to Article 3.3 prior to COP 4, to request the IPCC to undertake a Special Report on the issue with guidance from SBSTA and to plan a workshop on Article 3.4 sometime soon after COP 4.

Canada would like to thank the Secretariat for organizing a very useful and informative workshop, recently held in Rome, on issues related to the implementation of Article 3.3. Information provided at this workshop demonstrated very clearly that there is a continuing need for discussions both to educate and ensure that the intent of the Framework Convention is met.

ARTICLE 3.4 - GENERAL COMMENTS

Following in the spirit of cooperation shown at the recent SBSTA workshop, Canada would like to provide some general comments and views on implications of including, or not including additional activities that can act as sinks. As noted in earlier submissions, Canada is of the view that full carbon accounting is necessary to properly deal with the issue of sinks.

The intent of the Framework Convention on Climate Change is clear; countries are to take measures to reduce emissions from sources and enhance removals by sinks. It states "***Each Party shall... limit its anthropogenic emissions of greenhouse gases and protect and enhance its greenhouse gas sinks and reservoirs***". Recognizing this, the Kyoto Protocol, specifically articles 3.1, 3.3, 3.4 and 3.7, attempts to address the complex issues related to sources and sinks in the land use, land-use change, and forestry categories. Unfortunately, the Kyoto Protocol, by limiting the activities that can act as sinks to afforestation and reforestation, has provided disincentives to sustainable forest and agricultural soil management. In addition, by including a source term in a commitment (deforestation), but excluding it from setting an assigned amount, it has the unintended result of penalizing nations that take measures to reduce emissions.

The Framework Convention defines a sink as "***any process, activity or mechanism which removes a greenhouse gas, an aerosol, or a precursor of a greenhouse gas from the atmosphere***." Currently undefined is the term anthropogenic. While the term human induced has been used as a substitute for anthropogenic and has found widespread acceptance for emissions from industrial processes and fossil fuel combustion, it is not so easily applied to land-use (agriculture and forestry) and land-use change activities, that can have both a

source and a sink term. Because of the cyclical nature, and varying times involved in realizing the benefits from these systems, particularly forest systems, and because of the dominating influence of natural forests in certain countries, such as Canada, any legally binding instrument must treat land-use and land-use change activities in an all encompassing manner. This view, coupled with the appropriate treatment of both sources and sinks, and expressed by Canada prior to Kyoto, continues to be an issue of major importance to us.

Prior to Kyoto, Canada submitted its views on how to deal with the land-use and land-use change categories. While much of the discussions that followed on "**sinks**" focused on land-use change and forestry and not on land-use activities, such as agricultural practices, Canada welcomes the conclusion by the Subsidiary Body for Scientific and Technological Advice (SBSTA) at its recent meetings in Bonn. The methodological conclusion document clearly recognizes that there are at least three distinct categories: land-use, land use change and forestry, thus acknowledging that categories other than land-use change and forestry, such as agriculture, can have both a source and a sink term. As such, Canada is pleased to see this distinction reflected in the IPCC Special Report and would like to see it maintained in future discussions and documents prepared by the Secretariat, on the issue of sinks and land-use, land use change, and forestry.

It is, and always has been Canada's view that what the atmosphere sees is of utmost importance. Simply put, our view continues to be one of endorsing an approach that fosters the enhancement of sinks, and the reduction in sources. It is also important that any legally binding protocol be balanced in its treatment of sources and sinks. A gross/net approach to setting assigned amounts was agreed to by Parties in Kyoto on the basis that this was the most appropriate manner in which to deal with **sinks**. This is the view that Canada supported and promoted. However, by **limiting** activities, by including activities that **do not** have a sink term, and by specifying how the changes would be measured, Article 3.3 has had a number of unforeseen consequences. Specifically, it does not fully account for what the atmosphere sees, nor does it credit and thereby provide incentives for good forest management practices that ensure the sustainability of existing forests. In addition, it creates an imbalance between sources and sinks, and as was clearly shown in the recent workshops in Rome, depending on interpretations it can actually penalize a country that sequesters more carbon than it emits.

By limiting the actions humans can take to enhance sinks to two activities undertaken after 1990 in two distinct categories, land use and land-use change, the Kyoto Protocol has fundamentally changed the accounting system and the way in which we look at forests and land-use changes. The Kyoto Protocol has produced a new forest, that we now call the Kyoto Forest. For many parties the Kyoto Forest represents a **small fraction** of their existing managed forests and is a radical departure from an historical perspective of the management of forests for commercial timber production.

For example, by limiting the definition of reforestation to a solely land-use change definition, those Parties for whom forests require on average 100 years to reach maturity receive credit for a very small sink in the commitment period. At the same time, by including deforestation occurring in the commitment period due to forest management activities undertaken in the whole managed forest, without balancing them against the growth in that managed forest,

can, as shown in the recent SBSTA workshop in Rome, result in perverse consequences. More specifically, a Party may be required to report an increase in emissions when, in reality, overall emissions have declined.

An additional oddity resulting from the Kyoto Protocol relates to the accounting requirements for the ***virtual stocks***. SBSTA at its recent meetings in Bonn (FCCC/SBSTA/1998/CRP.3) clarified the intent of Article 3.3; namely, that *the emissions and removals resulting from the three activities of reforestation, afforestation and deforestation would be measured as a verifiable change in stocks.* Given that harvesting was **correctly** excluded as an activity upon which a change in stock would be measured, it is unclear how one will measure and track the stock changes from the limited activities of reforestation, afforestation and deforestation. It is clear that in any case, a full carbon stock accounting will be necessary, simply to calculate the difference.

Article 3.7, by allowing a modified net/net approach for those Parties for whom the land use change and forestry categories constituted a net source in 1990, was included to try and deal with some of these consequences. While appearing to be inconsistent with the gross/net approach, it is, in fact, consistent with the aims of the Convention and does provide incentives to reduce emissions and enhance sinks. It acknowledges that in certain cases, where land-uses are changing, a more appropriate, or balanced measure of progress is to compare current and future rates of change, rather than absolute changes.

However, as with Article 3.3, it is Canada's view that Article 3.7 **does not properly** address the full range of activities that can act as both sources and sinks. Article 3.7, in effect, allows countries for which net emissions from land-use change are greater than net removals from forestry in 1990 to include the net emissions from land use change in their assigned amount. A more appropriate manner in which to deal with sources from land-use activities, such as forestry and agriculture and land-use change activities might be to differentiate between them when applying Article 3.7. In this way a balance could be struck between countries undergoing dramatic land-use changes with those containing large and productive forests and agricultural soils.

Notwithstanding the compromise that Kyoto produced, Canada's original proposal to deal with both the issue of sinks and the issue of anthropogenic suggested the following wording: "***Direct human activities undertaken after 1990 that protect and enhance sink capacity, and that affect carbon stocks and that can be verified.***" Canada felt, and still believes that it is vital that a Protocol to the Convention provide incentives that encourage activities aimed at reducing emissions and enhancing sinks. By specifically defining anthropogenic as direct activities that change carbon stocks after 1990, many of the uncertainties associated with the land-use, land-use change and forestry categories would be reduced. Any approach that deals with all activities that are measured from a specific date, (such as 1990) is not only easier to verify because of an increase in accuracy afforded by real and measurable data, but is also more equitable by providing a level starting point for all Parties.

ARTICLE 3.4 & AGRICULTURE

At the third Conference of Parties in Kyoto, SBSTA was tasked with addressing the issues outlined in Article 3.4 of the Protocol. That is, to consider modalities, rules and guidelines for the land use change and forestry categories as well as to consider adding additional sink activities. As a country that has undertaken considerable research into measuring, verifying and promoting agricultural practices aimed at enhancing soil carbon sequestration, Canada welcomes this decision and the subsequent request to the IPCC. In this light, Canada would like to offer the following information and comments on the multiple benefits of soil carbon sequestration projects and to urge the SBSTA to consider agricultural soils as a land-use appropriate for inclusion in the Kyoto Protocol. It is clear that without incentives to undertake many of the practices that enhance soil carbon sequestration and thereby help to reduce atmospheric carbon dioxide concentrations, the Kyoto Protocol is not fulfilling the ultimate goals of the Framework Convention.

Globally, many agricultural soils, having been depleted of much of their native carbon stocks, have a significant CO2 sink capacity. International scientists estimate this capacity to be in the order of 20-30 Pg C over the next 50-100 years. The soil-C sink has a finite capacity which can be filled over a relatively short-time horizon, possibly 20-25 years. More sustainable farming practices will also confer additional benefits, such as desirable improvements to soil and water quality, enhancement of biodiversity and wildlife habitat.

Land management practices to build up soil C must increase the input of organic matter to soil and/or decrease soil organic matter decomposition. In temperate regions, there is considerable evidence that increasing cropping frequency, reducing traditional summerfallow, increasing the use of perennial forages in crop rotations, retaining crop residues and reducing or eliminating tillage results in significant C gains within 5 to 10 years after adoption. Also, conversion of marginal land to permanent perennial vegetation protects fragile soils and provides additional opportunities for C sequestration.

In the tropics, increasing C inputs to soil through improving the fertility, productivity, and sustainability of cropland and pastures is essential, in particular to help reduce land clearing. Cover crops, green manures, no-till and agroforestry are also beneficial in terms of C sequestration and protecting the environment.

Soil carbon, the single most important measure of soil quality and productivity, has been studied intensively for decades. While most of the analysis of sequestration potential has been conducted for industrialized countries, the impact of land management practices on soil C is well documented globally. Although soil C levels vary on a landscape basis, protocols for sampling and monitoring have been developed for various cropping systems in different agro-ecological regions. Existing C-cycling models are being refined and validated with long-term field measurements.

Canada's experience in this field indicates that changes in C stocks can be verified with a relatively high degree of certainty. More work is needed on the development and application of monitoring and verification protocols, especially for the tropics and developing countries,

to determine region-specific interactions between climate, soil and land resource management for global assessments. The opportunities and benefits of increasing soil C sequestration on agricultural soils will continue to stimulate the development and application of methodologies for measurement of soil C (or components of soil C) changes with increased precision over shorter time periods. As such, Canada welcomes the opportunity to provide further information to the IPCC and in preparing their Special Report on land-use, land-use change and forestry and to the Parties to the convention at future workshops. Canada supports the offer by the United States of America to host a workshop on modalities, guidelines and methods for including additional activities and urges Parties to accept this offer at SBSTA 9.

In this context, it is Canada's view that soil C sequestration is a significant and highly attractive mitigation option in addition to the added benefits of improved soil quality for enhanced agricultural productivity and sustainability. Clearly a win-win strategy for all concerned.

PAPER NO. 3: ICELAND

MODALITIES, RULES AND GUIDELINES AS TO HOW AND WHICH ADDITIONAL HUMAN INDUCED ACTIVITIES SHALL BE ADDED TO, OR SUBTRACTED FROM, THE ASSIGNED AMOUNTS OF PARTIES

SBSTA at its eight session requested Parties to submit information related to the process of adding activities to the list of sink enhancement activities.

The process

In Article 3.3, sink enhancement is limited to afforestation, reforestation and deforestation. This listing represents only a part of the activities that have a potential for enhanced carbon sequestration to combat climate change. Therefore Article 3.4. of the Protocol sets up a process for the COP/MOP to add activities to the limited list. According to the decision in Kyoto adopting the Protocol (1/CP.3) article 5 (a) the COP 4 should consider:

"Determination of modalities, rules and guidelines as to how and which additional human-induced activities related to changes in greenhouse gas emissions and removals in the agricultural soil and land-use change and forestry categories shall be added to, or subtracted from, the assigned amount for Parties included in Annex I, as provided for under Article 3, paragraph 4, of the Protocol."

The IPCC has been asked to produce a Special Report on Land Use, Land Use Change and Forestry and Carbon Emissions (SRLFC). This report will not be available until June 2000. While the Special Report will be an important basis for the deliberations on sinks, there are several major issues which will have to be dealt with by SBSTA directly. These are the policy issues. The IPCC report will be policy relevant but not policy prescriptive. Policy prescription rests with the convention bodies.

The work of SBSTA on sinks should not be halted while IPCC works on the Special Report. There are several important issues which can be usefully addressed in the interim period. The most important of which is to establish selection criteria for additional activities. This will direct the attention to the question of how activities should be added to the list. The question of "how" logically precedes the question of "which" activities are to be added. Iceland does not favor postponing the dialogue on sinks until the year 2000. For some Parties the successful outcome of this process may enhance their possibility to ratify the Kyoto Protocol. This is an important issue which should be given high priority by SBSTA-9 and COP-4.

One useful action SBSTA-9 could take would be to ask the Secretariat to compile a list of outstanding issues which are not going to be addressed by the IPCC Special Report and do not depend on it. This list should cover issues related to modalities, rules and guidelines for the implementation of Article 3.4.

Iceland welcomes the decision to hold a SBSTA workshop early next year on Article 3.4. This workshop could be organized in two parts. One part could contain an overview of the additional activities suggested by Parties and the other part on selection criteria for additional activities.

Categories of activities

The note by UNFCCC secretariat on sinks (FCCC/SBSTA/1998/INF.1) lists thirteen activities in Annex II. The activities can be classified into five broad categories:

I. Direct actions to increase the rate of soil carbon sequestration

Activities to build soil carbon
Revegetation of degraded lands
Soil conservation

II. Improved soil carbon management

Agrarian and pastoral practices
Conservation tillage

III. Forest management

Forest management practices
Forest conservation
Low- or reduced-impact logging

IV. Fate of harvested wood products

Increased wood product lifetimes
Sequestration in wood products

V. Emissions from land use, land use change and forestry

Activities to avoid carbon emissions
Harvesting
Land-clearing for agriculture

The list of possible activities could grow but it is less likely that new categories of activities will be introduced. This suggests that if the focus is on broad categories of activities the task of reaching a consensus on Article 3.4. will be simplified.

Selection criteria for additional activities

The guidelines for adding activities to the list called for in Article 3.4. should be based on broad principles. We suggest that the following selection criteria should be among the criteria governing the evaluation of suggested addition of activities:

_ Can the activity be documented in a verifiable manner ?
_ Would the inclusion of the activity provide an incentive for Parties to take additional action to sequester carbon ?
_ Would the inclusion of the activity contribute towards meeting the goals of other environmental agreements ?

When the question of verifiability is studied in more detail it becomes evident that generalizations are difficult. Verifiability is more dependent on the local conditions than the type of activity in question. There is no fundamental difference in verifiability of forest activities on the one hand and non-forest activities for example. Many of the carbon sequestration activities not listed in Article 3.3. can be documented just as well as reforestation or afforestation.

Due attention needs to be paid to the circumstances in individual countries. The rules and guidelines for adding activities should be designed in such a way that activities could be evaluated for individual countries on a case-by-case basis. Sink enhancement activities which can be verified in one country or region might not meet the criteria in another region due to differences in soil or climatic conditions.
For the first commitment period priority should be given to accepting sink enhancement activities which Parties to the Convention used in their efforts towards stabilizing GHG emissions at the 1990 level by the year 2000. This will minimize the disruption in the mitigation options open to Parties resulting from the Kyoto Protocol.

It is critical to analyze the incentives created by the Protocol. The implementation of the Kyoto Protocol should be guided by the principle of stimulating action which benefits the atmosphere. During the negotiation of the Kyoto Protocol, Iceland suggested that credits for sinks be limited to direct actions taken after 1990 to enhance anthropogenic removal of carbon dioxide from the atmosphere. Iceland is of the opinion that this approach will ensure a direct link between efforts by Parties and the credits obtained and significantly reduce the level of uncertainty associated with the verification of compliance with commitments. The implementation of Article 3.4. will be successful if it stimulates additional action to sequester carbon.

The link to other environmental agreements is also vital. In Kyoto, Iceland pointed out that revegetation of degraded land is important in the context of the Convention to Combat Desertification. It would therefore be mutually supportive for the objectives of the two conventions to include this activity in the list of human-induced activities to enhance carbon uptake by sinks.

Revegetation of degraded land

At COP 3, Iceland proposed the inclusion of revegetation of degraded land in the list in Article 3.3 of the Kyoto Protocol. This was supported by a number of delegations. Iceland also suggested that this should be defined as "direct action to increase carbon stocks in soil with low organic matter content". This definition is based on the rationale that measurement problems associated with the fate of existing soil carbon stocks are negligible in these soils.

Revegetation or restoration of degraded land involves direct inputs in terms of plants and nutrients. The carbon is stored below ground as soil organic matter. It typically also involves land use change since degraded land tends to have a history of non-sustainable land use. In Iceland, revegetation or restoration of degraded land usually involves fencing to protect the area from grazing. This is followed by either areal application of seed and fertilizers or direct drill seeding and fertilization. The plants used are grass species or nitrogen fixing plants. Studies have shown that this activity results in significant sequestration of carbon.

The soils of Iceland are primarily of volcanic origin (Andosols). These soils tend to immobilize carbon at a high rate and globally Andisols are only exceeded by the organic Histosols in terms of carbon stocks per unit area. The low rates of decomposition of organic matter at the low soil temperatures in Iceland further enhances the sequestration rates. Results from estimates of the sequestration rates will be presented at the SBSTA workshop on Article 3.4. in early 1999.

Revegetation of degraded land forms an important part of the Icelandic National Climate Change Action Programme established under the Framework Convention in 1995. The Government has provided new funding to revegetation and reforestation projects to help meet the target of stabilizing GHG emissions at 1990 levels by the year 2000. The estimated increase in annual sequestration from these projects is 100.000 tons carbon dioxide (3.7 % of projected CO2 emissions in that year). Approximately 50% of this sequestration is due to revegetation of degraded land. The uncertainty on the acceptance of revegetation of degraded land seriously disrupts Iceland's climate change mitigation options. It is essential that this kind of activity be accepted through the process prescribed in Article 3.4. and paragraph 5(a) of decision 1/CP.3.

PAPER NO. 4: NORWAY

METHODOLOGICAL ISSUES RELATED TO ARTICLE 3.3 OF THE KYOTO PROTOCOL

SBSTA 8 invited Parties to submit information related to the implementation of Article 3.3, on data and methods, and questions and issues identified in FCCC/SBSTA/1998/INF.1. This paper responds to the SBSTA request and gives in addition a preliminary presentation of the data availability for Norway related to the implementation of Article 3.3. Elements relevant for interpretation of Article 3.4 will also be addressed to some extent. A separate paper with Norway's views on additional human induced activities that might be included under Article 3.4 has also been submitted. The different country submissions and the positive outcome of the SBSTA workshop in Rome in September, will form a good basis for substantial progress on the sink issues at COP4. Final decisions on issues related to Article 3.3 and 3.4 will, however, probably have to wait for the outcome of the IPCC's Special Report on LUCF.

1. General remarks

Article 3.3 and 3.4 of the Kyoto Protocol address Land Use Change and Forestry activities that may be used to meet Annex B Parties' commitments. Article 3.3 limits these activities to afforestation, reforestation and deforestation and to stock changes in the commitment period due to such activities taken place after 1990. Article 3.4 opens for the implementation of other activities, provided that such new activities have been implemented after 1990.

In our view it is important that definitions, modalities and rules etc. related to Article 3.3 and 3.4 of the Kyoto Protocol give credit to maintaining sustainable forest management systems, included promotion of forest biodiversity. Without a thorough assessment of the impacts of different interpretations of Article 3.3 and 3.4, we see a possible danger that sustainable forest management systems will not be given their deserved credit, as illustrated in the next paragraph.

The forest activities related to Article 3.3 of the Kyoto Protocol are relevant only to a minor part of the managed forests in many Annex B countries, at least for those in the boreal area. Here the forest rotation cycle would typically be 70-120 years because of the climate conditions. Due to the slow growth rate of forest stocks in these countries, the carbon sink credited in the commitment period from afforestation, reforestation and deforestation after 1990 may be negative, while the forest area as a whole is a net carbon sink. In other countries with significantly warmer climate and a rotation cycle which may be less than 20 years, Article 3.3 will not necessarily prevent Parties from harvesting forests in second or subsequent commitment periodes, that have already been given credit in the first commitment period 2008-2012. Norway will support any efforts to avoid that Article 3.3 or 3.4 give such unintended effects.

The example presented above also illustrates that it is extremely important that any definitions and rules related to Article 3.3 and 3.4 take into account differences between countries and regions, due to different climate conditions and forest management practises.

2. Data availability for Norway related to the implementation of Article 3.3.
The Norwegian productive forest area is 7.4 million hectare, which amounts to about 22% of the total Norwegian continental area. In addition, an area of non productive forests ("other wooded land") cover approximately 4.5 million hectare. The Norwegian forests are dominated by spruce, pine and deciduous wood, respectively 42%, 31% and 27% of the forest area. The rate of regeneration felling is about 0.5% of the total forest area.

The budget for the emissions and sinks of CO_2 in the Norwegian forests as a whole has been made and reported to the FCCC-secretariat according to the IPCC Guidelines and reporting framework since 1994. The sink estimates in these inventories are based upon data on gross annual growth increment from the National Forest Inventory. The National Forest Inventory of Norway, started in 1919, is today based on data from approximately 10 000 permanent observation fields in all counties. All observation fields are visited in the course of a five-year cycle. Data on harvest of commercial timber and fuel wood are based on yearly industrial statistics, forest statistics and survey of consumer expenditure performed by Statistics Norway. The natural losses are assumed to be 0.6% of the total number of trees. The sink inventories include carbon in roots, stumps, branches and bark, but so far not carbon in soil. (According to the IPCC Guidelines it is assumed that all carbon is emitted in the year when the biomass is harvested.)

The net anthropogenic CO_2 sink in the total forest area of Norway was for 1996 estimated at 17.6 million tonnes. The 1996 gross emission of all greenhouse gases was 59 million tonnes of CO_2-equivalents. Thus the net CO_2 sink was equivalent to approximately 30% of the total gross emissions.

The Government's report to the Storting this year on the Norwegian implementation of the Kyoto Protocol presents a preliminary assessment of the national implications of the LUCF-activities as defined in the Kyoto Protocol. This assessment concludes that changes in carbon stock related to the implementation of Article 3.3 can be estimated based on observations of growth increments in the National Forest Inventory. The uncertainty of theses estimates is acceptable. By increasing the number of observation fields the uncertainty may be reduced.

The yearly afforestation and reforestation rate in Norway would be approximately 300 and 500 km^2 respectively, while the deforestation rate typically would be 20-30 km^2 per year. If these rates continued from 1990 to 2012, the preliminary calculations show that the commitment as given in Article 3.3 may give Norway a net yearly sink of 0.1-0.2 Mtonnes CO_2 in the first commitment period 2008-2012. This is equivalent to 0.1-0.3% of the total Norwegian gross emissions of all greenhouse gases. The calculations assume that regeneration after felling since 1990 is included under the definition of reforestation (the FAO definition). If the calculations were based on the assumption that reforestation should only include planting or seeding on areas prevailed for other use for at least 20 years (the IPCC definition), the Norwegian forest contribution to the Article 3.3 commitment would probably turn from a small net sink to a small net emission source of approximately 0.1 Mtonnes CO_2 per year.

3. How should forest be defined?

The definition of Norwegian forests differ between productive and non productive forests ("other wooded land"). Forest area corresponds to the land use class "productive forest land" in the National Forest Inventory. Productive forest land is defined as land with a yearly average potential production equal to or higher than 1 m^3 per hectare, regardless of the current stocking. Other wooded land is classified as "non-productive forest land" and "wooded mire". Non-productive forest land is defined as forest land on mineral soil with a yearly average potential production of between 0.1 and 1.0 m^3 per hectare, regardless of the current stocking. Wooded mire is assumued to have the same production potential as non-productive forest land, but on peat soil.

Norway believes that the definition of forest in Article 3.3 and 3.4 should take into account the differences between countries and regions, and between different forest management practises. Hence each country's own definitions often would be the best foundation for forest definitions under Article 3.3, presupposed that such definitions are accepted by the Parties.

4. How to define afforestation, reforestation and deforestation?

There are no official Norwegian definitions of afforestation, reforestation or deforestation. However, the normal understanding of the terms is as follows:

Afforestation will normally be defined as establishment of forests due to planting, seeding or other changes in human land-use practises on areas not defined as forests in the National Forest Inventory. How long such areas need to be prevailed for other than forest use is not defined, but typically such areas have been non forest land for at least 50-100 years. This definition will normally cover forest establishments due to withdrawal of agricultural land-use practices on areas where natural revegetation could occur. FCCC/SBSTA/1998/INF.1. presents the following definition of afforestation: *"planting of new forests on land which historically has not contained forests"*. This definition would for Norway probably mean that no areas could be claimed as afforested, since most of the potential afforested land in a historical time scale will have been covered by forests. Thus it is of vital importance to clearly define the term "historical" related to afforestation.

Reforestation will normally be defined as re-establishment of forests due to planting, seeding or "natural" revegetation on previously forest land or other wooded land. After harvesting all forests in Norway will be revegetated either by planting or by "naturally" revegetation as part of the normal forest management system. Approximately half of the harvested area is assumed to be planted, while the other half is assumed to be "natural" revegetated through different forest practices. If reforestation should follow the IPCC-definition, which only includes planting or seeding on areas prevailed for other use for at least 20 years, normal forest management in Norway would not be covered by Article 3.3.

Norway does not have any strong preference concerning which definition of the term reforestation in Article 3.3 should be based on. However, it is important that any definition should give credit to countries that endeavour to maintain and support sustainable forest management. A strict definition of reforestation (e.g. the IPCC definition) may give the result that countries within the boreal forest area, including Norway, could come out with a negative

carbon sink related to their commitments in Article 3.3 while their forest area as a whole remains a large positive net sink over the commitments period. We do not think this will give the right incentives for a climate friendly, sustainable forest management in these countries. On the other hand, it is important that any definition of reforestation should prevent Parties from converting natural forests to plantations and crediting this as reforestation under Article 3.3.

In Norway deforestation normally is defined as converting forests land and other wooded land (defined in the National Forest Inventory) to non forest area. That would include conversion of forests to agriculture land and roads, housing and other urban areas. Normal harvesting as part of a forest management system should not be defined as deforestation. Further, it is important to include the whole carbon stock change due to deforestation.

As described in chapter 1 and 2, the credit for carbon sinks in boreal forests from afforestation, reforestation and deforestation after 1990 under Article 3.3 of the Kyoto Protocol may be negative, while the forest area as a whole is a major net carbon sink. This paradox is mainly due to the slow growth rate of forest stocks in the boreal regions, where the effects of any human induced activities to stimulate afforestation and reforestation will be minor or negligible within a time frame of 20 years or less. At the same time deforestation often will involve cutting of old forests with relatively high carbon volume. Thus the emission increase due to deforestation could exceed the sink increase due to afforestation and reforestation, even though the area of deforestation is a magnitude of order less than the area of afforestation and reforestation. It is important that the further discussion on definitions and rules for calculation related both to Article 3.3 and 3.4 take into account this problem.

5. How to define direct human induced activities?

Related to afforestation and reforestation, direct human induced activities should include all practises that are implemented with the purpose to establish and re-establish forests. This includes planting, seeding and other forest practices which will accelerate the revegetation of the forests. Natural revegetation could also be defined as human induced activities, since such practises in many countries are deliberate policy as part of their forest management. Natural revegetation could also be an integrated part of a policy to increase the biodiversity in forests.

In many countries, including Norway, withdrawal of agricultural land-use practices will allow natural revegetation to occur. Principally such natural revegetation should not automatically be defined as direct human induced activities. However, it may be difficult to define which revegetation activities are based, and which are not based, on deliberate policy in this respect.

6. Which carbon stocks should be included?

All carbon biotic stocks should be included under afforestation, reforestation and deforestation, provided they could be measured in a verifiable way. This means that the "whole tree" should be considered, including the stem wood, branches, tops, stumps and roots. In addition we find it particularly important to include verifiable changes in carbon stocks in forest soil linked to the activities included under Article 3.3. Forest establishment on carbon rich soil, e.g. mires, could involve a carbon loss to the atmosphere rather than a carbon sink.

Changes in carbon stocks from wood products, landfills etc. related to the forest activities under Article 3.3 should not be included. Since CO_2 emissions due to harvesting is not a part of Article 3.3, it will be inconsistent to get credit for CO_2 sinks due to changes in the stock of wood products. Furthermore, IPCC still has to finalise its work on guidelines for estimation and reporting of CO_2 emissions and sinks from wood products. However, wood products could be included under Article 3.4, if harvesting was accepted as one of the additional activities under this Article and a consistent and verifiable methodology for estimating CO_2 emissions and sinks from wood products was developed. For further decisions of this issue, we refer to our separate submission on Article 3.4.

METHODOLOGICAL ISSUES RELATED TO ARTICLE 3.4 OF THE KYOTO PROTOCOL

SBSTA 8 invited Parties to submit information related to modalities, rules and guidelines for the inclusion of additional human induced activities under Article 3.4 of the Kyoto Protocol, including questions and issues identified in FCCC/SBSTA/1998/INF.1. This paper is a respons to that request, and gives some preliminary assessments and views, particularly in relation to the Norwegian forest management system. A separate paper with the Norwegian commitments related to Article 3.3 has also been submitted.

Article 3.3 allows Annex B Parties to meet their commitments by crediting verifiable stock changes due to direct human induced activities limited to afforestation, reforestation and deforestation taken place after 1990. Article 3.4 opens for the implementation of other activities, provided that such new activities have been implemented after 1990. Norway will emphasise that the implementation of new activities leading to sink enhancement related to Article 3.4 should give credit to countries that endeavour to maintain and support sustainable forest management and forest biodiversity. The inclusion of new activities should be guided by the need for a system that gives Parties incentives to enhance the carbon stock both in a short and long term perspective.

In Annex II of FCCC/SBSTA/1998/INF.1. a preliminary list of additional human-induced activities is presented. Many of these activities refer to normal forest management practices, such as “harvesting”, “activities to avoid carbon emissions” and “low- or reduced-impact logging”. Generally Norway would support an inclusion of harvesting and other activities under sustainable forest management. However, for the first commitment period it is important that harvesting and other forest management activities are limited to those forest areas defined under Article 3.3. Harvesting should not be included for the total forest area, without removing the limitation “since 1990”. If not removed Parties within the boreal forest area, where the growth rate is low and the forest rotation cycle typically would be 70-120 years, would have a relatively small sink due to afforestation and reforestation since 1990, and a large emission source due to harvesting. Such bias will not necessarily occur in countries with significant shorter rotation cycle.

By including harvesting and other forest management activities in the commitment, limited to those forest areas defined under Article 3.3, Parties will get incentives for the first commitment period and for subsequent commitment periods, to protect the forest carbon by reducing the rate of harvesting or increase the rate of forest conservation.

Furthermore, Norway would support the inclusion of activities to build up soil carbon, as long as the stock change can be measured in a verifiable way. Guidelines and rules on activities to build up soil carbon should take into account that the stock change processes are highly dependent on temperature, and thus also on latitude and elevation above sea level.

If harvesting is accepted as one of the additional activities under Article 3.4, and limited to forest areas defined under Article 3.3, it would be consistent to include activities that will increase wood product lifetimes and other CO_2 sequestration in wood products and land fills etc. However, IPCC has not yet established a guideline for estimation and reporting of CO_2 emissions and sinks for wood products. When such guidelines have been approved and countries are able to measure stock change in wood products in a transparant and verifiable way, Norway may support to include wood products under Article 3.4.

Furthermore, Norway believes it is important that any definitions, modalities and guidelines on the inclusion of additional human induced activities under Article 3.4 should take into account the differences between countries and regions due to different climate conditions and forest management practises.

Norway believes it is at present premature to take any final decision on which additional human induced activities should be included under Article 3.4. The outcome of the IPCC Special Report on LUCF is assumed to form the main basis for decisions at COP 6 particularly related to Article 3.4.

PAPER NO. 5: SOUTH AFRICA

1. There should be clearer definitions for these activities. They appear to be focussing mainly on activities in Annex I countries.

2. Obviously the modalities, rules and guidelines relating to all or some categories (of such additional activities) needs to be developed.

3. South Africa would support a coherent approach to the treatment of additional human-induced activities (should they be considered additionally).

4. Systems, processes and criteria to audit, verify and account. Reporting criteria to be established.

5. South Africa should discuss with the Africa group to ensure full understanding and that African interests are protected.

PAPER NO. 6: SWITZERLAND

IMPLEMENTATION OF ARTICLE 3.4 OF THE KYOTO PROTOCOL

In response to the call for comments at the eighth session of the Subsidiary Body for Scientific and Technological Advice concerning information related to modalities, rules, and guidelines as how and which additional human-induced activities might be included under Article 3.4 of the Kyoto Protocol, including questions and issues identified in FCCC/SBSTA/1998/INF.1, Switzerland presents the following views.

1. The discussions on Article 3.4 during the eighth session of SBSTA put in evidence many open issues. Switzerland welcomes the preparedness of IPCC to accept the mandate from SBSTA to conduct a thorough analysis of the methodological, scientific and technical implications of the sink related articles in the Kyoto Protocol. Decisions on the implementation of Article 3.4 (and 3.3) should not be taken before the conclusion of the work of IPCC on its Special Report.

2. Switzerland is led by the principle, that any implementation of the Kyoto Protocol should be guided by the objective of the FCCC, i.e., contribute to the timely and lasting stabilization of GHG emissions at levels that prevent dangerous anthropogenic interference with the climate system. Switzerland is concerned by the fact that the inclusion of additional activities under Art. 3.4 might distract from the importance of taking early action in the energy and transport sectors. Thus, beyond the cautious approach that is advised given the overt methodological problems, we would welcome a discussion on the need to define a tight cap regarding the amount of emissions offsets that may be delivered through activities under Article 3.4.

3. The results presented in the IPCC Special Report on LUCF will need to be carefully evaluated, if other activities are to be included in the context of the first commitment period. Switzerland will consider premature any attempt to include new activities as long as appropriate definitions are lacking, adequate and internationally accepted methodologies are not established and tested, and uncertainties that have a significant impact on the assessment and validation of emissions balances are not significantly reduced.

4. Due to the great potential for C losses or C sequestration linked to LUC processes, appropriate tools need to be defined not only for the assessment of additional activities in isolation but also for the conversion of forest areas to grassland or cropland and vice versa. The same is true for the conversion of cropland to grassland and vice versa. Also, the protection of existing C reservoirs must be taken into account. Sustainable management of such reservoirs must be a criteria of high priority.

5. Estimating large-scale, average annual changes in C stocks due to land use conversion processes and changes in land management is an extremely difficult task while having a potentially great impact on the long-term C balance of soils. In Switzerlands view, methodological difficulties shall not lead to ignoring such processes while taking into account other, ”simple” processes that are attractive from a C sequestration point of view.

6. Activities in the area of wetlands conversion influence not only CO2 fluxes but also net flows of CH4 and N2O. Due to the particularly high uncertainties linked to the measurement and the natural variability of CH4 and N2O fluxes, no activities in this area should be allowed for contributions to reduction commitments before considerable progress has been made in comprehensively assessing changes in GHG flows.

7. As a first step towards profiting from the important potentials for emissions reductions in the agricultural sector in the Convention process, Switzerland proposes that the Secretariat establishes an overview of practices and measures taken by Parties to enhance C sequestration or to stop or slow down C losses in existing reservoirs, on the basis of the national communications, the works of the Annex I Expert Group on the UNFCCC of the OECD/IEA, the FAO and other relevant international organisations.

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