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Report on the technical assessment of the proposed forest reference emission level and forest reference level of Côte d'Ivoire submitted in 2024

Summary

This report covers the technical assessment of the voluntary submission of Côte d'Ivoire on its proposed forest reference emission level (FREL) and forest reference level (FRL) in accordance with decision 13/CP.19 and in the context of results-based payments. The FREL and FRL proposed by Côte d'Ivoire cover the activities reducing emissions from deforestation, reducing emissions from forest degradation and enhancement of forest carbon stocks, which are among the activities included in paragraph 70 of decision 1/CP.16.

For its submission, Côte d'Ivoire developed a national FREL and FRL. The FREL and FRL presented in the original submission, based on the reference period 2015–2020, correspond to 46,886,522 tonnes of carbon dioxide equivalent (t CO_2 eq) per year and –217,091 t CO_2 eq per year respectively. As a result of the facilitative process during the technical assessment, the FREL and FRL were modified to 32,363,393 t CO_2 eq per year and –350,986 t CO_2 eq per year respectively.

The assessment team notes that the data and information used by Côte d'Ivoire in constructing its FREL and FRL are transparent, complete and in overall accordance with the guidelines contained in the annex to decision 12/CP.17. This report contains information on the assessed FREL and FRL, 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 the annex to decision 13/CP.19.

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
EF	emission factor
ERP	Emission Reduction Program of Côte d'Ivoire
FREL	forest reference emission level
FRL	forest reference level
GHG	greenhouse gas
HAC	high activity clay
HWSD	Harmonized World Soil Database
IPCC	Intergovernmental Panel on Climate Change
LAC	low activity clay
N_2O	nitrous oxide
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)
SEPAL	System for Earth Observation Data Access, Processing and Analysis for Land Monitoring
SOC	soil organic carbon
TA	technical assessment

I. Introduction and summary

A. Overview

1. This report covers the TA of the submission of Côte d'Ivoire on its proposed FREL and FRL,[1] submitted on 8 January 2024, in accordance with decisions 12/CP.17 and 13/CP.19. The TA took place from 18 to 22 March 2024 and was coordinated by the secretariat.[2] The TA was conducted by the AT, consisting of two land use, land-use change and forestry experts from the UNFCCC roster of experts:[3] Danae Maniatis (Belgium) and Carlos Riano (Colombia). The Consultative Group of Experts was invited to participate in the TA as an observer[4] but no representative was available. The TA was coordinated by Keiichi Igarashi (secretariat).

2. In response to the invitation of the COP and in accordance with the provisions of paragraphs 7–15 of and the annex to decision 12/CP.17, Côte d'Ivoire submitted its proposed FREL and FRL on a voluntary basis. The proposed FREL and FRL are among the elements[5] to be developed in implementing the activities referred to in paragraph 70 of decision 1/CP.16. Pursuant to paragraphs 1–2 of decision 13/CP.19 and paragraphs 7–8 of decision 14/CP.19, the COP decided that each submission of a proposed FREL and/or FRL, as referred to in paragraph 13 of decision 12/CP.17, shall be subject to a TA in the context of results-based payments.

3. Côte d'Ivoire provided its submission in French. The submission is supported by five annexes, an Excel file in French that covers the estimation of AD and EFs and the construction of the FREL and FRL, and a GitHub repository that includes the codes and procedures used to obtain the AD, which enhance the transparency of the FREL and FRL.

4. The objective of the TA is to assess the degree to which the information provided by Côte d'Ivoire 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 and FRL with a view to supporting the capacity of Côte d'Ivoire to construct and improve its FREL and FRL in the future, as appropriate.[7]

5. The TA of the FREL and FRL submitted by Côte d'Ivoire 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 Côte d'Ivoire. The facilitative exchange during the TA allowed Côte d'Ivoire to provide clarifications and additional information, which were considered by the AT in preparing this report.[9] As a result of the facilitative interactions with the AT during the TA, Côte d'Ivoire provided a modified version of its submission on 15 June 2024, which took into consideration the technical input of the AT. The modifications improved the clarity and transparency of the submitted FREL and FRL. The AT commends Côte d'Ivoire for providing additional clarifications and information during the TA and continuing to work on updating and improving the FREL and FRL for the modified submission. This TA report was prepared in the context of the modified FREL and FRL submission.

[1] The submission of Côte d'Ivoire is available at https://redd.unfccc.int/submissions.html?country=civ.
[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.

B. Proposed forest reference emission level and forest reference level

7. In paragraph 70 of decision 1/CP.16, 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 and FRL proposed by Côte d'Ivoire, on a voluntary basis for a TA in the context of results-based payments, cover the activities reducing emissions from deforestation, reducing emissions from forest degradation and enhancement of forest carbon stocks, which are three of the five activities referred to in paragraph 70 of decision 1/CP.16. The FREL and FRL include the emissions from deforestation associated with clear-cutting of natural forest, without provision for regeneration; the emissions from forest degradation associated with reducing the biological, structural and functional parameters of a forest that remains a forest according to the definition; and the removals from enhancement of forest carbon stocks associated with natural regeneration and tree planting leading to conversion of non-forest land to forest land. For its submission, Côte d'Ivoire applied a stepwise approach to developing its FREL and FRL in accordance with paragraph 10 of decision 12/CP.17, which enables Parties to improve their FREL and/or FRL by incorporating better data, improved methodologies and, where appropriate, additional pools.

8. The FREL and FRL submitted by Côte d'Ivoire in the modified submission correspond to 32,363,393 t CO_2 eq/year and –350,986 t CO_2 eq/year respectively based on the reference period 31 December 2015 to 31 December 2020.[10] The table contained in annex I summarizes the main features of the FREL and FRL presented in the modified submission, with the aim of accessing results-based payments for REDD+ activities, including reference period, territorial coverage, and pools and gases included.

9. For constructing its FREL and FRL, Côte d'Ivoire used the 2006 IPCC Guidelines and the 2019 Refinement to the 2006 IPCC Guidelines.

10. The AD used to construct the FREL were obtained using the ensemble Sample Based Area Estimation approach according to the SEPAL[11] workflow. Optimal allocation was employed to randomly select sample units from a dense grid of 1 km by 1 km across three strata reflecting low, medium and high probability of change in the historical reference period 2015–2020. The probability of change was modelled using a set of change detection layers as input, global data on land use (such as the European Space Agency Climate Change Initiative reference map) and 4,835 sample units as training data (4,000 from the ERP zone and 835 from the non-ERP zone). The AD for the ERP zone, used by Côte d'Ivoire in its ERP under the Forest Carbon Partnership Facility, were fully applied in constructing the national FREL. An additional set of 3,458 sample units was assessed as reference data (validation data). Final AD were estimated using information from 8,293 sample units (training and validation). Sample units were classified by a group of 10 photo-interpretation experts using the Collect Earth Online tool of the Food and Agriculture Organization of the United Nations.

11. The EFs used by Côte d'Ivoire include those derived from the national forest inventory carried out in 2017 and IPCC default EFs from the 2006 IPCC Guidelines and the 2019 Refinement to the 2006 IPCC Guidelines. For the forest inventory Côte d'Ivoire used 150 sampling units, each with 4 plots, for a total of 600 plots distributed across the four phytogeographic zones of the country. It employed the pantropical allometric equation developed by Chave et al. (2014) to convert field measurements into estimates of above-ground biomass. The Party estimated EFs specifically for the activities reducing emissions from deforestation, reducing emissions from forest degradation and enhancement of forest carbon stocks, covering the above-ground biomass, below-ground biomass, deadwood, litter and SOC carbon pools; although SOC was not included for reducing emissions from forest degradation, and only above-ground biomass was included for enhancement of forest carbon

[10] In its original submission, Côte d'Ivoire proposed a FREL of 46,886,522 t CO_2 eq/year and a FRL of –217,091 t CO_2 eq/year. The difference between the original and the modified submission is due mostly to improved calculations based on the technical exchanges with the AT.

[11] See https://docs.sepal.io/en/latest/workflows/eSBAE.html.

stocks. Côte d'Ivoire included CO_2, CH_4 and N_2O in the FREL and FRL, with CO_2 considered for all three REDD+ activities, and CH_4 and N_2O included only for reducing emissions from deforestation.

12. The FREL and FRL proposed by Côte d'Ivoire are its second FREL and FRL submitted in the context of applying the stepwise approach. The previous FREL and FRL were submitted on 2 January 2017 and were subject to a TA in 2017; they covered the activities reducing emissions from deforestation and enhancement of forest carbon stocks based on the reference period 2000–2015 and corresponded to emissions of 41,403,705.36 t CO_2 eq/year and removals of 1,723,344.56 t CO_2 eq/year. They were therefore higher than the FREL and lower than the FRL proposed in the most recent submission (see the table below for the differences between the most recent and previous FREL and FRL).

13. The uncertainties associated with the AD were assessed using the 90 per cent confidence interval. Four standard operating procedures[12] for data analysis were used, which explain how uncertainty was calculated for the AD: "Statistician estimates the standard error by computing the square root of the sum of the individual variance for each of the stratum or stratum/biogeographical zone combinations". Uncertainties for EFs were provided per forest type in ERP and non-ERP zones in the modified submission, using the 90 per cent confidence interval. To combine the uncertainties of the EFs for above-ground biomass, below-ground biomass, litter and deadwood (the uncertainties associated with the EFs are described in annex 4 to the modified submission), Côte d'Ivoire applied the simple error propagation method from the 2019 Refinement to the 2006 IPCC Guidelines (vol. 1, chap. 3, equation 3.2). Finally, to calculate the combined uncertainty of the FREL and FRL, Côte d'Ivoire applied the simple error propagation method from the 2019 Refinement to the 2006 IPCC Guidelines (vol. 1, chap. 3, equations 3.2 and 3.2B and box 3.0B).

II. Technical assessment of the proposed forest reference emission level and forest reference level

14. The table below describes the findings from the TA of the data, methodologies and procedures used by the developing country Party under assessment in constructing its FREL and FRL within the scope of the TA in accordance with decision 13/CP.19 and its annex.

[12] See https://1drv.ms/w/s!AjuGNp-WjLPhtk8bciWOGMPSVhic?e=DwxcRh, https://1drv.ms/w/s!AjuGNp-WjLPhtlDChBQthlF-XQ-F?e=Roq0wM, https://1drv.ms/w/s!AjuGNp-WjLPhtlGTpbg0Wp3R3jZ4?e=EDwGHW and https://1drv.ms/w/s!AjuGNp-WjLPhtlKzf4lDhB_tYjG6?e=KWhi90.

Findings from the technical assessment of the data, methodologies and procedures used by the developing country Party under assessment in constructing its forest reference emission level and/or forest reference level

Finding ID#	*Aspect of the scope of the TA (decision 13/CP.19, annex, para. 2)*	*Description of the issue, additional information shared by the Party during the TA, and TA by the AT*	*Area for future technical improvement*
1	2(a) Consistency with the national GHG inventories	The AT noted that, overall, Côte d'Ivoire maintained consistency in terms of sources of AD and EFs used for its FREL and FRL with those used for the GHG inventory included in its first and second biennial update reports. In its FREL and FRL submission, Côte d'Ivoire explained that it included SOC for the first time in the most recent FREL and FRL. During the TA, Côte d'Ivoire explained that SOC will be reported in future submissions to the UNFCCC, including its biennial transparency reports and national communications. The AT concludes that, overall, Côte d'Ivoire maintained consistency between the FREL and FRL and the national GHG inventories.	
2	2(b) How historical data have been taken into account	The national FREL and FRL proposed by Côte d'Ivoire for the historical reference period 2015–2020 are the annual average of the CO_2 eq emissions and removals associated with deforestation, forest degradation and enhancement of forest carbon stocks in the country. The AT concludes that the available historical data have been taken into account in constructing the FREL and FRL.	
3	2(c) Transparency – Approach	The AT noted that for the original submission the approaches used by Côte d'Ivoire to construct the FREL and FRL included uncertainties for AD only. During the TA, Côte d'Ivoire explained that it planned to estimate the EF and combined uncertainties for the modified submission. The AT commends the Party for including the uncertainties for AD and EFs and the combined AD–EF uncertainties in the modified submission.	
4	2(c) Accuracy – EFs	The AT noted that Côte d'Ivoire calculated a mean biomass for before land conversion for each activity on the basis of the results of the national forest inventory carried out in 2017. The method used to estimate the mean values considers the number of samples in each phytogeographic zone and not the estimates by stratified area that each of these samples represents. The AT commends Côte d'Ivoire for improving the FREL and FRL submission by including specific carbon stocks for each phytogeographic zone and forest type in the modified submission.	
5	2(c) Accuracy – EFs	The AT noted that, to calculate GHG emissions from conversion of forest land to non-forest land, Côte d'Ivoire used a P-factor (for years after conversion of forest land) of 2.5 years, which can lead to an overestimation of total emissions in all equations it is used.	

Finding ID#	Aspect of the scope of the TA (decision 13/CP.19, annex, para. 2)	Description of the issue, additional information shared by the Party during the TA, and TA by the AT	Area for future technical improvement
		During the TA, Côte d'Ivoire stated that it would revise the calculation on the basis of the suggestions made by the AT. For the modified submission, Côte d'Ivoire modelled the growth of forest, instead of applying a P-factor, to simulate the release of emissions from soil and sequestration of biomass removals. The AT concludes that the modified approach provides a more accurate estimation of soil emissions and biomass removals, and commends Côte d'Ivoire for this improvement in the modified submission.	
6	2(c) Accuracy – EFs	The AT noted that, to estimate carbon stock changes in above-ground biomass due to reforestation, Côte d'Ivoire used the average growth of secondary forests in ombrophilous and mesophilic zones cited in an ERP document.[a] The AT examined the FREL and FRL submission and the supporting Excel file, and found that the values used were the tropical rainforest value for ombrophilous zones (7 t dry matter/ha/year) and the tropical moist deciduous forest value for mesophilic zones (5 t dry matter/ha/year) provided in the 2006 IPCC Guidelines (vol. 4, chap. 4, table 4.12). The AT considered that Côte d'Ivoire could estimate the average growth of secondary forests for the sub-Sudanese and Sudanese zones using the value for above-ground biomass of natural forests provided in table 4.12 of the 2006 IPCC Guidelines. During the TA, Côte d'Ivoire explained that different average growth values would be applied for each forest type included in the FREL and FRL. The removal factors in the modified submission were calculated using the removal factors associated with the enhancement of forest carbon stocks specific to each phytogeographic zone and forest type in the country. The AT concludes that using removal factors for each forest type and phytogeographic zone increases the accuracy and consistency of the estimates for enhancement of forest carbon stocks, and commends Côte d'Ivoire for this improvement in the modified submission.	
7	2(c) Accuracy – AD	The AT noted that the reported stable forest area decreased by 58 per cent from 5,540,927 ha in the original submission to 2,336,014 ha in the modified submission, while all other forest areas reported increased. Côte d'Ivoire explained that it revised the samples used to estimate the AD, as part of quality assurance/quality control activities, correcting several reference samples erroneously classified as being in the stable forest classes in the original submission. As a result, errors in the AD were reduced and the estimate of stable forest area for 2020 was revised to 2,336,014 ha.	
8	2(c) Accuracy – AD	The AT noted that Côte d'Ivoire used the HWSD 2.0 soil map to select the soil classes used to determine the changes in SOC for all included activities. According to the soil map, 85.77 per cent of the soils in Côte d'Ivoire are LAC soils and 11.79 per cent are HAC soils. The Party only considered LAC soils because their carbon	The AT notes using the HWSD soil map (or any other more accurate soil map) to differentiate between LAC and HAC soil areas as an area

Finding ID#	*Aspect of the scope of the TA (decision 13/CP.19, annex, para. 2)*	*Description of the issue, additional information shared by the Party during the TA, and TA by the AT*	*Area for future technical improvement*
		stock is lower than that of HAC soils, resulting in conservative estimates in terms of emissions. During the TA, Côte d'Ivoire clarified that it will include all relevant soil classes presented in the HWSD soil map in future FREL and FRL submissions.	for future technical improvement of the FREL and FRL in order to improve the accuracy of the SOC emission estimates.
9	2(d) Description of relevant policies and plans, as appropriate	In its original submission, Côte d'Ivoire provided a list of relevant REDD+ processes, policies and legal text as part of the information on its national circumstances. During the technical exchanges with the Party, the AT asked for more information on relevant policies and plans, but Côte d'Ivoire did not provide any in the modified submission. Côte d'Ivoire did not apply an adjustment to the FREL or FRL based on national circumstances.	The AT notes providing descriptions of relevant policies and plans as an area for future technical improvement of the FREL and FRL.
10	2(e) Changes to previously submitted FREL and FRL	In its FREL and FRL submission, Côte d'Ivoire described the following changes from previously submitted information in accordance with paragraph (b) of the annex to decision 12/CP.17: including reducing emissions from forest degradation, non-CO_2 gases and SOC in the FREL and FRL. In addition to the differences mentioned by the Party, the AT identified the following differences in methods and data used between Côte d'Ivoire's previous and most recent FREL and FRL submissions: (a) A different method was used for calculating the EFs. This issue was raised during the TA and Côte d'Ivoire clarified in its modified submission that for the most recent FREL and FRL it estimated EFs for each category of forest (dense forest, degraded forest), which was not the case for the previous FREL; (b) A different approach was used to estimate AD. This issue was raised during the TA and Côte d'Ivoire indicated that it would clarify this in its modified submission, but this was not done. During the TA, Côte d'Ivoire explained that the changes had been made considering the areas for improvement identified during the previous TA and owing to the methods used for estimating AD, EFs, etc., to receive payments through the World Bank's Forest Carbon Partnership Facility and Carbon Fund. The AT concludes that the FREL and FRL proposed in the most recent submission differ from the FREL and FRL proposed in the modified 2017 submission previously assessed owing mainly to the different approach to estimating AD, different method for calculating EFs – including for reducing emissions from forest degradation – and the inclusion of non-CO_2 gases and SOC. In making these changes, Côte d'Ivoire addressed most of the areas for future technical improvement identified during the previous TA (see document FCCC/TAR/2017/CIV, para. 38).	The AT reiterates the finding of the previous AT that obtaining data from the latest national forest inventory, once available, so that the FREL and FRL can be updated with EFs that are more representative of deforestation is an area for future technical improvement of the FREL and FRL.

Finding ID#	*Aspect of the scope of the TA (decision 13/CP.19, annex, para. 2)*	*Description of the issue, additional information shared by the Party during the TA, and TA by the AT*	*Area for future technical improvement*
		Only the issue of increasing the sample size for biomass measurement to derive EFs that are more representative of deforestation was not addressed for the most recent FREL and FRL. Côte d'Ivoire indicated that steps are being taken to obtain data from the latest national forest inventory so that the FREL and FRL can be updated using EFs that are more representative of deforestation. The AT commends Côte d'Ivoire for the improvements made in the modified submission compared with its previous FREL submission.	
11	2(f) Pools – harvested wood products	The above-ground biomass, below-ground biomass, deadwood, litter and SOC pools were included in the FREL and FRL, although SOC was not considered for reducing emissions from forest degradation, and enhancement of forest carbon stocks includes only above-ground biomass. Harvested wood products was not included in the FREL and FRL. According to paragraph (c) of the annex to decision 12/CP.17, reasons for omitting a pool in constructing the FREL and FRL should be provided, noting that significant pools should not be excluded. With regard to emissions from harvested wood products, the AT requested clarification of the reasons for omitting the pool. In response, Côte d'Ivoire explained that the pool was not included because the national data for harvested wood products were deemed insufficient to support analysis of associated GHG emissions. The AT considers that the exclusion of harvested wood products was not adequately justified by Côte d'Ivoire but commends its intention to obtain better information on the pool with the aim of including it in future FREL and FRL submissions as part of the stepwise approach. The AT is unable to conclude whether the Party's emissions from harvested wood products are likely to be insignificant.	The AT considers the treatment of emissions from harvested wood products to be an area for future technical improvement of the FREL and FRL, in terms of including the pool or providing more information to justify its omission.
12	2(f) Gases – CH_4 and N_2O	CO_2, CH_4 and N_2O were included in the FREL and FRL, although only CO_2 was considered for reducing emissions from forest degradation and enhancement of forest carbon stocks. For non-CO_2 gases the AT could not find AD related to the area affected by fire in the original FREL and FRL submission and noted that Côte d'Ivoire assumed that 50 per cent of deforestation was caused by fire during the reference period. During the TA, Côte d'Ivoire explained that, in the absence of precise data on the area of land burned, this assumption was based on national expert judgment. Côte d'Ivoire reaffirmed its awareness of the need to make efforts to obtain AD related to forest fires. In the modified submission, Côte d'Ivoire provided AD related to the area affected by fire, which showed the 50 per cent of forest converted to certain non-	The AT considers obtaining more accurate AD on the area affected by fire to be an area for future technical improvement of the FREL and FRL.

Finding ID#	*Aspect of the scope of the TA (decision 13/CP.19, annex, para. 2)*	*Description of the issue, additional information shared by the Party during the TA, and TA by the AT*	*Area for future technical improvement*
		forest classes, notably agricultural land. The AT commends Côte d'Ivoire for providing the additional information.	
13	2(f) Activities – conservation of forest carbon stocks and sustainable management of forests	Conservation of forest carbon stocks and sustainable management of forests were not included in the FREL and FRL. Pursuant to paragraph (c) of the annex to decision 12/CP.17, reasons for omitting an activity in constructing the FREL and FRL should be provided, noting that significant activities should not be excluded. During the technical exchanges with the Party, the AT requested clarification as to why the two activities were excluded. On the basis of the information provided by the Party in the modified submission, the AT acknowledges that it is likely that Côte d'Ivoire included in its FREL and FRL the most significant activities (reducing emissions from deforestation, reducing emissions from forest degradation and enhancement of forest carbon stocks) of the five activities identified in paragraph 70 of decision 1/CP.16 in accordance with its national capabilities and circumstances. The AT notes that the other activities, conservation of forest carbon stocks and sustainable management of forests, could also be significant.	The AT considers the treatment of emissions and removals from conservation of forest carbon stocks and sustainable management of forests (including the activities or providing more information justifying their omission) to be an area for future technical improvement of the FREL and FRL.
14	2(g) Definition of forest	Côte d'Ivoire provided in its submission the definition of forest used in constructing its FREL and FRL: any area of 0.1 ha in a single block with forest trees whose crown covers at least 30 per cent of the surface and that reach a minimum height of 5 m at maturity, constituting a dynamic and heterogeneous environment with a direct or indirect effect on the soil, climate and water regime. In the forest definition submitted by Côte d'Ivoire, seven additional attributes of forest are listed and described. How these areas are detected in practice was not clearly explained in the original submission. During the technical exchanges with the Party, the AT invited it to provide further clarification in the modified submission of how these additional forest attributes are detected. In its modified submission, Côte d'Ivoire clarified which attributes were measured using remote sensing techniques for the FREL. These are forest height (minimum 5 m), tree crown cover (minimum 30 per cent) and minimum cartographic unit (0.5 ha).	
15	2(g) Definition of forest	During the TA, the AT asked Côte d'Ivoire to clarify whether agricultural tree plantations, such as cocoa, palm oil and rubber, are included in or excluded from the forest definition. In the modified submission, Côte d'Ivoire clarified that they are excluded from the forest definition.	
16	2(g) Definition of forest	During the TA, the AT asked Côte d'Ivoire to clarify how agroforestry was taken into account in estimating AD and how agroforestry plots differ from forest. Côte d'Ivoire clarified in the modified submission that agroforestry plots are areas where agricultural plantations and forest trees coexist; while forest is the land category to	

Finding ID#	*Aspect of the scope of the TA (decision 13/CP.19, annex, para. 2)*	*Description of the issue, additional information shared by the Party during the TA, and TA by the AT*	*Area for future technical improvement*
		which agroforestry belongs, alongside other classes (dense forest, open forest, mangrove, forest plantations, etc.).	
17	2(g) Definition of forest	The forest definition is the same as that used by Côte d'Ivoire for its national GHG inventory and its reporting to the Food and Agriculture Organization of the United Nations for the Global Forest Resources Assessment.	

[a] See https://www.forestcarbonpartnership.org/country/cote-divoire.

III. Conclusions

15. The FREL and FRL presented in the submission are Côte d'Ivoire's second FREL and FRL.

16. The FREL and FRL presented in the most recent modified submission, based on the reference period 2015–2020, correspond to 32,363,393 t CO_2 eq/year and –350,986 t CO_2 eq/year respectively.

17. The AT acknowledges that, given the availability of data, Côte d'Ivoire included in its FREL and FRL the most relevant activities, the most important forest types and phytogeographic zones, and the most significant pools in terms of emissions from forests. The AT considers that, in doing so, Côte d'Ivoire followed paragraph 70 of decision 1/CP.16, on activities undertaken, and paragraph 10 of decision 12/CP.17, on applying the stepwise approach. The AT commends Côte d'Ivoire for its plan to obtain more data at the national level for the activities conservation of forest carbon stocks and sustainable management of forests as a step towards constructing a more detailed national FREL and FRL.

18. As a result of the facilitative interactions with the AT during the TA, Côte d'Ivoire 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 and FRL submission and commends Côte d'Ivoire on its efforts. The new information provided in the modified submission, including the data shared and the examples of how estimates of CO_2 emissions from deforestation were calculated, increased the reproducibility of the FREL and FRL calculations.

19. Pursuant to paragraph 3 of the annex to decision 13/CP.19, the AT identified areas for future technical improvement (see the table above).

20. The information used by Côte d'Ivoire in constructing its FREL and FRL for reducing emissions from deforestation, reducing emissions from forest degradation and enhancement of forest carbon stocks is transparent, complete and in overall accordance with the guidelines for submissions of information on reference levels.

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

(a) Disaggregate AD by subcategory of forest;

(b) Apply EFs obtained from the data of the national forest and wildlife inventory, which are more representative of the REDD+ activities, to increase the accuracy of the estimates;

(c) Establish a national definition of forest degradation and collect AD and EFs aligned with that definition.

22. In conclusion, the AT commends Côte d'Ivoire for showing strong commitment to continuously improving its FREL and FRL estimates in line with the stepwise approach. A number of areas for the future technical improvement of Côte d'Ivoire's FREL and FRL 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 Côte d'Ivoire.

[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 and forest reference level based on information provided by Côte d'Ivoire

Main features of the FREL and FRL		*Remarks*
Proposed FREL	32 363 393 t CO_2 eq/year	See paragraph 8 of this document
Proposed FRL	–350 986 t CO_2 eq/year	See paragraph 8 of this document
Type and reference period of FREL and FRL	FREL = average of historical emissions from 31 December 2015 to 31 December 2020 FRL = average of historical removals from 31 December 2015 to 31 December 2020	See paragraph 8 of this document
Application of adjustment for national circumstances	No	
National/subnational	National	See paragraph **Error! Reference source not found.** of this document
Activities included	Reducing emissions from deforestation Reducing emissions from forest degradation Enhancement of forest carbon stocks	See paragraph 7 of this document
Pools included	Above-ground biomass Below-ground biomass Deadwood Litter SOC	SOC was not considered for reducing emissions from forest degradation, and only above-ground biomass was included for enhancement of forest carbon stocks (see para. 11 of this document)
Gases included	CO_2, CH_4 and N_2O	Non-CO_2 GHGs were included only for reducing emissions from deforestation (see para. 11 of this document)
Forest definition	Included	See also finding ID#s 14–17 in the table in this document
Consistency with latest national GHG inventory	Methods used for estimating the FREL and FRL are overall consistent with those used for the latest national GHG inventory (2020)	See also finding ID# 1 in the table in this document
Description of relevant policies and plans	Partially included	See also finding ID# 9 in the table in this document
Description of assumptions on future changes to domestic policy, if included in constructing the FREL/FRL	Not applicable	
Description of changes to previous FREL/FRL	Partially included	See also finding ID# 10 in the table in this document
Identification of future technical improvements	Included	Several areas for future technical improvement have been identified (see finding ID#s 8–13 in the table and para. 21 in 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. 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 biennial update reports and national inventory report of Côte d'Ivoire. Available at https://unfccc.int/BURs.

First and second FREL and FRL submissions of Côte d'Ivoire. Available at https://redd.unfccc.int/submissions.html?country=civ.

First, second and third national communications of Côte d'Ivoire. Available at https://unfccc.int/non-annex-I-NCs.

"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 Côte d'Ivoire submitted in 2017. FCCC/TAR/2017/CIV and Corr.1. Available at https://unfccc.int/documents/65141 and https://unfccc.int/documents/181344.

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:

Chave, Jérôme, et al. 2014. Improved allometric models to estimate the aboveground biomass of tropical trees. *Global change biology* 20.10: pp.3177–3190.