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**Report of the technical assessment of the forest management
reference level submission of Austria submitted in 2011**

Contents

	<i>Paragraphs</i>	<i>Page</i>
I. Introduction and summary	1–3	3
A. Overview	1–2	3
B. Proposed reference level.....	3	3
II. General description of the reference level.....	4–28	3
A. Overview	4	3
B. How each element of footnote 1 to paragraph 4 of decision 2/CMP.6 was taken into account in the construction of the reference level.....	5–11	4
C. Pools and gases.....	12	5
D. Approaches, methods and models used	13–17	5
E. Description of the construction of the reference levels	18–26	6
F. Policies included.....	27–28	7
III. Conclusions and recommendations.....	29–31	7
Annex		
Documents and information used during the technical assessment		9

I. Introduction and summary

A. Overview

1. This report covers the technical assessment (TA) of the submission of Austria on its forest management reference level (FMRL), submitted on 15 April 2011 in accordance with decision 2/CMP.6. The TA took place (as a centralized activity) from 23 to 27 May 2011 in Bonn, Germany, and was coordinated by the UNFCCC secretariat. The TA was conducted by the following team of nominated land use, land-use change and forestry experts from the UNFCCC roster of experts: Mr. Jim Penman (United Kingdom of Great Britain and Northern Ireland), Mr. Sandro Federici (San Marino), Ms. Gro Hølen (Norway), Mr. Agustín Inthamoussu (Uruguay), Mr. Mattias Lundblad (Sweden) and Mr. Nalin Srivastava (India). Mr. Jim Penman and Mr. Sandro Federici were the lead reviewers. The TA was coordinated by Ms. María José Sanz-Sánchez (UNFCCC secretariat).

2. In accordance with the “Guidelines for review of submissions of information on forest management reference levels” (decision 2/CMP.6, appendix II, part II), a draft version of this report was communicated to the Government of Austria, which provided comments that were considered and incorporated, as appropriate, into this final version of the report.

B. Proposed reference level

3. Austria has proposed an FMRL for the period 2013–2020 with and without explicit estimation of harvested wood products (HWP), as follows:

(a) –6.516 million tonnes of carbon dioxide equivalent (Mt CO₂ eq) per year with HWP estimated on the three-time constant basis set out in document FCCC/KP/AWG/2010/18/Add.1, chapter II, annex I, paragraph 27;

(b) –2.121 Mt CO₂ eq per year assuming instantaneous oxidation of HWP.

II. General description of the reference level

A. Overview

4. The FMRL is a projection based on historical data taken from Austrian national forest inventories (NFIs) conducted for the periods 1981–1985, 1986–1990, 1992–1996 and 2000–2002, and the “Wood and biomass supply study”, published in 2009 on the basis of survey work undertaken between 2007 and 2008.¹ These are the most up-to-date data sources that were available at the time of the FMRL calculation. Austria has recently finished its most recent NFI (2007–2009), which was included in the submission for verification purposes only because it was not available when the FMRL was estimated.

¹ Schadauer, K, Bauhansl, C, Eckmüllner, O, Englisch M, Gschwantner, T, Katzensteiner, K, Ledermann, T, Mannsberger, G, Neumann, M, Reiter R, Schedl, P, Spiegel H and Wresowar M. 2009. Holz- und Biomassenstudie, *BFW-Praxisinformation*. 18.

B. How each element of footnote 1 to paragraph 4 of decision 2/CMP.6 was taken into account in the construction of the reference level**1. Historical data from greenhouse gas inventory submissions**

5. Austria's 2010 greenhouse gas (GHG) inventory and the FMRL are based on the results of the 2000–2002 NFI. A higher harvesting rate than the historical level is used for the FMRL, based on the 2009 "Wood and biomass supply study" (see paragraph 4 above). This study, and the results from the most recent NFI (2007–2009) will be used in reporting under the Convention and the Kyoto Protocol for the national GHG inventory in 2012.

6. Two inconsistencies exist between the FMRL and the treatment of forest management over the next commitment period. Both are evaluated by Austria and by the expert review team (ERT) as conservative, as follows:

(a) The forest area considered under the FMRL is projected to be 4 per cent higher than the projected area under forest management in 2020 as discussed in Austria's FMRL submission, since removals from areas expected to be deforested, according to historical deforestation rates, have not been excluded from the projection. This inconsistency results in an overestimation of net removals and a more demanding FMRL;

(b) Biomass loss due to mortality is excluded in the FMRL, resulting in underestimation of emissions and a more demanding FMRL.

2. Age-class structure

7. Austria's three most recent NFIs show about 60 per cent of total forest area with trees in the four age classes up to 80 years, falling to approximately 5 per cent of the area with trees older than 140 years. The projections show a relative increase in the younger age classes in future years. As a consequence, the increment in 2020 is projected to be 29.3 million m³ per year and the loss is projected to increase from 25.8 at present to 31 million m³ per year in 2020. For calculating the FMRL, Austria assumed a constant increment of 29.8 million m³ per year, based on the weighted average of the last NFIs available at the time of compiling the FMRL submission.

3. The need to exclude removals from accounting in accordance with decision 16/CMP.1, paragraph 1

8. See paragraph 26 below.

4. Other elementsForest management activities already undertaken

9. Austria has a long tradition of forest utilization and conservation. The Federal Ministry of Agriculture, Forestry, Environment and Water Management has recently developed an Austrian Forest Programme (2006) in order to further develop responsible forest management. Policy measures supporting and promoting an increase in demand for woody biomass are currently the most important drivers for harvest activities in Austria.

Projected forest management activities under a 'business as usual' scenario

10. Austria aims, in the context of policies adopted and implemented up to mid-2009, to maintain forest cover, which, at about 47 per cent, is currently one of the highest in Central Europe, and to increase the share of renewable energy sources such as biomass.

Continuity with the treatment of forest management in the first commitment period

11. Austria did not report forest management activities in the first commitment period under the Kyoto Protocol.

C. Pools and gases**Pools and gases included in the reference level and consistency with inclusion of pools in the estimates**

12. The pools and gases considered in calculating the FMRL are consistent with the pools currently reported under the Convention: above-ground biomass, below-ground biomass and dead wood. Changes in the dead wood pool are considered to remain constant up to 2020, at the level contained in the 2000–2002 NFI (0.6 Mt CO₂ per year). Litter pools and soil organic carbon pools are assumed to be in equilibrium in the FMRL, but Austria intends to make a technical correction to its FMRL as soon as national estimates for these pools are available.

D. Approaches, methods and models used**1. Description**

13. There is methodological consistency between the FMRL reported by Austria and the national reporting under the Convention, as both are built on the results of Austria's NFI.

14. The "Wood and biomass supply study" referred to in paragraph 4 above, includes projections for 2020, using the growth and harvest models implemented in a simulation program called PROGNAUS. This is an empirical model which was also derived from, and validated for, Austrian forest conditions based on the results of the 2002 NFI.

15. The increase in harvesting rates in recent years – after the 2000–2002 NFI – registered in the Austrian statistics of harvested timber, correlates with the forecast trend of future harvesting rates up to 2020 assumed in the model.

16. Based on trends over the past decade, it was assumed that an increase of harvesting intensity does not cause changes in increment, which remained quite stable throughout recent decades. The annual wood increment, used for deriving the FMRL, is calculated as the mean of the increments from the 1986–1990, 1992–1996 and 2000–2002 NFIs (31.4, 27.3 and 31.3 million m³ per year, respectively), the values weighted according to the length of the assessment periods. The increment from the 2007–2009 NFI (30.4 million m³ per year) was not included in this calculation because it was viewed as inconsistent with the input data (that is, the NFIs up to 2002) used in the "Wood and biomass supply study" to estimate harvesting rates. The weighted mean increment resulting from this calculation (29.8 million m³ per year) is greater than the projected increment from the study (29.3 million m³ per year), and correspondingly conservative.

2. Transparency and consistency

17. Transparency and an understanding of consistency were evident in the Austrian submission and the replies received to questions during the TA.

E. Description of the construction of the reference levels

1. Area under forest management

18. The area under forest management was taken from the 2000–2002 NFI and embraces a total area of 3.37 million ha (which corresponds to “forest in yield”²). It is assumed that the total Austrian area under forest management will stay constant until 2020. The 3.37 million ha area includes land that will be accounted for under Article 3, paragraph 3, of the Kyoto Protocol and may therefore be about 4 per cent greater than the area which will actually be accounted for under forest management. This is conservative, since the FMRL is not reduced for projected deforestation and afforestation/reforestation activities, which will constitute a net removal (see annex).

2. Relationship of the forest land remaining forest land category with the forest management activity reported previously under the Convention and the Kyoto Protocol

19. Austria decided not to account for forest management during the first commitment period.

3. Forest characteristics

20. Total national forest area in Austria has been increasing across the forest inventories used for sourcing historical data applied in the FMRL calculation. Currently it comprises a total of 3.96 million ha, of which “forest in yield” embraces a total area of 3.37 million ha. The latter is the basis for the FMRL; the remaining 0.59 million ha is non-productive forest area, where no net changes in carbon stocks are assumed to take place.

4. Historical and assumed harvesting rates

21. Harvesting rates increased from 19 million m³ per year in 1990 to 25.8 million m³ per year in 2007–2009 according to the last NFI. Taking into account the forest status and growth and other variables such as demand, sustainability policies, available timber for harvesting, forest access and four different timber price scenarios, the rate is projected to increase to 31 million m³ per year by 2020.

22. The ERT noted that the FMRL calculation took into account the four different timber price scenarios, including a very wide range from EUR 71/m³ (a past value) to EUR 162/m³ (based on the assumption that wood price will double during the 2013–2020 period). The FMRL is based on the average price and, in the view of the ERT, is not unduly sensitive to the extremes.

23. The harvesting rate projection (31 million m³ per year) is expected to exceed the value of the increment (29.8 million m³ per year) in 2020. This difference is the main reason behind the reduction of the forest as a net sink from the current –7.3 Mt CO₂ to the level submitted to be the reference level, that is, –2.12 Mt CO₂.

5. Harvested wood products

24. In order to estimate emissions from HWP, the simulation model FOHOW has been used, based on Austria’s national circumstances. Historical data from the Food and Agriculture Organization of the United Nations dating back to 1961 have been included. The first-order decay function from the *2006 IPCC Guidelines for National Greenhouse Gas Inventories* has been applied. The data have been aggregated to the appropriate

² Forest managed for wood production purposes.

categories and time constants taken from document FCCC/KP/AWG/2010/18/Add.1, chapter II, annex I, paragraph 27.

6. Disturbances in the context of force majeure

25. The simulation model used by Austria to calculate the FMRL does not include any consideration of disturbances in the context of force majeure.

7. Factoring out

26. Use of a projected reference level which includes age-class structure is considered to factor out dynamic age-class effects. The effects of elevated CO₂ concentrations and indirect nitrogen deposition occur in both the reference level and the commitment period estimates, and therefore, based on current scientific knowledge, they can be assumed to factor out.

F. Policies included

1. Description of policies

27. At 47 per cent of the total land area, forest is clearly a characteristic element of the Austrian landscape. The forest cover has been expanding since 1961, to presently cover a total area of nearly 4 million ha. Austrian forest management aims to guarantee the stability of forest cover and mainly focuses on targets to maintain biodiversity, productivity, regeneration capacity and vitality of forests and to improve adaptation to changing conditions. The forest sector has recently been playing a key role as a supplier of renewable energy sources and other sustainable raw materials. Several policies related to the use of biomass as a renewable source have been used in the calculation of the FMRL and are clearly and transparently reported in the submission.

2. How policies are taken into account in the construction of the reference level

28. Policies have been taken into account in the construction of the reference level by increasing the harvesting rates registered in the past (2000–2002 NFI); these policies are currently considered under the ‘business as usual’ scenario.

III. Conclusions and recommendations

29. Austria has submitted a transparent FMRL suitable for consideration by the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol at its seventh session.

30. Austria intends to make a technical correction to its FMRL as soon as national estimates for the litter and soil pools are available.

31. Austria’s submission contains results from the latest NFI, conducted in 2007–2009. These results were not used for the FMRL calculation.³ Austria does not envisage updating the FMRL to take account of this information, on the grounds that the variables and parameters used at the time of calculating the FMRL (e.g. results from NFIs up to 2002) would not be affected. The ERT believes that the FMRL should in principle take account of the most recent data available at the time of estimation and suggests that Austria should assess whether including the 2007–2009 data would make a significant difference to the

³ These data were included for information and verification purposes since they became available too late to be included in the FMRL estimate.

FMRL, and, if so, should it include this with the technical correction mentioned in paragraph 30 above.

Annex

Documents and information used during the technical assessment

A. Reference documents

Submission of information on forest management reference levels by Austria in accordance with decision 2/CMP.6, 15 April 2011. Available at <http://unfccc.int/files/meetings/ad_hoc_working_groups/kp/application/pdf/awgkp_austria_2011.pdf>.

Submission of information on forest management reference levels by Hungary and the European Commission on behalf of the European Union, 13 April 2011. Available at <<http://unfccc.int/5896.php>>.

National greenhouse gas inventory of Austria submitted in 2010. Available at <<http://unfccc.int/5270.php>>.

National greenhouse gas inventory of Austria submitted in 2011. Available at <<http://unfccc.int/5888.php>>.

B. Additional information provided by the Party¹

The information shown in table 1 comes from the Austrian forest management reference level (FMRL) submission and further explanations provided by Austria during the centralized technical assessment.

<i>Reconciliation of area data</i>	<i>Area (1000 ha)</i>
(1) “Forest in yield” area according to NFI 2000–2002 (basis for the “Wood and biomass supply study” and basis for FMRL)	3 371
(2) Total AR area of “forest in yield” from 1990 to 2001 (mean year of NFI period 2000–2002)	74
(3) Total D area of “forest in yield” from 2001 until 2020 (assuming same annual D rates of “forest in yield” as in the NFI period 2001)	52
(4) (1) minus (2) equals total “forest in yield” FM area in 2001	3 297
(5) (4) minus (3) equals total “forest in yield” FM area in 2020	3 244

The “forest in yield” area according to the 2000–2002 national forest inventory (point 1 in table 1) is the forest area available for wood harvesting and was the basis for the “Wood and biomass supply study”.² This “forest in yield” area in 2001 also includes afforestation and reforestation (AR) areas of “forest in yield” since 1 January 1990 (point 2), which are accounted for under Article 3, paragraph 3, of the Kyoto Protocol. In assessing the development of the area subject to deforestation between 2001 and 2020, Austria assumes a constant increase as in 1990–2001 (see point 3). These are areas which will lose their status of forest management land and change to another category of land use to the Article 3,

¹ Reproduced as received from the Party.

² The remaining forest area between the difference of the “forest in yield” area and the total Austrian forest area is “protective forest not in yield”, where no harvest occurs.

paragraph 3, accounting. The difference between (4) and (1) is approximately 2 per cent. The difference between (5) and (1) is approximately 4 per cent, which is the total difference between the forest area considered in the FMRL and the area potentially accounted for under forest management in 2020.

Information on projected harvest from forest land remaining forest land is shown in table 2.³

<i>Projected harvest as a function of price</i>		<i>Projections</i>		
	<i>Price scenarios</i>	<i>2010</i>	<i>2015</i>	<i>2020</i>
Million m ³ over bark	EUR 71/m ³	26.7	27.8	29.0
	EUR 81/m ³	28.0	29.1	30.4
	EUR 100/m ³	29.0	30.2	31.5
	EUR 162/m ³	30.5	31.7	33.1

³ Austrian fifth national communication, table 5.12, p. 124.