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UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

SUBSIDIARY BODY FOR SCIENTIFIC AND TECHNOLOGICAL ADVICE

Thirteenth session

The Hague, 13-18 November 2000

Agenda item 9 (a)

**METHODOLOGICAL ISSUES**

**LAND-USE, LAND-USE CHANGE AND FORESTRY**

**Submissions from Parties**

**Note by the secretariat**

1. At the first part of its thirteenth session, the Subsidiary Body for Scientific and Technological Advice, having given initial consideration to country-specific data provided by Parties in accordance with the conclusions of the SBSTA at its twelfth session (FCCC/SBSTA/2000/5, para. 32 (d)), urged Parties that had not yet supplied complete data, to do so by 1 November 2000, using the agreed data format (FCCC/SBSTA/2000/10, para. 33 (c)).
2. As of 6 November 2000, the secretariat has received two such submissions.\* In accordance with the procedure for miscellaneous documents, these submissions are reproduced in the language in which they were received and without formal editing.

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\* In order to make these submissions available on electronic systems, including the World Wide Web, these submissions have been electronically imported. The secretariat has made every effort to ensure the correct reproduction of the texts as submitted.

**FCCC/SBSTA/2000/MISC.11**

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PAPER NO. 1: IRELAND

**SUBMISSION FROM IRELAND ON POSSIBLE 3.4 ACTIVITIES IN THE FOREST SECTOR**

Table III – Preliminary data and information provided by Annex I Part on Article 3.4 activities, related net GHG emissions, involved areas, and projected carbon stock changes (additional activities under Article 3.4)

Article 3.4 Country specific data	Accounting framework	a <sub>1</sub> (1000 ha)	CO <sub>2, 1</sub> (kt CO <sub>2</sub> )	CH <sub>4, 1</sub> (t CO <sub>2</sub> equiv.)	N <sub>2</sub> O <sub>, 1</sub> (t CO <sub>2</sub> equiv.)	a <sub>11</sub> (1000 ha)	CO <sub>2, 11</sub> (kt CO <sub>2</sub> )	CH <sub>4, 11</sub> (t CO <sub>2</sub> equiv.)	N <sub>2</sub> O <sub>, 11</sub> (t CO <sub>2</sub> equiv.)	a <sub>cp</sub> (1000 ha)	ΔCcp (kt C) + = uptake - = release	ΔCO <sub>2</sub> (kt C) + = uptake - = release	ΔCH <sub>4</sub> (kt C) + = uptake - = release	N <sub>2</sub> O (kt C) + = uptake - = release	Methods and Approaches	Data sources, data quality, and uncertainties (e.g. ranges)	Other information relevant to decision making
Forest management	Land based																
	Activity based	0	0	0	0	0	0	0	0	6000	368	1,348			See below	See below	See below

The activity indicated here is retention of conifer stands beyond the normal age of clearfelling. Current policy in Ireland is to fell crops at their age of maximum mean annual age of volume increment (as indicated from the yield class determined from Forestry Commission models) less 20%. The proposal is to retain 500 ha/year on long term retention, beyond the age of maximum mean annual volume increment. This will have a number of effects. First wood volume that would otherwise be harvested volume will be retained *in situ*. Second the activity would have an immediate impact on storing additional carbon through volume increment which will continue in the stand, albeit at a declining rate once the crop has passed its age of maximum mean annual volume increment. Third there will be reduced ground disturbance which will reduce evolution of soil carbon.

Other 3.4 activities that may be considered include regeneration of slow growing, moribund coniferous plantations (comprising mainly lodgepole pine) using higher yielding species. This will increase the rate of carbon storage and the long-term stock on a particular site (as the crops that are being replaced are growing slowly and in some cases are moribund with, more than likely a net release of carbon. Fertiliser application to slow

growing stands is another option, which will increase both the rate of carbon sequestration and long term storage. The use of fast growing plantations for energy production could also be considered. The preceding is not intended to be an exhaustive list.

The calculations are based on the following assumptions:

1. 500 ha per year are retained beyond normal felling age from 2001-2012,
2. a notional yield class of Sitka spruce 16 (maximum mean annual volume increment/ha) is used for standing volume and increment calculations
3. the carbon content of the volume that would otherwise have been harvested is credited, this is estimated at 300 cubic metres of wood/ha, increased by a biomass expansion factor of 1.3,
4. the density of the wood is estimated as 0.35 and the carbon content of the wood is estimated as 40%,
5. thinning volumes of 56 cubic metres/ha are assumed in the retained areas, on a five year cycle,
6. an estimate of carbon sequestration in regenerated crops (had the retained crops been felled) was made on the basis of a current annual volume increment of 0, 4 and 8 cubic metres of wood/ha over the periods 1-5, 6-10 and 11-12 years, respectively, from planting.

The calculations used an Excel spreadsheet model incorporating the above assumptions.

PAPER NO. 2: SWITZERLAND

**Table I - Preliminary data and information provided by Annex I Party on carbon stock changes and areas related to Article 3.3 activities**

Article 3.3 Country specific data	Defi- nitions	Ac- count- ing frame- work	a <sub>I</sub> (ha)	C <sub>I</sub> (t C)	a <sub>II</sub> (ha)	C <sub>II</sub> (t C)	a <sub>cp</sub> (ha)	C <sub>cp</sub> (t C)	Methods and approaches	Data sources, data quality, and uncertainty (e.g. ranges)	Other information relevant to decision-making
Afforestation/ Reforestation	IPCC/ FAO	Activity based	875	352	1147	723	2200	3852	Area deviated from the number of planted trees	medium to high	3000 planted trees per ha in the average Estimation of growth by yield tables
		Land based	875	352	1147	723	2200	3852	Area deviated from the number of planted trees	medium to high	<b><i>3000 planted trees per ha in the average</i></b> Estimation of growth by yield tables
Deforestation	IPCC/ FAO	Activity based	804	-90580	1437	-161884	3305	-80942	Authorisations by forest agencies	high	Estimation of carbon stock by multiplying the area with the mean biomass stock of Swiss forests <sup>1)</sup>
		Land based	804	-90580	1437	-161884	3305	-80942	Authorisations by forest agencies	high	Estimation of carbon stock by multiplying the area with the mean biomass stock of Swiss forests <sup>1)</sup>
Afforestation/ Reforestation	Land Use/ Flexible	Activity based	28568 28568	98140 98140	47613 28568	257034 210302	109510 28568	537435 168242	Scenario 1 Scenario 2	medium	Area and volume increase derived from NFI 1 and 2 (1985 and 1995 respectively) <sup>2)</sup> .
		Land based	28568 28568	1031680 1031680	47613 28568	2124113 1143841	109510 28568	1470975 168242	Scenario 1 Scenario 2	medium	Area and volume increase derived from NFI 1 and 2 (1985 and 1995 respectively) <sup>2)</sup> .
Deforestation	Land Use/ Flexible	Activity based	804	-90580	1437	-161884	3305	-80942	Authorisations by forest agencies	high	Estimation of carbon stock by multiplying the area with the mean biomass stock of Swiss forests
		Land based	804	-90580	1437	-161884	3305	-80942	Authorisations by forest agencies	high	Estimation of carbon stock by multiplying the area with the mean biomass stock of Swiss forests

$a_I$  Area (ha) afforested and reforested, or deforested since 1990 up to 1995 or possibly an earlier specific year.  
 $C_I$  Carbon stock change (t C) since 1990 up to the same year as used in  $a_I$  on land afforested, reforested, and deforested.  
 $a_{II}$  Area (ha) afforested and reforested, or deforested since 1990 up to 1999 or an earlier specific year.  
 $C_{II}$  Carbon stock change (t C) since 1990 up to the same year as used in  $a_{II}$  on land afforested, reforested, and deforested.  
 $a_{cp}$  Projected area (ha) afforested and reforested, or deforested since 1990 up to 2012.  
 $C_{cp}$  Projected carbon stock change (t C) over the first commitment period on land afforested, reforested, and deforested since 1990 up to 2012.  
Methods and approaches Specify: a) Forest definition used; b) Definitions for afforestation, reforestation and deforestation used; c) Applied accounting approaches; d) Included carbon pools; e) Other.

All figures of stock changes represent biomass only, changes in soil carbon are not assessed.

- 1) Statistics provide only data on the year of deforestation permission. Deforestation area is counted in the year in which permission is given. It may be executed 1 to 4 years later
- 2) Forest area and standing volume are assessed by the National Forest Inventory 1 and 2 in the years 1983 – 1985 and 1993 – 1995 respectively. The increase in area and of the standing volume is calculated by linear interpolation for the years 1990 to 1995 ( $a_I$ ,  $C_I$ ). In activity based figures, the growth of biomass in the respective years is accounted only. In land based figures the existing tree biomass in the year at which the area changes from non forest to forest is also accounted.  
Scenario 1: The forest area is assumed to increase linearly as in the period from 1985 to 1995. This scenario provides a maximum possible amount of sequestration.  
Scenario 2: The forest area is assumed to stay stable after 1995. This scenario provides the minimum amount of sequestration.

### **Definitions of forest:**

National forest inventory: Crown cover at least 20 %, top height at minimal 3 m and width of the area at least 25 m.

Forest Law: Area at least 200 m<sup>2</sup>, width at least 10 m and trees must be 10 years old.

**Afforestation** is the change from non-forest to forest.

Afforestation and reforestation are not differentiated in the Swiss forest law. Any other use of a forested area, even if it is only for a limited time period needs a deforestation authorisation. It has to be clarified whether some deforestation according to the Swiss law are deforestations according to the KP definitions, because they are “reforested” within a few years.

Figures include biomass only.

Comment to the difference in afforestation between IPCC/FAO and Land Use/Flexible Scenario: The difference is due to the area with natural regeneration, which is a generally admitted principle of Swiss forest policy with the goal to get stands with site adapted species composition. The natural regeneration is partly also due to protection works like artificial windbreaks or avalanche protection and can be taken as human induced. The high removal under the flexible or the land use scenarios could be interpreted as an argument against these scenarios. But it should be taken into account, that by including areas with natural regeneration the area under control of the Kyoto Protocol could be augmented. This means that emissions at a later stage would be counted as a debit to the assigned amount of a Party at least with a land based approach, which we support. Otherwise neither emissions nor removals would be controlled.

The influence of activity based and land based on deforestation figures seems to be negligible but is not yet assessed on afforestation figures.

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