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## **Report on the technical assessment of the proposed forest reference emission level of the Dominican Republic submitted in 2022**

### *Summary*

This report covers the technical assessment of the voluntary submission of the Dominican Republic on its proposed forest reference emission level (FREL) in accordance with decision 13/CP.19 and in the context of results-based payments. The FREL proposed by the Dominican Republic covers the activities reducing emissions from deforestation, reducing emissions from forest degradation, sustainable management of forests, conservation of forest carbon stocks and enhancement of forest carbon stocks, which correspond to the full range of activities included in decision 1/CP.16, paragraph 70.

For its submission, the Dominican Republic developed a national FREL. The FREL presented in the original submission, for the reference period 2001–2015, corresponds to –14,819,265 tonnes of carbon dioxide equivalent per year. As a result of the facilitative process during the technical assessment, the FREL was modified to –7,979,584 tonnes of carbon dioxide equivalent per year.

The assessment team notes that the data and information used by the Dominican Republic in constructing its FREL are transparent, complete and in overall accordance with the guidelines contained in decision 12/CP.17, annex. This report contains the assessed FREL and a few areas identified by the assessment team for future technical improvement in accordance with the provisions on the scope of the technical assessment contained in decision 13/CP.19, annex.



## Abbreviations and acronyms

2006 IPCC Guidelines	<i>2006 IPCC Guidelines for National Greenhouse Gas Inventories</i>
2019 Refinement to the 2006 IPCC Guidelines	<i>2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories</i>
AD	activity data
AT	assessment team
BUR	biennial update report
CH <sub>4</sub>	methane
CO <sub>2</sub>	carbon dioxide
CO <sub>2</sub> eq	carbon dioxide equivalent
COP	Conference of the Parties
EF	emission factor
FAO	Food and Agriculture Organization of the United Nations
FREL	forest reference emission level
GHG	greenhouse gas
HWP	harvested wood products
IPCC	Intergovernmental Panel on Climate Change
LULUCF	land use, land-use change and forestry
N <sub>2</sub> O	nitrous oxide
NFI	national forest inventory
REDD+	reducing emissions from deforestation; reducing emissions from forest degradation; conservation of forest carbon stocks; sustainable management of forests; and enhancement of forest carbon stocks (decision 1/CP.16, para. 70)
SICA	Central American Integration System
SOC	soil organic carbon
TA	technical assessment
Wetlands Supplement	2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands

## I. Introduction and summary

### A. Overview

1. This report covers the TA of the voluntary submission of the Dominican Republic on its proposed FREL,<sup>1</sup> submitted on 11 February 2022, in accordance with decisions 12/CP.17 and 13/CP.19. The TA took place from 21 to 25 March 2022 and was coordinated by the secretariat.<sup>2</sup> The TA was conducted by two LULUCF experts from the UNFCCC roster of experts<sup>3</sup> (hereinafter referred to as the AT): Doru Leonard Irimie (Romania) and Luis Panichelli (Argentina). In addition, Fazle Rabbi Sadeque Ahmed (Bangladesh), an expert from the Consultative Group of Experts, participated as an observer<sup>4</sup> during the session. The TA was coordinated by Luca Birigazzi (secretariat).

2. In response to the invitation of the COP and in accordance with the provisions of decision 12/CP.17, paragraphs 7–15 and annex, the Dominican Republic submitted its proposed FREL on a voluntary basis. The proposed FREL is one of the elements<sup>5</sup> to be developed in implementing the activities referred to in decision 1/CP.16, paragraph 70. Pursuant to decision 13/CP.19, paragraphs 1–2, and decision 14/CP.19, paragraphs 7–8, the COP decided that each submission of a proposed FREL, as referred to in decision 12/CP.17, paragraph 13, shall be subject to a TA in the context of results-based payments.

3. The Dominican Republic provided its submission in Spanish. The submission is supported by an English-language Excel calculation tool developed by the Coalition for Rainforest Nations<sup>6</sup> covering land representation; AD database and digital image/plot data processing; land-use matrices; NFI biomass data processing; estimation of AD and EFs; the national GHG inventory results for the land sector, including all IPCC land-use categories; FREL results; and a graphical summary (annex I to the Excel file), which enhance the transparency of the FREL.

4. The objective of the TA is to assess the degree to which the information provided by the Dominican Republic is in accordance with the guidelines for submissions of information on reference levels<sup>7</sup> and to offer a facilitative, non-intrusive, technical exchange of information on the construction of the FREL with a view to supporting the capacity of the Dominican Republic to construct and improve its FREL in the future, as appropriate.<sup>8</sup>

5. The TA of the FREL submitted by the Dominican Republic was undertaken in accordance with the guidelines and procedures for the TA of submissions from Parties on proposed FRELS and/or forest reference levels.<sup>9</sup> This report on the TA was prepared by the AT following the same guidelines and procedures.

6. Following the process set out in those guidelines and procedures, a draft version of this report was communicated to the Government of the Dominican Republic. The facilitative exchange during the TA allowed the Dominican Republic to provide clarifications and additional information, which were considered by the AT in the preparation of this report.<sup>10</sup> As a result of the facilitative interactions with the AT during the TA, the Dominican Republic provided a modified version of its submission on 7 June 2022, which took into consideration the technical input of the AT. The modifications improved the clarity and transparency of the

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<sup>1</sup> The submission of the Dominican Republic is available at <https://redd.unfccc.int/submissions.html?country=DOM>.

<sup>2</sup> As per decision 13/CP.19, annex, para. 7.

<sup>3</sup> As per decision 13/CP.19, annex, paras. 7 and 9.

<sup>4</sup> As per decision 13/CP.19, annex, para. 9.

<sup>5</sup> See decision 1/CP.16, para. 71(b).

<sup>6</sup> “Foundational Platform for greenhouse gas inventories, forest reference levels, and monitoring, reporting and verification of the forest and land use sector” developed under the Reporting for Results-based REDD+ project.

<sup>7</sup> Decision 12/CP.17, annex.

<sup>8</sup> Decision 13/CP.19, annex, para. 1(a–b).

<sup>9</sup> Decision 13/CP.19, annex.

<sup>10</sup> As per decision 13/CP.19, annex, paras. 1(b), 13 and 14.

submitted FREL without needing to alter the approach used to construct it. This TA report was prepared in the context of the modified FREL submission.

## **B. Proposed forest reference emission level**

7. In decision 1/CP.16, paragraph 70, the COP encouraged developing country Parties to contribute to mitigation actions in the forest sector by undertaking a number of activities, as deemed appropriate by each Party and in accordance with their respective capabilities and national circumstances, in the context of providing adequate and predictable support. The FREL proposed by the Dominican Republic, on a voluntary basis for a TA in the context of results-based payments, covers the activities reducing emissions from deforestation, reducing emissions from forest degradation, sustainable management of forests, conservation of forest carbon stocks and enhancement of forest carbon stocks, which are five of the five activities referred to in that paragraph. Pursuant to paragraph 71(b) of the same decision, the Dominican Republic developed a national FREL that covers its entire territory, with the exception of some small islands. For its submission, the Dominican Republic applied a stepwise approach to developing its FREL in accordance with decision 12/CP.17, paragraph 10. The stepwise approach enables Parties to improve their FREL by incorporating better data, improved methodologies and additional pools.

8. The national FREL proposed by the Dominican Republic for the historical reference period 2001–2015 is the annual average of net emissions and removals for all five REDD+ activities. The analysis was carried out at the national level, following the gain–loss method proposed in the 2006 IPCC Guidelines and implementing a country-specific Excel calculation tool. The AD used were obtained from the land use and land-use change assessment, which was carried out on the basis of a sampling approach (IPCC approach 3) using the Collect Earth tool, with high-resolution images (Google Earth and Bing Maps) available for 2005–2015 and low-resolution (Landsat) images available for the interpretation of land cover for 2000–2015. Information on EFs was obtained primarily from data from the Dominican Republic’s NFI, as well as national statistics, country-specific research, scientific literature and default values from the 2006 IPCC Guidelines, the Wetlands Supplement and the 2019 Refinement to the 2006 IPCC Guidelines. The FREL presented in the modified submission, with the aim of accessing results-based payments for REDD+ activities for 2016–2020, corresponds to  $-7,979,584$  t CO<sub>2</sub> eq/year.<sup>11</sup>

9. The proposed FREL includes the pools above-ground biomass, below-ground biomass, deadwood, litter and soil. Regarding GHGs, the submission includes CO<sub>2</sub>, as well as CH<sub>4</sub> and N<sub>2</sub>O emissions from forest fires. In relation to the SOC pool, the submission includes CO<sub>2</sub> but does not include direct N<sub>2</sub>O associated with the drainage of organic soils.

10. The FREL proposed by the Dominican Republic is its second FREL submitted in the context of applying the stepwise approach in accordance with decision 12/CP.17, paragraph 10. Its previous national FREL was submitted on 6 January 2020 and was subject to a TA in June 2020;<sup>12</sup> it covered the activities reducing emissions from deforestation, reducing emissions from forest degradation and enhancement of forest carbon stocks for the reference period 2006–2015. The previous assessed FREL corresponded to  $2,200,494$  t CO<sub>2</sub> eq/year (only CO<sub>2</sub>) and was therefore higher than the FREL proposed in the most recent submission. The assessed FREL proposed in the modified 2020 submission differs from that in the modified 2022 submission owing mainly to the addition of two new REDD+ activities, namely sustainable management of forests and conservation of forest carbon stocks, and the associated (gain–loss) estimation methodologies.

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<sup>11</sup> In its original submission, the Dominican Republic proposed a national FREL of  $-14,819,265$  t CO<sub>2</sub> eq/year for 2001–2015. The difference between the original and the modified submission is due mostly to changes in values for forest regrowth in forest land remaining forest land.

<sup>12</sup> See document FCCC/TAR/2020/DOM.

## **II. Data, methodologies and procedures used in constructing the proposed forest reference emission level**

### **How each element in decision 12/CP.17, annex, was taken into account in constructing the forest reference emission level**

#### **1. Information used by the Party in constructing its forest reference emission level**

11. For constructing its FREL, the Dominican Republic used estimation methodologies that are consistent with those provided in the 2006 IPCC Guidelines. The Party's FREL is not subject to adjustments for national circumstances under the provisions of decision 12/CP.17, paragraph 9.

12. The FREL is based on the average historical net emissions and removals (in CO<sub>2</sub> eq) associated with all the activities referred to in decision 1/CP.16, paragraph 70, namely reducing emissions from deforestation, reducing emissions from forest degradation, conservation of forest carbon stocks, sustainable management of forests and enhancement of forest carbon stocks, which cover the entire country with the exception of some small islands. The selected reference period is from 1 January 2001 to 31 December 2015.

13. AD were collected through the visual interpretation of sample area units of 1 ha (100x100 m) distributed over the country in a systematic grid measuring 2.5x2.5 km, resulting in 7,696 sample units. Land use and land-use change were analysed by interpreting the normalized difference vegetation index using the Collect Earth Desktop tool, with 5x5 m high-resolution images (Google Earth and Bing Maps) for 2005–2015 and 30x30 m low-resolution images (Landsat) available for 2000–2015.

14. Forest lands are stratified by forest type (humid forest, dry forest, coniferous forest, mangroves, and perennial crops (mainly coffee and cocoa)); croplands include annual crops and sugarcane; grasslands include wet scrub, dry scrub and grass; settlements are recorded as urban areas; and wetlands and other lands are not further subclassified.

15. The EFs were obtained either from NFI and other country-based statistic or default values from 2006 IPCC Guidelines, the Wetlands Supplement and the 2019 Refinement to the 2006 IPCC Guidelines. These EFs were applied to the IPCC land-use categories forest land remaining forest land, land converted to forest land and forest land converted to another land use (cropland, grassland, wetlands, settlements and other land).

#### **2. Transparency, completeness, consistency and accuracy of the information used in constructing the forest reference emission level**

##### **(a) Methodological information, including description of data sets, approaches and methods**

16. In its most recent modified FREL submission, the Dominican Republic described the following changes from previously submitted information in accordance with decision 12/CP.17, annex, paragraph (b):

- (a) Increase of sampling intensity from 5x5 km to 2.5x2.5 km grid;
- (b) Use of higher tier estimates and 20-year transition period for SOC;
- (c) Use of gain–loss method for the categories forest land remaining forest land, land converted to forest land and forest land converted to another land use (cropland, grassland, wetlands, settlements and other land);
- (d) Calculation of annual gains and emission estimates;
- (e) Inclusion of CH<sub>4</sub> and N<sub>2</sub>O estimates for forest fires.

17. During the TA, the AT identified the following differences in methods and data used between the Dominican Republic's previous and most recent modified FREL submission:

- (a) Inclusion of additional REDD+ activities (i.e. conservation of forest carbon stocks and sustainable management of forests);
- (b) Change of FREL reference period from 2006–2015 to 2001–2015;
- (c) Enhanced consistency between the FREL, national GHG inventory and estimation methodology using the latest data from the national GHG inventory.

18. The Dominican Republic constructed its FREL using a land-based approach and the forest-related information from the national GHG inventory under the LULUCF sector. The AT commends the Dominican Republic for its efforts to include all REDD+ activities. The AT noted however that reporting aggregated REDD+ activities may affect the transparency and accuracy of the FREL. The AT commends the Dominican Republic for providing clarifications that allowed the AT to evaluate the risk of double counting, as well as the risk of overestimation or underestimation of GHG emissions and removals in forest lands remaining forest lands.

19. In the 2020 FREL submission, the Dominican Republic used the most recent reported national GHG inventory submitted as part of its first BUR in 2020. The previous AT found that the 2020 FREL was not consistent with the most recent national GHG inventory submitted by the Party. The Dominican Republic indicated in its 2022 FREL and clarified during the current TA that it is currently working on updating its national GHG inventory, which will be published in 2022 and included as part of the Party's second BUR. That updated national GHG inventory will be fully consistent with the 2022 FREL. The AT commends the Dominican Republic for its efforts while noting that consistency with the 2022 national GHG inventory will need to be evaluated once the second BUR has been submitted to the UNFCCC.

20. The AD were obtained on the basis of a sampling approach (IPCC approach 3, see para. 13 above) characterized by spatially explicit observations of land-use categories and land-use conversions. Forest land was stratified by forest type (humid forest, dry forest, coniferous forest, mangroves, and perennial crops (mainly coffee and cocoa)). For the purpose of performing a multi-temporal visual evaluation and reducing bias associated with interpretation and geolocation errors, a reference classification protocol was established. The Collect Earth tool was used to facilitate data collection and interpret medium and high spatial resolution imagery in Google Earth, Bing Maps and Google Earth Engine. Both high-resolution (5x5 m) and low-resolution (30x30 m) images were used in the Collect Earth tool and a normalized difference vegetation index was used to support the identification of changes to land cover and ensure consistency in the interpretation of both the high- and low-resolution images of the same plot.

21. A hierarchical rule was used to assign one and only one land-use class to each plot, on the basis of the percentage of the area within each sampling unit that had a particular type of land cover, beginning with forest (at least 30 per cent of the plot area). If this condition was met, the plot was assigned as forest land. If not, an evaluation of the percentage of other land covers was conducted until the minimum threshold for each category was met, according to the following order: cropland, at least 20 per cent; grassland, at least 20 per cent, wetland, at least 20 per cent; settlement, at least 20 per cent; and other land, at least 80 per cent. Once data collection was complete, a database was extracted from the Collect Earth tool with all the information recorded for each of the 7,696 plots from 2000 to 2015. Each plot included the time series indicating whether the plot had remained in the same category of use of land or there had been a conversion of land use and, in the case of the latter, the year of conversion. For the data analysis of the 7,696 plots, a coding system was created to aggregate plots with the same land use or land use change trajectory (that is, the combination of land-use changes that occurred in a plot across the whole time series). The total area occupied by plots coded as a particular land-use trajectory was calculated by multiplying the number of plots coded as that trajectory by the expansion factor of 620.68 ha, which was calculated by dividing the total area of the country (4,777,380 ha) by the total number of plots on the grid (7,696 plots). The AT considers this approach statistically sound.

22. The Party applied the gain–loss method to estimate emissions and removals in forest land remaining forest land and in the categories for land converted to another land use. For the case of land remaining forest land, the Party indicated that its forests are situated in an

area frequently affected by tropical storms and hurricanes, which generate specific conditions in the forests preventing them from reaching total stability. As those forests have been affected during or prior to the reference period, they are all considered secondary forests, with a growth rate corresponding to young forest regrowth after natural disturbances. Nevertheless, the Party estimated emissions from disturbances in forest land remaining forest land, including only the areas affected by forest fires. In the modified FREL submission, the result of the applied growth rates and the exclusion of losses due to disturbances result in net removals from forest land remaining forest land of  $-9,150,371$  t CO<sub>2</sub> eq that corresponds to 115 per cent of the FREL. The Dominican Republic indicated that the same approach was used for the national GHG inventory and that the estimation of areas affected by natural disturbances is an area for further technical improvement as it is currently not possible to separate natural from anthropogenic disturbances, with the exception of forest fires, which are mostly of anthropogenic origin. The AT understands that this approach resulted in an overestimation of net GHG removals in forest land remaining forest land and that the country should consistently apply the gain–loss method to account for both (expected) gains and (historical) losses due to natural disturbances and identified this as an area for further technical improvement.

23. Fire AD are reported in table 19 of the original FREL submission. In the preliminary questions the AT sought clarification on the source of information used by the Dominican Republic to derive these data, which were unpublished. The AT commends the Dominican Republic for sharing the source of the data and considers that publishing such information will increase the transparency of the FREL submission. During the TA the AT sought further clarification on the areas affected by forest fires to understand whether such areas included in forest land remaining forest land only or forest land converted to non-forest land as well as forest land remaining forest land. The Party indicated that such areas may also include fires used as a land-clearing technique to prepare land for non-forest purposes and that it was not possible to separate the two land categories through visual interpretation. The Party acknowledged that the vast majority of forest fires are human-caused, while natural fires represent a tiny minority (in the range of 1–2 per cent of fire-affected areas). The AT noted that if these areas are also counted as deforestation, the use of these data may result in an overestimation of emissions from forest fires, and consider this as an area for further technical improvement. In the modified FREL submission the Party indicated that forest fires are counted under the category of forest land remaining forest land as long as the severity of the fire does not restrict the process of restoration and re-establishment of forest canopy cover. The AT noted the separation of forest fires occurring in forest land remaining forest land and forest land converted to non-forest land as an area for further technical improvement.

24. The Party reported biomass losses in forest land remaining forest land including roundwood extraction and excluding fuelwood extraction and illegal logging. Annual values of wood extraction from forest land are reported in table 17 of the original FREL submission as between 32,000 and 85,000 m<sup>3</sup>/year, which, relative to the approximate forest area of the country (ca.1.8 million ha), represent annual values of between 0.02 and 0.05 m<sup>3</sup>/ha/year. This represents an insignificant share of the increment figures included as gains in the estimates (e.g. 1.73 m<sup>3</sup>/ha/year for tropical humid forest remaining in the same category). The AT asked for clarification on the reason for such low wood extraction values. During the TA week the Party indicated that approximately 85–90 per cent of the timber consumed is imported and only 10–15 per cent is produced domestically, and also that the area under forest management, including forest plantations, covers less than 10 per cent of the area under forest cover. The AT noted that including this information in the FREL will increase the transparency and clarity of the reporting. The Party also indicated that the low values may also be due to the lack of consistent statistics on roundwood extraction and noted that it plans to review wood extraction data in plantations. In the modified FREL submission, the Party reported the average harvesting figure of 8 m<sup>3</sup>/ha/year, which refer to the areas under forest management. The AT noted this as an area for further technical improvement.

25. Concerning emissions from fuelwood extraction, the Dominican Republic reported in the modified FREL that these emissions were excluded owing to a lack of data, which is due to the fact that members of the population do not require a formal permit to collect and use firewood. During the TA week the Party recognized that even though only a minority of households in rural areas use fuelwood (the majority, up to 85 per cent, use gas for cooking),

there is an underestimation of emissions related to fuelwood extraction. The AT considers this too as an area for further technical improvement.

26. In the original FREL submission, the country-specific estimates of forest biomass growth used to estimate carbon gains in forest land remaining forest land were in the upper range of the tropical forest growth values recommended in the 2006 IPCC Guidelines. Furthermore, the Party clarified during the TA week that those estimates are net estimates (i.e. they include mortality due to natural selection) and that there are some methodological issues regarding the interpretation of the NFI data from which those estimates were derived. The AT also noted in table 14 that the annual average biomass growth in tonnes of carbon per year for different forest classes have two different values, reported as “stable land” and “land after conversion”. The Party clarified the assumption made for the use of different growth values, namely that stable forests have a lower growth rate, than those that are newly converted to a different land category. The AT noted that the use of those values and the application of the calculated age approach may result in an overestimation of CO<sub>2</sub> removals in forest land remaining forest land. In the modified FREL submission, the Party updated forest growth estimates, providing gross values, noting that net growth values are inappropriate for the gain–loss method. The new values reported in the modified FREL submission were obtained using the biomass values from the NFI and the evaluation of the biomass and carbon content in the non-forest systems of the Dominican Republic (tables 21–22). The application of the new values resulted in gains in forest land remaining forest land of –9,150,371 t CO<sub>2</sub> eq in the modified FREL submission, compared with –15,131,205 in the original FREL submission. The increase in forest growth figures when moving from net to gross figures has been attributed to the use of different sources.

27. In the original FREL submission, the age corresponding to the forest growth figures was estimated by dividing the average total biomass values reported in table 21 of the original FREL submission by the annual average growth rates reported in table 14. The AT noted that the values in tables 14 and 21 are from different data sources and that this approach may lead to a bias when estimating the number of years required for each forest type to grow and reach a steady state. The Party indicated in its original FREL submission that there is no country-specific information available to estimate those numbers of years. In the modified FREL submission the Party used national statistics on the average annual increment (m<sup>3</sup>/ha/year) of the forests in the Dominican Republic and an expert judgment to re-estimate the average ages of each type of forest (table 15). The AT commends the Dominican Republic for improving the consistency between forest growth rates and forest ages.

28. In the original FREL submission, the Party reported uncertainty values for some AD and EFs, but the overall uncertainty analysis of AD, EFs and the overall FREL was missing. The Party indicated in its original FREL submission and clarified during the TA that they are currently working on obtaining the values, ranges and variables needed to calculate the uncertainties for AD and EFs using IPCC approach 1 for error propagation. The AT noted that including this analysis in the next FREL submission would increase the transparency, completeness and accuracy of the FREL and remains an area for further technical improvement.

**(b) Description of relevant policies and plans, as appropriate**

29. The Party provided in section 6 of its original FREL submission a description of the forestry sector in the Dominican Republic, including relevant policies and plans, in accordance with decision 12/CP.17, annex.

30. The Party provided in section 6.1 a description of the Dominican Republic’s geographical and biophysical characteristics and outlined in section 6.2 the biodiversity and protected areas framework, including the National System of Protected Areas, which was created by law 202-04 and partly associated with the conservation of forest carbon stocks. The Party provided in section 6.3 a description of the socioeconomic characteristics of the agriculture, forestry and other land use sector, including references to the National Development Strategy 2030, the Agroforestry Development Programme, the Sierra Plan created by decree 643-79 and other national and non-governmental initiatives for the sustainable management of forests. The Party also provided a description in section 6.4 of forest ownership, with reference to the Sector Law on Protected Areas (2004), and a



description in section 6.5 of the occurrence of natural disturbances, indicating that in the past 170 years 61 atmospheric phenomena have directly impacted the national territory, of which 16 were hurricanes and 38 tropical storms. The most recent extreme events are the four that occurred between 2015 and 2017.

31. The Party outlined its climate change related policy framework in section 6.6. The Party also outlined policies and plans related to biodiversity and the management of forests. The Party listed other relevant instruments, policies, processes and mechanisms in section 6.6 and described the institutional overview and arrangements for the construction of the FREL in section 6.7.

32. The AT commends the Party for providing relevant information on the legal framework for the forest sector and on the efforts undertaken in the Dominican Republic to protect forests and ensure their sustainable use, which enhanced the AT's understanding of the sector and its role in climate change mitigation.

### **3. Pools, gases and activities included in constructing the forest reference emission level**

33. According to decision 12/CP.17, annex, paragraph (c), reasons for omitting a pool or activity in constructing the FREL should be provided, noting that significant pools and activities should not be excluded.

34. The pools included in the Party's FREL are above-ground and below-ground biomass, litter, deadwood and SOC. HWP was not included. The Party indicates in its modified FREL submission that this pool was not included owing to a lack of data. The AT noted this as an area for further technical improvement.

35. Regarding gases, the Dominican Republic included the most significant gases, namely CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O. The AT however noted in the original FREL submission that N<sub>2</sub>O and CH<sub>4</sub> emission estimates from forest fires in forest land remaining forest land and forest land converted to non-forest land were reported as zero. The Party indicated that this is an error and that it will correct the estimate in future FREL submissions. In the modified FREL submission, the Party reported figures for the corresponding N<sub>2</sub>O and CH<sub>4</sub> emissions. The AT acknowledges that the Party also omitted N<sub>2</sub>O emission estimates from the drainage of organic soils. The AT however understands that this emission source may not be significant.

36. The AT acknowledges that the Dominican Republic included in its FREL five of the five activities identified in decision 1/CP.16, paragraph 70, in accordance with its national capabilities and circumstances. While the Dominican Republic indicates in the original FREL submission that REDD+ activities cannot be separated owing to the land-based approach used, the Party did define, in the Excel calculation tool, the associated emissions and removals from conservation of forest carbon stocks, sustainable management of forests, enhancement of forest carbon stocks, reducing emissions from deforestation and reducing emissions from forest degradation. During the TA the Party indicated that one area for technical improvement is the breakdown of the category of forest land remaining forest into conservation areas, enhancement of carbon stock areas and sustainable forest management areas. The Party is analysing options to break down in a spatially explicit way the areas that correspond to each activity. The AT commends the Dominican Republic for including all five REDD+ activities in the FREL.

37. The AT found in the original FREL submission that emissions from deforestation and removals from the enhancement of forest carbon stocks for 2000 and 2001 were reported as zero and sought clarifications during the TA to determine whether this indicates that emissions are "NO" (not occurring) or "NE" (not estimated). The Dominican Republic indicated that the data for 2000 only represents land use since it is the initial year or starting point for sampling in the Collect Earth tool, and that the land-use change dynamics can be identified only from 2001. The AT noted however that emissions from deforestation and removals from the enhancement of carbon stocks are also reported as zero for 2001 and that removals in forest land remaining forest land for these years are included. In the modified FREL submission the same issue remains. During the technical assessment, the Party further clarified that it was not able to identify land-use changes between 2000 and 2001 owing to the lack of high-resolution images for those years and acknowledged that this may result in underestimation of the emissions. The AT considers the estimation of emissions from

deforestation and removals from the enhancement of carbon stocks for 2000 and 2001 as an area for further technical improvement.

38. Overall, the AT commends the Dominican Republic for providing all the necessary information to reconstruct the FREL and acknowledges the Party's intention to improve future FREL submissions when new and adequate data and better information become available as part of the stepwise approach.

#### **4. Definition of forest**

39. The Dominican Republic provided in its submission the definition of forest used in constructing its FREL. The definition of forest is reported as a natural or planted ecosystem with biological diversity and an abundance of woody plants that produces goods and provides environmental and social services, the minimum land area of which is of 1 ha (equivalent of 11 pixels in a resolution of 30x30 m) and the tree canopy coverage of which exceeds 30 per cent. Agroforestry systems and coffee and cocoa plantations can be included in this definition, provided that they meet the aforementioned criteria. In addition, the Party indicated that the national operational definition does not include areas covered by young trees that have not yet reached a canopy cover of at least 30 per cent and a height of 5 m.

40. During the TA the Dominican Republic indicated that forest plantations are included in the FREL as part of the forest land stratum. The AT noted that, given the particular carbon dynamics of forest plantations, using a separate stratum may increase the accuracy and transparency of the FREL and noted this as an area for further technical improvement.

41. The Dominican Republic reported in the original FREL submission, for transparency purposes, the legal definition of forest, based on the Forestry Sector Law (2018); the IPCC definition of forest lands; and, in table 6, other forest definitions previously used for the Ministry of Environment and Natural Resources (2014), the FAO Global Forest Resources Assessment (2015) and the NFI (2021). The definition used to construct the FREL is different from that used by the Party for its latest national GHG inventory included in its first BUR (2020) and its reporting to the FAO for the Global Forest Resources Assessment. The Dominican Republic indicated in its FREL and clarified during the TA that it is currently working on updating its national GHG inventory to be published in 2022 (see also para. 19 above) using the same operational forest definition to be consistent with the current FREL. In the modified FREL submission, the Dominican Republic included the national GHG inventory 2022 forest-related data as a basis for constructing the FREL. The AT commends the Dominican Republic for its efforts to improve consistency in the application of forest definitions in its FREL, national GHG inventory and other international reporting.

42. During the TA the Dominican Republic indicated that the operational forest definition varies according to the visual interpretation method used to collect AD on land use and land-use change, and includes parameters to quantify changes in forest carbon stocks. The definition had to be adjusted according to the resolution of the satellite images used in the construction of the land-use maps (Landsat 30x30 m) to adequately separate forest from non-forest use categories, and to include in the FREL the carbon gains from any increase in the area of forested agricultural crop and livestock areas that occurs during the implementation of the Emission Reduction Program. The AT noted that including this information in the FREL submission will increase the transparency of the FREL.

43. The Dominican Republic also used FAO definitions for forest land-use subcategories to stratify forest land (table 6 of the modified submission). During the TA the Dominican Republic indicated that those definitions do not coincide with the operational definition used for this FREL. The main differences lie in the canopy cover percentage (minimum of 10 per cent for FAO but 30 per cent for the FREL). The AT sought clarification on the consistency between the national operational definition and the FAO definitions used to stratify forest land to ensure consistent land representation (i.e. that the sum of the forest land in each stratum is equal to the total forest land area). During the TA week the Party indicated that these definitions are descriptive and were not used in forest land stratification. The AT considers that a more detailed description of land stratification and consistency with the total forest land area will increase the transparency of the FREL.

### III. Conclusions

44. The information used by the Dominican Republic in constructing its FREL for reducing emissions from deforestation, reducing emissions from forest degradation, sustainable management of forests, conservation of forest carbon stocks and enhancement of forest carbon stocks is transparent and complete and in overall accordance with the guidelines for submissions of information on reference levels.

45. The FREL presented in the submission is the Dominican Republic's second FREL. The previous FREL was submitted on 6 January 2020 and was subject to a TA in 2020;<sup>13</sup> it covered the activities reducing emissions from deforestation, reducing emissions from forest degradation and enhancement of forest carbon stocks for the reference period 2006–2015. It corresponded to 2,200,494 t CO<sub>2</sub> eq/year (only CO<sub>2</sub>).

46. The FREL presented in the most recent modified submission, for the reference period 2001–2015, corresponds to –7,979,584 t CO<sub>2</sub> eq/year. This represents a move from a net emission to a net removal FREL.

47. The AT acknowledges that the Dominican Republic included in its FREL all five REDD+ activities, almost all carbon pools and the most significant gases in terms of emissions from forests. The AT considers that, in doing so, the Dominican Republic followed decision 1/CP.16, paragraph 70, on activities undertaken, and decision 12/CP.17, paragraph 10, on applying the stepwise approach. The AT commends the Dominican Republic for including all the REDD+ activities, the most significant pools and gases and for providing information on its ongoing work to improve the FREL.

48. As a result of the facilitative interactions with the AT during the TA, the Dominican Republic provided a modified submission that took into consideration the technical input of the AT. The AT notes that the transparency and completeness of the information provided were significantly improved in the modified FREL submission, without having to alter the approach used to construct the FREL, and commends the Dominican Republic on its efforts. The new information provided in the modified submission, including the modified Excel tool with the new calculations, resulted in a change in value from –14,819,265 t CO<sub>2</sub> eq/year to –7,979,584 t CO<sub>2</sub> eq/year.

49. The AT notes that, overall, the Dominican Republic did not maintain consistency, in terms of sources of AD and EFs used for its FREL, with those used for the latest national GHG inventory included in its first BUR.<sup>14</sup> The Dominican Republic indicated in its FREL and clarified during the current TA that it is currently working on updating its national GHG inventory, which will be published in 2022 and included as part of the Party's second BUR.. The forest-related information in the inventory was used to construct the FREL. The AT commends the Dominican Republic for its efforts to improve the consistency between the FREL and the 2022 national GHG inventory for the forestry and other land-use sector.

50. Pursuant to decision 13/CP.19, annex, paragraph 3, the AT identified the following areas for future technical improvement:

- (a) Consistently apply the gain–loss method to account for both emissions and removals in forest land remaining forest land;
- (b) Estimate emissions and removals from deforestation and enhancement of carbon stocks for 2000 and 2001;
- (c) Generate AD for fuelwood, HWP and areas affected by natural disturbances;
- (d) Exclude or disaggregate emissions and removals from natural disturbances;
- (e) Revise forest fire AD to clarify whether the reported areas apply to forest land remaining forest land, converted forest land or both;
- (f) Improve roundwood and fuelwood production data collection and accuracy;

<sup>13</sup> See document FCCC/TAR/2020/DOM.

<sup>14</sup> In reference to the scope of the TA, as per decision 13/CP.19, annex, para. 2(a).

- (g) Include forest plantations as a separate forest stratum;
- (h) Develop and include in the FREL the overall uncertainty assessment of AD, EFs and the FREL.

51. The AT acknowledges and welcomes the Party's intention to:

- (a) Estimate and collect information on areas affected by disturbances such as storms, hurricanes and extraction of firewood for fuel;
- (b) Improve roundwood extraction data and review wood extraction data in plantations;
- (c) Include an uncertainty analysis using the tier 1 (error propagation) approach;
- (d) Develop national SOC data;
- (e) Improve data collection, particularly related to disturbances;
- (f) Establish permanent plots to analyse forest ecosystem dynamics;
- (g) Continuous training, especially for the team directly linked to the generation of data (including metrics and transparency, department of environment and natural resources, forest monitoring, and mitigation).

52. In conclusion, the AT commends the Dominican Republic for showing strong commitment to continuously improving its FREL estimates in line with the stepwise approach. A number of areas for the future technical improvement of the Dominican Republic's FREL have been identified in this report. At the same time, the AT acknowledges that such improvements are subject to national capabilities and policies, and notes the importance of providing adequate and predictable support.<sup>15</sup> The AT also acknowledges that the TA was an opportunity for a rich, open, facilitative and constructive technical exchange of information with the Dominican Republic.

53. The table contained in annex I summarizes the main features of the Dominican Republic's proposed FREL.

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<sup>15</sup> As per decisions 13/CP.19, annex, para. 1(b); and 12/CP.17, para. 10.

## Annex I

## Summary of the main features of the proposed forest reference emission level based on information provided by the Dominican Republic

	<i>Main features of the FREL</i>	<i>Remarks</i>
Proposed FREL	-7 979 584 CO <sub>2</sub> eq/year	Changes from previous FREL: original 2020 FREL submission: 6 534 106 t CO <sub>2</sub> eq (only CO <sub>2</sub> ); modified 2020 FREL submission: 2 200 494 t CO <sub>2</sub> eq (only CO <sub>2</sub> ); original 2022 FREL submission: -14 819 265 t CO <sub>2</sub> eq, representing a change from a net emissions to a net removals FREL; (see para. 8 of this document)
Type and reference period of FREL	FREL = average of historical emissions and removals in 2001–2015	See paragraph 8 of this document
Application of adjustment for national circumstances	No	See paragraph 11 of this document
National/subnational	National	Some small islands excluded (see para. 12 of this document)
Activities included	Reducing emissions from deforestation Reducing emissions from forest degradation Conservation of forest carbon stocks Sustainable management of forests Enhancement of forest carbon stocks	The Party included all five REDD+ activities (see para. 7 of this document)
Pools included	Above-ground biomass Below-ground biomass Deadwood Litter Soil	HWP excluded owing to lack of data (see para. 34 of this document)
Gases included	CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O	See paragraph 35 of this document
Forest definition	Included	Forest definition is different from the one used for the NFI, FAO Global Forest Resources Assessment and the latest published national GHG inventory submitted in the first BUR (see paras. 39–43 of this document)
Consistency with latest GHG inventory	Methods used for estimating the FREL are not consistent with those used for the latest GHG inventory (2015)	The Party reported that it will submit an updated national GHG inventory in 2022, together with its second BUR. At the time of drafting of the present report, both documents remained unpublished (see para. 19 of this document)
Description of relevant policies and plans	Included	See paragraph 30 of this document

<i>Main features of the FREL</i>		<i>Remarks</i>
Description of assumptions on future changes to domestic policy, if included in constructing the FREL	Not applicable	–
Description of changes to previous FREL	Included	The Party included changes based on the areas for technical improvement identified by the AT of the previous FREL submission, but did not report the inclusion of conservation and sustainable management of forests as the main change with the previous FREL (see para. 16 of this document)
Identification of future technical improvements	Included	Several areas for future technical improvement have been identified (see paras. 50 and 51 of this document)

## Annex II

### Reference documents

#### A. Reports of the Intergovernmental Panel on Climate Change

IPCC. 2006. *2006 IPCC Guidelines for National Greenhouse Gas Inventories*. S Eggleston, L Buendia, K Miwa, et al. (eds.). Hayama, Japan: Institute for Global Environmental Strategies. Available at <http://www.ipcc-nggip.iges.or.jp/public/2006gl>.

IPCC. 2014. *2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands*. T Hiraishi, T Krug, K Tanabe, et al. (eds.). Geneva: IPCC. Available at <https://www.ipcc.ch/publication/2013-supplement-to-the-2006-ipcc-guidelines-for-national-greenhouse-gas-inventories-wetlands/>.

IPCC. 2019. *2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories*. E Calvo Buendia, K Tanabe, A Kranjc, et al. (eds.). Geneva: IPCC. Available at <https://www.ipcc-nggip.iges.or.jp/public/2019rf/index.html>.

#### B. UNFCCC documents

First and second modified FREL submissions of the Dominican Republic. Available at <https://redd.unfccc.int/submissions.html?country=DOM>.

“Guidelines and procedures for the technical assessment of submissions from Parties on proposed forest reference emission levels and/or forest reference levels”. Decision 13/CP.19, annex. Available at <https://unfccc.int/sites/default/files/resource/docs/2013/cop19/eng/10a01.pdf#page=36>.

“Guidelines for submissions of information on reference levels”. Decision 12/CP.17, annex. Available at <https://unfccc.int/sites/default/files/resource/docs/2011/cop17/eng/09a02.pdf#page=19>.

Report on the TA of the proposed FREL of the Dominican Republic submitted in 2020. FCCC/TAR/2020/DOM. Available at [https://unfccc.int/sites/default/files/resource/tar2020\\_DOM.pdf](https://unfccc.int/sites/default/files/resource/tar2020_DOM.pdf).

#### C. Other documents

The following references may not conform to UNFCCC editorial style as some have been reproduced as received or as cited in the submission:

Medio Ambiente y Recursos Naturales. 2014. *Estudio de uso y cobertura de suelo 2012*. Santo Domingo, R.D., 38 páginas. Año 2014.

Food and Agriculture Organization. 2015. *Evaluación de los recursos forestales Mundiales (FRA) 2015. Informe Nacional. Republica Dominicana*. Available at <https://www.fao.org/3/az202s/az202s.pdf>.

Ley Sectorial Forestal de la República Dominicana, núm. 57-18. G. O. No. 10924 del 11 de diciembre de 2018. EL CONGRESO NACIONAL.