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

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## **I. Introduction and summary**

### **A. Overview**

1. This report covers the technical assessment (TA) of the submission of Belarus on its forest management reference level (FMRL), submitted on 14 March 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 Hylen (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 Belarus, which provided comments that were considered and incorporated, as appropriate, into this final version of the report.

### **B. Proposed reference level**

3. Belarus has proposed an FMRL of –30.02 million tonnes of carbon dioxide equivalent (Mt CO<sub>2</sub> eq) per year. This consists of gross removals of –40.96 Mt CO<sub>2</sub> eq per year and total emissions of 10.94 Mt CO<sub>2</sub> eq per year (10.36 Mt CO<sub>2</sub> eq due to harvesting, 0.04 Mt CO<sub>2</sub> eq due to forest fires, and 0.54 Mt CO<sub>2</sub> eq due to soil drainage).

## **II. General description of the reference level**

### **A. Overview**

4. Belarus proposes to use a historical FMRL based on 1990 data, and has provided relevant information about these data in two documents. The documents comprise its submission according to the provisions of decision 2/CMP.6, and its 2011 national greenhouse gas (GHG) inventory. They are mutually consistent, and the technical correctness of the calculations has been checked by the expert review team (ERT) using additional information provided by the Party during the TA.

### **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. The historical data applied are those reported in the 2011 national GHG inventory submission.

**2. Age-class structure**

6. Age-class structure is reported in Belarus's national inventory report (NIR) tables 7.4–7.6, contained in the 2011 national GHG inventory submission. Net removals for the above-ground biomass pool have been calculated using the age-class structure reported for 1990 (young: 42.3 per cent, mean: 42.2 per cent, ripening: 11.0 per cent, ripe and overripe: 4.5 per cent). In the period 1990–2009, the age-class structure shows a relative decrease in the young age class<sup>1</sup> and a relative increase in the older age classes.

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

7. See paragraph 24 below.

**4. Other elements**

Forest management activities already undertaken

8. Since Belarus proposes to use 1990 as its reference level, the contribution of forest management activities to the FMRL is limited to those activities implemented before 1990.

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

9. Belarus has submitted estimates of net emissions/removals of projected forest management activities for the period 2013–2020. The projection assumes the following: a 23.5 per cent increase in the harvesting rate from 2009 to 2015; emissions due to forest fires at the 1990 to 2009 average; an increasing area under forest management due to planned forest expansion; increasing emissions from soil drainage as the area of forest cover increases; and a constant age-class structure so that, year by year, the new forest area is shared among each age class proportional to its contribution to the total area. It could be noted that, by analogy with the assumption made for projecting emissions from soil drainage, emissions from forest fires should be projected to increase because of the increase in forest area. Assuming a constant age-class structure may not be consistent with the projected increase in harvesting and in the forest area, since new forests are young forests. This is likely to have resulted in the underestimation of future gross removals.

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

10. Belarus did not report forest management activities in the first commitment period.

**C. Pools and gases**

**1. Pools and gases included in the reference level**

11. Belarus has included the above-ground biomass pool, CO<sub>2</sub> emissions from the burning of forest biomass and the drainage of forest organic soils.

**2. Consistency with inclusion of pools in the estimates**

12. Two inconsistencies have been identified: methane and nitrous oxide (N<sub>2</sub>O) emissions from the burning of forest biomass, and N<sub>2</sub>O emissions from the drainage of forest organic soils, have not been included in the FMRL, although for both processes the non-CO<sub>2</sub> emissions have been included in Belarus's 2011 GHG inventory. Since these sources are purely emissive, non-inclusion in the FMRL is conservative. Below-ground

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<sup>1</sup> Before 2001, the young age class was subdivided into two age classes: young I and young II.

biomass is neither included in the inventory nor in the FMRL but could be included using tier 1 methods. Dead organic matter and mineral soil organic matter are assumed to be in equilibrium, consistent with tier 1 practice.

## **D. Approaches, methods and models used**

### **1. Description**

13. Belarus applied three methodologies for estimating its anthropogenic GHG emissions and removals from lands subject to forest management. Methods have been used in a manner consistent with each other.

14. The first methodology is the Intergovernmental Panel on Climate Change (IPCC) gain–loss method, which has been used for estimating carbon stock changes of the above-ground biomass pool. Gain has been estimated by stratifying (see tables 7.4–7.6 of Belarus’s 2011 NIR) the forest area under management by age class and vegetation type and then by multiplying a specific growth rate value (see table 7.7) per the area covered by each stratum. Losses have been estimated according to the historical harvesting rate (see figure 7.1 and table 7.11 of Belarus’s 2011 NIR) and historical forest fires data (see tables 7.7 and 7.11 of Belarus’s 2011 NIR).

15. The second methodology is the IPCC default method, which has been used to estimate non-CO<sub>2</sub> emissions from forest fires (see table 7.8 of Belarus’s 2011 NIR).

16. The third methodology is the IPCC default method for estimating CO<sub>2</sub> emissions from organic soils. Area data used for this purpose have been reported in Belarus’s NIR table 7.9 of its 2011 GHG inventory and the emission factor was communicated to the ERT in written form.

### **2. Transparency and consistency**

17. Belarus provided all necessary data and a comprehensive description of all methods used in calculating its FMRL. Apart from the inconsistencies already noted in paragraph 12 above, the reference value reported is comparable with the value reported for 1990 in the 2011 national GHG inventory.

## **E. Description of the construction of the reference levels**

### **1. Area under forest management**

18. Belarus reported the same area of forest land under forest management as was reported as being managed under the forest land remaining forest land category of the 2011 national GHG inventory for 1990.

### **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. The same methods and data have been applied to calculate the FMRL as were used to estimate emissions and removals from the forest land remaining forest land category.

### **3. Forest characteristics**

20. Data have been provided according to three forest types: coniferous, hardwood broadleaved and softwood broadleaved trees. The 1990 forest area included the three types

as follows: 65.5 per cent, 4.3 per cent and 30.2 per cent respectively; in 2009, the share slightly changed to 64.4 per cent, 3.7 per cent and 31.9 per cent respectively.

**4. Historical and assumed harvesting rates**

21. In calculating the FMRL, the 1990 historical harvesting rate has been used (see figure 7.1 and table 7.11 of Belarus's 2011 NIR).

**5. Harvested wood products**

22. Belarus accounted for harvested wood products (HWP) on the basis of instantaneous oxidation and expresses its intention to account for HWP using the three-time constant methodology when data become available.

**6. Disturbances in the context of force majeure**

23. Belarus has not excluded from the FMRL any emission due to disturbances.

**7. Factoring out**

24. With the present state of scientific knowledge, the effects of elevated CO<sub>2</sub> concentrations and indirect nitrogen deposition are considered to occur both in the reference level and in the commitment period estimates, and therefore they can be assumed to factor out. The dynamic age-class effects will remain over any given commitment period but may eventually be removed from accounting by being cancelled out over successive commitment periods.

**F. Policies included**

**1. Description of policies**

25. Belarus has created its projection based on the forest development programmes planned for the period 2011–2015, which include forest expansion. A list of indicators with numerical values for those policies has been included in the submission by Belarus under the provisions of decision 2/CMP.6.

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

26. As Belarus submitted as its FMRL the 1990 historical level of emissions and removals in lands under forest management, ongoing policies and measures since that point and the related level of 'business as usual' emissions and removals have not been taken into account.

**G. Other issues**

27. The ERT notes that the area used to calculate the FMRL is less than the total area of forest land in Belarus, and that forestry, which is currently not considered as being managed, may be brought under forest management in the future. Between 1990 and 2009, the areas under forest management increased by about 13.3 per cent (or about 937 kilohectares) in this way. Increases in area would effectively be accounted for on a gross-net basis.

### III. Conclusions and recommendations

28. The ERT found two inconsistencies relative to the provisions of decision 2/CMP.6:
- (a) Non-CO<sub>2</sub> GHG emissions due to forest fires have been excluded from the FMRL although CO<sub>2</sub> emissions have been included;
  - (b) N<sub>2</sub>O emissions from the drainage of organic forest soils have been excluded from the FMRL although CO<sub>2</sub> emissions have been included.
29. While omission of these sources from the FMRL is conservative, since these are both estimated in Belarus's national GHG inventory, the ERT recommends that Belarus considers revising its FMRL accordingly.
30. The ERT also recommends that Belarus makes a technical recalculation to add net carbon stock changes to the below-ground biomass pool, applying tier 1 methods.
31. To ensure transparency, the ERT recommends that Belarus reports the emissions factors used for calculating CO<sub>2</sub> and N<sub>2</sub>O emissions from the drainage of organic forest soils.

## Annex

### Documents and information used during the technical assessment

#### Reference documents

Submission of information on the forest management reference level by Belarus, 14 March 2011. Available at [http://unfccc.int/files/meetings/ad\\_hoc\\_working\\_groups/kp/application/pdf/awgkp\\_belarus\\_2011\\_english.pdf](http://unfccc.int/files/meetings/ad_hoc_working_groups/kp/application/pdf/awgkp_belarus_2011_english.pdf).

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

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

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