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Report on the technical assessment of the proposed forest reference emission level of Honduras submitted in 2023

Summary

This report covers the technical assessment of the voluntary submission of Honduras 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 Honduras covers the activities 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 are the activities included in decision 1/CP.16, paragraph 70.

For its submission, Honduras developed a national FREL. The FREL presented in the original submission, for the reference period 2016–2020, corresponds to –17,347,363 tonnes of carbon dioxide equivalent per year. As a result of the facilitative process during the technical assessment, the FREL was modified to –5,545,227 tonnes of carbon dioxide equivalent per year.

The assessment team notes that the data and information used by Honduras 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	*2006 IPCC Guidelines for National Greenhouse Gas Inventories*
2019 Refinement to the 2006 IPCC Guidelines	*2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories*
AD	activity data
AT	assessment team
CH_4	methane
CO_2	carbon dioxide
CO_2 eq	carbon dioxide equivalent
COP	Conference of the Parties
DOM	dead organic matter
EF	emission factor
FREL	forest reference emission level
FRL	forest reference level
GHG	greenhouse gas
HWP	harvested wood products
IE	included elsewhere
IPCC	Intergovernmental Panel on Climate Change
LULUCF	land use, land-use change and forestry
N_2O	nitrous oxide
NA	not applicable
NDC	nationally determined contribution
NE	not estimated
NFI	national forest inventory
NO	not occurring
QA/QC	quality assurance/quality control
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)
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 Honduras on its proposed FREL,[1] submitted on 23 January 2023, in accordance with decisions 12/CP.17 and 13/CP.19. The TA took place from 20 to 24 March 2023 and was coordinated by the secretariat.[2] The TA was conducted by two LULUCF experts from the UNFCCC roster of experts[3] (hereinafter referred to as the AT): Doru Leonard Irimie (Romania) and Luis Panichelli (Argentina). In addition, Edou Komlan, an expert from the Consultative Group of Experts, participated as an observer[4] during the session. The TA was coordinated by Raúl Abad Viñas (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, Honduras submitted its proposed FREL on a voluntary basis. The proposed FREL is one of the elements[5] 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. Honduras provided its submission in Spanish. The submission is supported by three annexes (in Spanish), covering tabular information on the dynamics of the land use and land-use changes (annex A), the roles of the national experts that participated in the preparation of the FREL (annex B) and information about programmes, projects and initiatives for forest conservation (annex C), which enhance the transparency of the FREL.

4. The objective of the TA is to assess the degree to which the information provided by Honduras is in accordance with the guidelines for submissions of information on reference levels[6] 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 Honduras to construct and improve its FREL in the future, as appropriate.[7]

5. The TA of the FREL submitted by Honduras was undertaken in accordance with the guidelines and procedures for the TA of submissions from Parties on proposed FRELs and/or FRLs.[8] 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 Honduras. The facilitative exchange during the TA allowed Honduras to provide clarifications and additional information, which were considered by the AT in the preparation of this report.[9] As a result of the facilitative interactions with the AT during the TA, Honduras provided a modified version of its submission on 22 November 2023, which partially took into consideration the technical input of the AT. The modifications improved the clarity and transparency of the 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,

[1] The submission of Honduras is available at https://redd.unfccc.int/submissions.html?country=hnd.
[2] As per decision 13/CP.19, annex, para. 7.
[3] As per decision 13/CP.19, annex, paras. 7 and 9.
[4] As per decision 13/CP.19, annex, para. 9.
[5] See decision 1/CP.16, para. 71(b).
[6] Decision 12/CP.17, annex.
[7] Decision 13/CP.19, annex, para. 1(a–b).
[8] Decision 13/CP.19, annex.
[9] As per decision 13/CP.19, annex, paras. 1(b), 13 and 14.

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 Honduras, 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, conservation of forest carbon stocks, sustainable management of forests and enhancement of forest carbon stocks, which are the five activities referred to in that paragraph. Pursuant to paragraph 71(b) of the same decision, Honduras developed a national FREL that covers its entire territory (except for two islands of 1.1 and 2.5 km^2 respectively located about 180 km off the north coast of Honduras). For its submission, Honduras 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 or FRL by incorporating better data, improved methodologies and, where appropriate, additional pools.

8. The national FREL proposed by Honduras for the historical reference period 2016–2020 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 an assessment of land use and land-use change that was carried out on the basis of a sampling approach (approach 3 of the 2006 IPCC Guidelines) using the Collect Earth Online tool, adapted to report REDD+ activities under the Convention, with high-resolution images (Google Earth) available for 2005–2022. Information on EFs was obtained primarily from data from Honduras's NFI, as well as from national statistics, country-specific research, scientific literature, expert judgment, 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 the reference period 2021–2025, corresponds to –5,545,227 t CO_2 eq/year.[10]

9. The proposed FREL includes the pools above-ground biomass, below-ground biomass, deadwood, litter and soil and excludes HWP. Regarding GHGs, the submission includes CO_2, as well as CH_4 and N_2O emissions from forest fires. In relation to the SOC pool, the submission includes CO_2 but does not include direct N_2O associated with the drainage of organic soils.

10. The FREL proposed by Honduras is its third 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;[11] it consisted of the historical average of the CO_2 emissions associated with deforestation in 2000–2016, the historical average of the CO_2 emissions associated with forest degradation in 2000–2018 and the CO_2 removals associated with enhancement of forest carbon stocks resulting from conversion of non-forest land to forest in 2000–2018. The previous assessed FREL corresponded to 8,142,121.66 t CO_2 eq/year and was therefore significantly higher than the FREL proposed in the most recent submission. The FREL proposed in the most recent submission differs from that in the modified 2020 submission previously assessed due mainly to the inclusion of conservation and sustainable forest management REDD+ activities; the use of new definitions of forest and REDD+ activities based on thresholds of canopy cover, new AD (high-resolution Google Earth Engine satellite images and statistical data), new EFs (updated values from the 2006 IPCC Guidelines and NFI sample plots) and new methods for estimating carbon stock changes (gain–loss); and the inclusion of the SOC pool, CH_4 and N_2O emissions from forest fires and an uncertainty analysis.

[10] In its original submission, Honduras proposed a national FREL of –17,347,363 t CO_2 eq/year for 2016–2020. The difference between the original and the modified submission is due mostly to the use of new EFs for forest growth, natural disturbances and mortalities.

[11] See document FCCC/TAR/2020/HND.

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, Honduras used 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 GHG emissions and removals measured in t CO_2 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, covering the entire country except for some small islands for the selected reference period of 2016–2020.

13. Compared with the previous FREL submission, Honduras applied a new definition of forest (see chap. II.4 below) and new national definitions for each REDD+ activity as follows:

(a) Deforestation: loss of tree cover due to anthropogenic activities, which causes a decrease in the crown percentage (canopy) below the thresholds established in the definition of forest, transforming forest land to other land uses;

(b) Forest degradation: gradual reduction of tree or herbaceous/shrub cover on forest land, caused by natural or anthropogenic disturbances, which affects the structure of the forest but remains within the thresholds of the definition of forest (cover reduction due to disturbances of between 10 and 89 per cent for coniferous and mangrove forests and between 10 and 69 per cent for other types of forest);

(c) Enhancement of forest carbon stocks: increase in forest carbon stock from the conversion of other land uses to forest land, in accordance with the definition of forest and through natural or assisted restoration processes, except for increases in forest reserves in areas under sustainable forest management;

(d) Conservation of forest carbon stocks: forest land that remains as such and maintains crown cover of at least 91 per cent;

(e) Sustainable management of forests: variation of the carbon content in natural or planted forests under forest management plans or instruments for the purpose of using forest products and by-products.

14. Honduras matched the REDD+ activities with IPCC land-use categories as follows (see table 2 of the modified FREL submission):

(a) Deforestation: forest land converted to cropland, grassland, wetlands, settlements and other land;

(b) Forest degradation: forest land remaining forest land, with disturbances from agriculture, livestock, infrastructure, pests, fires, illegal logging, mining, and hurricanes and storms;

(c) Enhancement of forest carbon stocks: cropland, grassland, wetlands, settlements and other land converted to forest land;

(d) Conservation of forest carbon stocks: forest land remaining forest land, undisturbed;

(e) Sustainable management of forests: forest land remaining forest land, under forest management.

15. The operational definitions and criteria used to determine land uses by category took into consideration definitions established in binding national laws, the field manual of the

NFI (including its three completed cycles), the classification system of land-use categories of the *Map of Forest Cover and Land Use of Honduras 2018* and IPCC definitions. Land uses were classified using a hierarchical approach, using IPCC land-use categories and stratifying forest types (humid broadleaves, coniferous, mixed, deciduous broadleaves, mangroves and agroforests). Cropland, grassland and wetlands were further stratified on the basis of national land-use categories.

16. Forest land is stratified by forest type (humid forest, dry forest, coniferous forest, mangroves and perennial crops (mainly coffee and cocoa)); cropland includes annual crops and sugarcane; grassland includes wet scrub, dry scrub and grass; settlements are recorded as urban areas; and wetlands and other land are not further subclassified.

17. AD were collected through the visual interpretation of sample area units of 1 ha (100 x 100 m) distributed over the country in a systematic grid measuring 2.5 x 2.5 km, resulting in 18,552 sample units. Land use and land-use change were analysed using the Collect Earth desktop tool using satellite images from Google Earth Pro and Google Earth Engine for 2005–2022.

18. EFs were obtained either from the third NFI cycle and other country-based statistics or were default values from the 2006 IPCC Guidelines, the Wetlands Supplement or the 2019 Refinement to the 2006 IPCC Guidelines. The 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).

19. Honduras applied a land-based approach (approach 3 of the 2006 IPCC Guidelines) and the gain–loss method to calculate emissions and removals from each REDD+ activity. Honduras classified forest land remaining forest land on the basis of the occurrence of disturbances (i.e. undisturbed forest land and disturbed forest land), including both natural and anthropogenic disturbances and several disturbance types classified in two groups: agriculture, livestock, infrastructure, mining and illegal logging; and sustainable forest management, pests, and hurricanes and storms. The difference between the groups is that the latter includes biomass gains after disturbances (i.e. forest regeneration). For each disturbance type, specific biomass removal fractions were applied (see tables 15–18 of the modified FREL submission). This methodology allows the addition of multiple types of disturbance on the same area, until the carbon stock falls below the threshold of the forest definition. Once that threshold is reached, it is no longer considered degradation but deforestation. The methodology also allows the combination of several disturbances. Each time a disturbance was identified, the year and percentage of the disturbance was assigned and then averages were estimated for each disturbance. The disturbance values in table 17 of the modified FREL submission were calculated as the average of the first disturbances on the plots in all years. Honduras clarified that the average value of the fraction of the biomass affected by the first disturbance is the average for all years of the time series.

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

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

(a) Inclusion of two additional REDD+ activities, namely conservation of forest carbon stocks and sustainable management of forests, in order to ensure full coverage of REDD+ activities;

(b) Inclusion of land classification and uses specific to the national context in order to assign EFs and removal factors to each land-use category on the basis of disturbances occurring in each land-use class;

(c) Introduction of a new operational definition of forest and new national definitions of REDD+ activities;

(d) Introduction of thresholds for percentages of changes to canopy cover in order to distinguish between forests affected by deforestation or degradation or that are under conservation;

(e) Implementation of the 2006 IPCC Guidelines approach 3 for land representation using estimates from a systemic sampling grid for the whole territory except for some small islands;

(f) Inclusion of non-CO_2 gases (N_2O and CH_4) in the estimation of emissions from forest fires;

(g) Introduction of additional carbon pools (i.e. SOC) in order to estimate emissions from mineral soils using information from the Food and Agriculture Organization of the United Nations Global Soil Organic Carbon Map and the systematic sampling grid;

(h) Use of data from the third NFI cycle and use of permanent sampling plots for estimating carbon stocks in forest land and the intensity of forest degradation;

(i) Introduction of a new methodology for estimating forest degradation;

(j) Use of the 2006 IPCC Guidelines adjusted for each land-use category and land-use conversions;

(k) Estimation of carbon stocks in non-forest land in order to enable the calculation of carbon stock changes resulting from deforestation and the enhancement of forest carbon stocks;

(l) Inclusion of carbon stocks from final land use in order to estimate net emissions from land conversions;

(m) Implementation on an annual basis of the gain–loss method for all REDD+ activities in order to estimate emissions and removals without disturbances, after disturbances and after land-use conversions;

(n) Inclusion of an analysis of the uncertainty of the FREL based on the error propagation method.

21. During the TA, the AT identified the following differences in methods and data used between Honduras's previous and most recent FREL submission:

(a) Use of a new reference period, 2016–2020, compared with 2000–2016 in the previous submission;

(b) Inclusion of natural disturbances;

(c) Inclusion of natural mortalities;

(d) Introduction of different thresholds of canopy cover in the definition of broadleaf forest (30 per cent) and mangrove and coniferous forests (10 per cent);

(e) Treatment of the REDD+ activity sustainable management of forests as a subset of the activity forest degradation;

(f) Introduction of a matrix of logical, likely or impossible transitions between land uses and a decision tree for prioritizing changes from forest land to other land uses.

22. During the TA, the AT sought clarification on a number of issues regarding how the FREL was constructed, such as on the estimation of AD and EFs and the consistency of these parameters with the operational definitions of forest types. In response, Honduras more clearly described (including additional information) the steps in constructing the FREL. The AT commends Honduras for increasing the transparency of its reporting in preparation for and during the review.

23. Honduras differentiates between REDD+ activities on the basis of the percentage of loss in canopy cover during the reference period. Both forest degradation and sustainable management of forests correspond to cover reduction ranging from 10 to 89 per cent for conifer and mangrove forests and from 10 to 69 per cent for broadleaf forest. The difference between the two is that the latter corresponds to legal cuts/silvicultural operations, while the former corresponds to natural disturbances (pests, hurricanes and storms), fires (assumed

anthropogenic) and pressure exercised by other activities (agriculture, livestock, infrastructure and illegal logging).

24. Furthermore, Honduras distinguishes lower from higher degradation levels (see table 10 of the modified FREL submission), although the Party clarified that these degradation levels are not translated into carbon estimates. Honduras also clarified that the vast majority of forest fires are of anthropogenic nature and are reported as a separate disturbance category under the activity forest degradation. Forest fires occurring on land under sustainable forest management are also reported under the fire disturbance category. A clearer description of the choices made in the modified FREL submission, in particular how the thresholds in table 10 of the submission are used (or not) to classify REDD+ activities and estimate carbon stock changes and where forest fires on land under sustainable forest management are accounted for, would enhance its transparency and completeness. The AT identified this as an area for future technical improvement.

25. The AT noted equation 6.4.9 in the original FREL submission and asked the Party whether the carbon losses from natural tree mortalities that occur in old-growth forests are considered. Honduras responded that natural mortalities are considered in the cases of canopy coverage changes in the range of 1–9 per cent, corresponding to the REDD+ activity conservation of forest carbon stocks. Furthermore, it explained that, since these forests do not exceed the percentage established to be considered as disturbed forests, no mortality losses are estimated. The AT considers that this approach may lead to an overestimation of removals or an underestimation of emissions and therefore identified this as an area for future technical improvement.

26. The AT also asked the Party whether and how mortalities in old-growth forests are considered in the original FREL submission, in accordance with equation 2.20 of the 2006 IPCC Guidelines (biomass transfer to DOM). The Party responded that this was not done in the original FREL submission, although there were fractions of forest affected by pests identified as being transferred to DOM. In the modified submission (section 6.4.12) Honduras provided estimates of the proportion of transfer of living biomass to DOM by type of forest and disturbance. The AT commends Honduras for its efforts to enhance the accuracy of these estimates.

27. Table 41 of the modified FREL submission shows that forests classified under the REDD+ activity conservation of forest carbon stocks only retain gains, although the gain–loss method is used to estimate carbon stock changes. The AT asked Honduras to clarify the assumption that there was no disturbance and hence no losses for the REDD+ activity conservation of forest carbon stocks, even though it was ascertained that forests could have been affected during the reference period by a loss in canopy coverage of up to 9 per cent. The AT also asked the Party to clarify why gains from undisturbed forest land remaining forest land are estimated by assuming growth values for forests below 20 years of age as per tier 1 methodology in the 2006 IPCC Guidelines. Honduras responded that this land was classified as forest in the base year for the GHG inventory (2005) and that subsequent growth was assumed to have occurred in the absence of disturbances. Furthermore, it stressed that there are no national data that can be used to monitor the steady state of forests, and a time series of 30–40 years would be needed to assess forest maturity. During the TA, Honduras committed to providing further information in support of the assumption that all forests under this REDD+ activity are young secondary forests undergoing rapid growth, resulting in annual average net removals of 29,298,150 t CO_2 eq/year for 2016–2020. The AT noted that conservation of forest carbon stocks is the activity that made the most significant contribution to the modified FREL (–5,545,227 t CO_2 eq/year), resulting in net removals, compared with the net emissions for the previous FREL (8,142,121.66 t CO_2 eq/year). Honduras noted that experts have confirmed that the country's forests are mainly secondary forests and hence are constantly regenerating due to natural events, such as pests, fires and hurricanes, that have occurred over the past decades. The AT noted the significant impact of the assumption in the FREL that there were no disturbances to forests, which may result in an overestimation of removals from forest land remaining forest land, and identified the provision of sufficient information to validate the assumption as an area for future technical improvement.

28. Regarding equation 2.10 on net growth estimates by type of forest in section 6.4.7 of the original FREL submission, Honduras applied default values from table 4.9 of the 2006

IPCC Guidelines to estimate forest growth (i.e. less than 20 years for undisturbed land and more than 20 years for disturbed forest land). The AT asked the Party how it distinguished, on a specific plot, forests that were below or above 20 years of age in the reporting year and how it applied this information to derive further estimates. Honduras responded that the available 17-year time series of imagery data allowed an analysis of forests and growth over time, but the Party did not consider making a clear distinction between forests below or above 20 years of age.

29. Furthermore, the AT asked Honduras why it used IPCC (tier 1) data for forest growth, since the Party had already included in the original FREL submission national data (tier 2) for carbon stocks by forest type from the three completed NFI cycles and the fourth ongoing NFI cycle, and had calculated values for forest growth, which were calculated by dividing the accumulated stock by age of the forest stands, in the Excel table that was submitted as additional information in support of the original FREL submission. Honduras responded that this was due to recommendations from the experts responsible for the NFI and that inconsistencies had resulted from the application of this method for some types of forest. The AT considers that a clearer description of the choices made (i.e. the rationale for selecting these ranges for undisturbed and disturbed forest land and for not using the national NFI values) in the modified FREL submission would enhance its transparency and completeness. In the modified FREL submission, Honduras updated these values with national data from the third NFI cycle by forest type, except for agroforests, for which values from the 2019 Refinement to the 2006 IPCC Guidelines were used. The use of updated forest growth values led to a significant decrease in the estimates of forest growth, particularly for disturbed forest land remaining forest land, and increase in the estimated emissions from disturbed forest land remaining forest land (i.e. 0.5–3.8 Mt CO_2 eq/year on average for 2016–2020) and reduction in the estimated removals from undisturbed forest land remaining forest land (i.e. –37.8 to –29.3 Mt CO_2 eq/year on average for 2016–2020). The same occurred with the estimated removals from land converted to forest land (i.e. –5.6 to –2.9 Mt CO_2 eq/year on average for 2016–2020). The AT commends Honduras for improving the accuracy of the FREL by using national data from the NFI.

30. The AT noted discrepancies in the original FREL submission between table 32 and the Excel table submitted in support thereof, including the calculation sheets associated with it, for example the +/– signs for forest degradation activity, which were all positive in the original FREL submission regardless of whether they referred to gains or losses. The AT also noted abnormal values for some subcategories; for example, in the case of pests, significant gains (–5 Mt CO_2 eq) were estimated compared with losses (0.007 Mt CO_2 eq). The AT considers that providing this information will enhance the transparency of the report. Honduras acknowledged that there were some errors in both table 32 and the Excel worksheets. In the modified FREL submission, Honduras revised the figures in table 41 to reflect the methodological changes to the gain–loss estimates highlighted above. The AT commends Honduras for its efforts to improve the consistency of the reporting.

31. The AT noted the information included in table 3 of the original FREL submission and asked the Party to provide justification for reporting "NO", "NE" and "NA" for non-CO_2 emissions for all non-forest land categories, as well as "IE" for AD on grassland. Honduras responded that these notation keys were used because the estimates are part of the national GHG inventory and not part of the FREL. Furthermore, table 32 of the original FREL submission reports estimates of non-CO_2 gases and Honduras indicated that these estimates correspond to emissions from forest fires only, and assumed that they were of anthropogenic origin. In the case of deforestation, these emissions are indicated as "IE" as they are included in the national GHG inventory. The AT considers this an incorrect use of notation keys, and moreover that including non-CO_2 emissions from forest fires occurring as part of deforestation activities will enhance consistency with the national GHG inventory. In the modified FREL submission, Honduras included estimates of non-CO_2 emissions from forest land disturbed by fires, grassland converted to forest land, and forest land converted to cropland and grassland. The AT commends Honduras for including these estimates in the modified FREL submission.

32. The AT noted from table 32 of the original FREL submission that for forest land remaining forest land affected by disturbances and for forest land converted to other land

uses there are no changes in the DOM and SOC pools. Honduras responded during the TA that DOM and SOC changes have not yet been included in the calculations for disturbances in forest land remaining forest land and land converted to forest land, as at the time of the submission of the FREL the technical team was still gathering information on how these carbon pools were affected by disturbances and forest conversion, and that these estimates would be included in the modified submission. The AT commends Honduras for including these calculations in the modified FREL submission.

33. Honduras included natural disturbances in the definition of forest degradation and excluded them from the definition of deforestation and other REDD+ activities (i.e. conservation of forest carbon stocks). It explained that the causes of forest degradation are not always the same as those of deforestation. The Party included in its submission GHG gains and losses from natural disturbances in forest degradation (disturbed forest land remaining forest land) and separated the effect of pests and of hurricanes and storms. However, since it is not clear to the AT how natural disturbances have been accounted for under other REDD+ activities (including conservation of forest carbon stocks), the AT identified this as an area for future technical improvement.

34. The AT noted the significant effect of natural disturbances (e.g. the effect of pests in 2016) on the increase in CO_2 emissions in the reference period. The AT commends Honduras for including natural disturbances in the FREL, which allows for a better representation of forest dynamics in the country. However, the AT also noted the impact that including natural disturbances in the FREL can have when estimating the REDD+ results. In this regard, as per the 2006 IPCC Guidelines, the inclusion of natural disturbances can bias the estimation of REDD+ results. That is, in the absence of a pest or hurricane event, the country may experience emission reductions without having associated policies to reduce emissions from forest degradation. The AT noted during the TA that the 2019 Refinement to the 2006 IPCC Guidelines provides methods for excluding the effect of natural disturbances from the national GHG inventory. The AT also noted that the estimation of the FREL with and without natural disturbances (disaggregated) could improve the transparency of the reporting and the consistency of the FREL with the national GHG inventory. In view of the estimation of the REDD+ results, the AT identified this as an area for future technical improvement.

35. According to decision 13/CP.19, annex, paragraph 2(a), the AT should assess the extent to which the FREL maintains consistency with corresponding anthropogenic forest-related GHG emissions by sources and removals by sinks reported in the national GHG inventory. The AT noted that the data in the FREL submission and the most recent GHG inventory submission do not fully match. Honduras responded that the FREL data are deemed to be the most reliable and will be the basis for the upcoming GHG inventory to be included in the next biennial update report. The AT acknowledges that the inconsistency with the national GHG inventory (which was compiled in 2015) is due to the improvement in data and methods in the LULUCF sector and commends Honduras for its effort to improve the consistency between the FREL and the national GHG inventory.

36. Honduras reported that it has implemented a QA/QC process that includes an external revision of the FREL submission, but that the calculation used to construct the FREL has not been revised. The AT considers the implementation of a QA/QC process that includes the revision of the calculation as an area for future technical improvement. The original FREL submission did not include an uncertainty analysis of the FREL. The AT commends Honduras for including an uncertainty analysis in the modified FREL submission.

37. Honduras applied the error propagation method to determine the overall uncertainty of the FREL (39.2 per cent), the uncertainty by land-use category (i.e. forest land remaining forest land – disturbed and undisturbed, forest land converted to other land uses and other land uses converted to forest land) and the uncertainty of the AD and EFs. The AT noted, however, that the method was applied for up to 2020 only, which is not consistent with the FREL reference period. Moreover, several outliers were identified (see tables 44–46 of the modified FREL submission). The AT identified the consistent estimation of uncertainty as an area for future technical improvement.

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

38. Honduras included in the FREL submission a comprehensive chapter on the national context, including several international treaties and national policies and laws that are deemed to be directly related to land-based mitigation action.

39. At the international level, Honduras highlighted the Convention on Biological Diversity, the Cartagena Protocol on Biosafety to the Convention on Biological Diversity, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity, the Ramsar Convention on Wetlands of International Importance Especially as Waterfowl Habitat, the Convention Concerning the Protection of the World Cultural and Natural Heritage, the Indigenous and Tribal Peoples Convention, the Convention on International Trade in Endangered Species of Wild Fauna and Flora, the Convention, the Kyoto Protocol, the Paris Agreement, the Convention for the Conservation of the Biodiversity and the Protection of Priority Wilderness Areas in Central America, the Montreal Protocol on Substances that Deplete the Ozone Layer, and the Convention on the Conservation of Migratory Species of Wild Animals.

40. On national policies and laws, Honduras highlighted the Constitution of the Republic, the General Environmental Law, the Territorial Planning Law, the Climate Change Law, the Law on Forests, Protected Areas and Wildlife, the legislative decrees declaring protected areas, the Municipalities Law, the Property Law, the National Climate Change Strategy of Honduras, the National Forestry Policy, protected areas and wildlife, the National Forestry Program, the National Strategy for the Control of Illegal Logging and Transportation of Forest Products, the Health and Forest Health Strategy, the National Strategy for the Management of the Hydrographic Basins of Honduras 2017–2027, the Strategic Plan of the National System of Protected Areas and Wildlife of Honduras, the National Community Forestry Strategy for the Management of the National Forest Areas of Honduras, the National Strategy of Fire Use and Management, the National Strategy for the Restoration of the Landscapes of Honduras, and the 2017 and 2020 NDCs.

41. In relation to the Party's global mitigation goal, the 2020 NDC stipulates an increase in its ambition with respect to the 2015 intended nationally determined contribution objectives by proposing a 16 per cent reduction in GHG emissions compared with the 'business as usual' scenario by 2030. The NDC also proposes a distribution of emission reductions by sector, based on their emissions in the 2005–2015 national GHG inventory (the Party's most recent national GHG inventory). In relation to its LULUCF sectoral objectives, Honduras reported that implementing functional landscape restoration in rural areas led to an increase in the ambition to restore land from 1 to 1.3 million ha. The NDC further includes the goal of reducing the consumption of firewood in homes by 39 per cent, helping in the fight against deforestation.

42. The AT commends the Party for providing information on the legal framework for the forest sector and on the efforts undertaken in Honduras to protect forests and ensure their sustainable use, which enhanced the understanding by the AT of the sector and its role in climate change mitigation.

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

43. 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.

44. The pools included in the Party's FREL are above-ground biomass, below-ground biomass, deadwood, litter and soil; HWP are excluded in the modified FREL submission. The AT commends Honduras for the efforts to include the most significant carbon pools in its FREL.

45. Honduras included the most significant gases, namely CO_2, CH_4 and N_2O. The AT noted from the original FREL submission, however, that N_2O and CH_4 emissions from forest fires on disturbed forest land were reported as zero. The Party indicated that this is an error

that will be corrected in future FREL submissions. In the modified FREL submission, the Party reported figures for the corresponding N_2O and CH_4 emissions from forest fires.

46. Honduras used the global warming potential values over a 100-year time-horizon from the Fifth IPCC Assessment Report to convert non-CO_2 gases into CO_2 eq.

47. The AT acknowledges that Honduras included in its FREL the most significant REDD+ activities identified in decision 1/CP.16, paragraph 70, in accordance with its national capabilities and circumstances. The AT commends Honduras for including all five REDD+ activities in its FREL.

48. The AT 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

49. Honduras provided in its modified submission the definition of forest used in constructing its FREL.

50. Forests are defined in the modified FREL submission as areas with the presence of tree species (a woody plant with a defined stem and crown), natural or planted, with a minimum area of 1 ha, crown coverage greater than 10 per cent for coniferous and mangrove forests, and greater than or equal to 30 per cent for other types of forest, and with tree species with heights greater than 2 m for mangrove forest and 3 m for the other types of forest. This may or may not be accompanied by shrubs or other strata.

51. Moreover, Honduras detailed its key considerations for the definition of forest as follows:

(a) The minimum coverage varies, but for pine forest and mangrove forest there should be a minimum coverage of 10 per cent;

(b) The definition includes naturally established and/or planted areas at any stage of the natural life cycle;

(c) Forests are also considered as areas that temporarily lack a tree population, owing to natural causes or management actions, but that are in regeneration and where there has been no change in land use;

(d) The minimum tree height is 3 m for broadleaf, pine and mixed forests and 2 m for mangrove forest;

(e) All forests in Honduras are considered managed areas or areas in which there is some human intervention.

52. In the 2015 GHG inventory, Honduras defined forest as a natural or planted association of trees (at any stage of the natural life cycle) that may or may not be accompanied by shrubs or other strata, covering a minimum area of 1 ha and capable of producing wood, other forest products, and ecosystem goods and services for the benefit of the population and that influence the water regime, soil and climate and provide habitat for wildlife. The crown coverage of said association must be greater than 10 per cent and the trees must reach a minimum height of 2 m for mangroves and 4 m for the rest of the ecosystems. Likewise, forest areas are also considered areas that temporarily lack forest population as a result of human intervention or natural causes, but with potential conditions, characteristics and vocation to become forest. The forest definition included in the modified FREL submission is different from that used by the Party for its latest national GHG inventory submitted to the secretariat (i.e. a height of 3 m or more for broadleaf forest and at least 10–30 per cent canopy cover for conifer and mangrove forests). In the modified FREL submission, Honduras clarified that the new definition allows for the full operationalization of forest monitoring at the national level, and that it was submitted to be included in the modification of the current Forest Law, in order to ensure consistency between operational data and the relevant national regulations. The new operational definition will also be used to estimate emissions and removals in the forest sector as part of future national GHG inventories to be submitted to the secretariat.

III. Conclusions

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

54. The FREL presented in the submission is Honduras's third FREL. The previous assessed FREL was submitted on 6 January 2020 and was subject to a TA in June 2020. It covered the activities reducing emissions from deforestation for the reference period 2000–2016 and reducing emissions from forest degradation and enhancement of forest carbon stocks for 2000–2018.

55. The AT acknowledges that Honduras included in its third FREL the most significant activities, the most important forest types and the most significant pools and gases in terms of emissions and removals from forests. The AT considers that, in doing so, Honduras 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 Honduras for providing information on its ongoing work, as part of the stepwise approach to improve its FREL over time.

56. As a result of the facilitative interactions with the AT during the TA, Honduras provided a modified submission that partially 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. The AT commends Honduras on its efforts, as the new information provided in the modified submission increased the reproducibility of the FREL calculations.

57. The AT notes that, overall, Honduras did not maintain consistency, in terms of forest and REDD+ activities, definitions, methods, AD and EFs used for its FREL, with those used for the latest GHG inventory included in its latest biennial update report.[12] However, during the TA Honduras clarified that the upcoming GHG inventory will be based on the current FREL submission.

58. Pursuant to decision 13/CP.19, annex, paragraph 2(f), in assessing the pools and gases included in the FREL the AT noted that all main pools, gases and activities have been included in the FREL. Pursuant to decision 13/CP.19, annex, paragraph 3, the AT identified the following areas for future technical improvement:

(a) Consistently applying the gain–loss method to account for both gains and losses (i.e. emissions and removals) on forest land remaining forest land;

(b) Providing sufficient information to verify that all undisturbed forest land remaining forest land associated with the activity conservation of forest carbon stocks is not in a steady state and results in significant real net removals;

(c) Providing a clearer description of the choices made in the modified FREL submission, in particular how the thresholds in table 10 are used (or not) in order to classify REDD+ activities and estimate carbon stock changes and where forest fires on land under sustainable forest management are accounted for;

(d) Clarifying how natural disturbances have been accounted for under other REDD+ activities, including conservation of forest carbon stocks;

(e) Disaggregating emissions and removals from natural disturbances in order to improve consistency with the national GHG inventory;

(f) Implementing a QA/QC process that includes revising the calculations and assumptions used to construct the FREL;

[12] In reference to the scope of the TA, as per decision 13/CP.19, annex, para. 2(a).

(g) Ensuring consistent estimation of uncertainty, applied for the reference period 2016–2020, and justifying outliers.

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

(a) Strengthen forest data collection and reduce the associated overestimations or underestimations of emissions and compare these estimates with official national statistics;

(b) Improve land-use classification data by carrying out a field validation of current land use by verifying approximately 14 per cent (2,622 plots) of the sampling points or plots established in the data-collection process;

(c) Improve data on forest fires by developing a verification process for the areas affected by fires in which the heat points of the Moderate Resolution Imaging Spectroradiometer sensor and the plots used in the data-collection process will be used as a reference layer to verify the affected areas and the timing of forest fires;

(d) Intensify sampling in mangrove forest;

(e) Develop a verification process for data on areas under sustainable forest management for the FREL period contained in the existing databases and compare them with the database of the land assessment app developed by the Coalition for Rainforest Nations;

(f) Improve estimates of EFs for legal logging;

(g) Institutionalize data collection and processing in order to improve information flows on the management of forest resources;

(h) Strengthen the national forest monitoring system and information management platforms for a more effective preparation and submission of FRELs and decision-making for the management, conservation and restoration of forest ecosystems.

60. In conclusion, the AT commends Honduras 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 Honduras'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.[13] The AT also acknowledges that the TA was an opportunity for a rich, open, facilitative and constructive technical exchange of information with Honduras.

61. The table contained in annex I summarizes the main features of Honduras's proposed FREL.

[13] 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 Honduras

Main features of the FREL		*Remarks*
Proposed FREL	–5 545 227 t CO_2 eq/year	The previous modified FREL (in 2020) was 8 142 121.66 t CO_2 eq/year. Therefore, the FREL went from net emissions to net removals (see para. 10 of this document)
Type and reference period of FREL	FREL = average of historical emissions and removals in 2016–2020	See paragraph 8 of this document
Application of adjustment for national circumstances	No	–
National/subnational	National	The FREL covers the whole national territory except for two islands of 1.1 and 2.5 km^2 located about 180 km off the north coast of Honduras (see para. 7 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	Honduras applied a land-based approach (approach 3 of the 2006 IPCC Guidelines) and the gain–loss method to calculate emissions and removals from each REDD+ activity (see paras. 12–13 of this document)
Pools included	Above-ground biomass Below-ground biomass Deadwood Litter Soil	The FREL excludes HWP (see para. 9 of this document)
Gases included	CO_2, CH_4, N_2O	Non-CO_2 emissions were estimated for forest fires occurring on disturbed forest land, grassland conversion to forest land and forest land conversion to cropland and grassland (see para. 31 of this document)
Forest definition	Included	Forests are defined as areas with the presence of tree species (a woody plant with a defined stem and crown), natural or planted, with a minimum area of 1 ha, crown coverage greater than 10 per cent for coniferous and mangrove forests, and greater than or equal to 30 per cent for other types of forest, and with tree species with heights greater than 2 m for mangrove forest and 3 m for the other types of forest The definition is different from the one used for the latest national GHG inventory submitted by Honduras (see para. 52 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)	Honduras indicated that its upcoming GHG inventory will be based on the current FREL submission (see para. 35 of this document)

Main features of the FREL		*Remarks*
Description of relevant policies and plans	Included	See chapter II.2(b) of this document
Description of assumptions on future changes to domestic policy, if included in constructing the FREL	Not applicable	–
Description of changes to previous FREL	Included	See paragraph 20 of this document
Identification of future technical improvements	Included	Several areas for future technical improvement have been identified by Honduras and the AT for the modified FREL submission (see para. 58 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-nggip.iges.or.jp/public/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 Honduras. Available at https://redd.unfccc.int/submissions.html?country=hnd.

"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 Honduras submitted in 2017. FCCC/TAR/2017/HND. Available at https://unfccc.int/documents/65118.

Report on the TA of the proposed FREL of Honduras submitted in 2020. FCCC/TAR/2020/HND. Available at https://unfccc.int/documents/273956.

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:

Charles T. "Chip" Scott. 2023. Estimates Methods for the National Forest Inventory of Honduras.

ICF. 2018. Mapa de cobertura forestal y uso del suelo Honduras. [Map of Forest Cover and Land Use of Honduras.] Comayaguela: Instituto Nacional de Conservación y Desarrollo Forestal, Áreas Protegidas y Vida Silvestre.

Excel spreadsheets used to calculate the FREL.

Excel workbook containing a comparison of definitions adopted for the 5 REDD+ activities.