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Technical report on the technical analysis of the technical annex to the second biennial update report of Colombia submitted in accordance with decision 14/CP.19, paragraph 7, on 28 December 2018
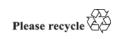
Summary

This technical report covers the technical analysis of the technical annex submitted on a voluntary basis, in the context of results-based payments, by Colombia on 28 December 2018 through its second biennial update report in accordance with decision 14/CP.19. The technical annex provides data and information on the activity reducing emissions from deforestation, which is an activity included in decision 1/CP.16, paragraph 70, and covers the same subnational territorial forest area as the assessed forest reference emission level for deforestation in the Colombian Amazon biome proposed by Colombia in its submission of December 2014.

Colombia reported the results of the implementation of this activity for 2015–2016, which amount to 31,474,933.5 tonnes of carbon dioxide equivalent and were measured against the assessed forest reference emission level of 51,612,072.9 tonnes of carbon dioxide equivalent per year.

The data and information provided in the technical annex are in overall accordance with the guidelines contained in the annex to decision 14/CP.19. The technical analysis concluded that the data and information provided by Colombia in the technical annex are transparent and consistent with the assessed forest reference emission level in the Amazon biome established in accordance with decision 1/CP.16, paragraph 71(b), and decision 12/CP.17, section II. This report contains the findings of the technical analysis and a few areas identified for capacity-building and future technical improvement in accordance with decision 14/CP.19, paragraph 14.

Contents

Abbreviations and acronyms

AD	activity data
BUR	biennial update report
CGE	Consultative Group of Experts
CO_2	carbon dioxide
CO_2 eq	carbon dioxide equivalent
EF	emission factor
FARC	People's Alternative Revolutionary Force
FREL	forest reference emission level
GHG	greenhouse gas
IDEAM	Institute of Hydrology, Meteorology and Environmental Studies of Colombia
IPCC	Intergovernmental Panel on Climate Change
IPCC good practice guidance for LULUCF	*Good Practice Guidance for Land Use, Land-Use Change and Forestry*
LULUCF	land use, land-use change and forestry
MRV	measurement, reporting and verification
NFI	national forest inventory
NFMS	national forest monitoring system
NIR	national inventory report
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)
SMByC	Colombia's forest and carbon monitoring system
TA	technical analysis
TTE	team of technical experts
2006 IPCC Guidelines	*2006 IPCC Guidelines for National Greenhouse Gas Inventories*

I. Introduction

A. Introduction

1.   This technical report covers the TA of the technical annex provided by Colombia on 28 December 2018 in accordance with decision 14/CP.19, paragraph 7, included in the second BUR of Colombia, which was submitted in accordance with decision 2/CP.17, paragraph 41(a), and annex III, paragraph 19. In the technical annex, Colombia provided the data and information used for estimating its anthropogenic forest-related emissions by sources and removals by sinks, forest carbon stocks, and forest carbon stock and forest-area changes resulting from the implementation of REDD+ activities. The submission of the technical annex is voluntary and in the context of results-based payments in accordance with decision 14/CP.19, paragraph 8. The TA was coordinated by Nalin Srivastava (secretariat).

2.   In this context, Colombia underlined that the submission of the technical annex through its second BUR was made voluntarily in the context of results-based payments in line with the Warsaw framework for REDD+ with the purpose of having access to payments for the results of the implementation of the activity reducing emissions from deforestation in the Amazon biome for 2015–2016; and that it does not modify the intended nationally determined contribution of Colombia or any other legal instrument of national character or binding agreement under the Convention.

3.   The TA of the technical annex is part of the international consultation and analysis of BURs referred to in decision 2/CP.17, annex IV, paragraph 4, the objective of which is to increase the transparency of mitigation actions and their effects through analysis by the TTE in consultation with Colombia and through a facilitative sharing of views, resulting in a separate summary report.[1]

4.   Colombia made its second FREL submission, for deforestation in the Colombian Amazon biome, in accordance with decision 12/CP.17, on 8 December 2014, which was subject to a technical assessment following the guidance provided in decision 13/CP.19 and its annex. The assessed FREL[2] was included as one of the elements of the technical annex to its second BUR in accordance with the guidelines contained in the annex to decision 14/CP.19. The findings from the technical assessment of the FREL are included in a separate report.[3]

5.   Colombia previously submitted a technical annex to its first BUR on 17 February 2016. During the TA process, the Party submitted a modified technical annex on 18 October 2016. The outcome of the TA thereof is contained in document FCCC/SBI/ICA/2016/TATR.1/COL. Previous submissions of the Party's FREL, BURs with technical annexes and associated technical assessment and analysis reports are available online.[4]

B. Process overview

6.   The TA of the second BUR of Colombia took place from 27 to 31 May 2019 in Bonn and was undertaken by the following TTE drawn from the UNFCCC roster of experts on the basis of the criteria defined in decision 20/CP.19, annex, paragraphs 2–6: Maria Ana Gonzalez Casartelli (Argentina), Carlos Fuller (former member of the CGE from Belize), Renata Grisoli (Brazil), Agustín José Inthamoussu (Uruguay), Naofumi Kosaka (Japan), Kakhaberi Mdivani (Georgia), Lilian Portillo (former member of the CGE from Paraguay), Marcelo Theoto Rocha (Brazil), Christoph Streissler (Austria) and Silke Christina (Sina) Wartmann (Germany). Mr. Rocha and Ms. Wartmann were the co-leads. Jorge Eduardo

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[1] FCCC/SBI/ICA/2016/TASR.1/COL.

[2] The value of Colombia's FREL reported in its first FREL submission, which was subject to technical assessment, was 51,599,618.7 t CO_2 eq/year. However, in the first technical annex submitted with its first BUR, the Party revised the FREL to 51,612,072.9 t CO_2 eq/year in order to correct a calculation error made in the FREL submission.

[3] FCCC/TAR/2015/COL, published on 20 October 2015.

[4] https://redd.unfccc.int/submissions.html?country=col.

Morfín Ríos (Mexico) and Elisabeth Pagnac-Farbiaz (France) were the LULUCF experts who undertook the TA of the technical annex in accordance with decision 14/CP.19, paragraphs 10–13.

7. The TA of the technical annex provided by Colombia was undertaken in accordance with the procedures contained in decisions 2/CP.17, 14/CP.19 and 20/CP.19. This technical report on the TA was prepared by the LULUCF experts in the TTE in accordance with decision 14/CP.19, paragraph 14.

8. During the TA and subsequent exchanges, the LULUCF experts and Colombia engaged in technical discussions, and Colombia provided clarifications in response to the questions raised by the LULUCF experts, in order to reach a common understanding on the identification of the capacity-building needs of the Party and areas for technical improvement.

9. Following the TA of the technical annex, the LULUCF experts prepared and shared the draft technical report with Colombia for its review and comments. The LULUCF experts responded to the Party's comments and incorporated them into and finalized this technical report in consultation with Colombia.

C. Summary of results

10. In decision 1/CP.16, paragraph 70, the Conference of the Parties 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 in accordance with its respective capabilities and national circumstances. In the context of results-based payments and in line with decision 12/CP.17, Colombia, on a voluntary basis, proposed a subnational FREL covering the activity reducing emissions from deforestation for the purpose of a technical assessment in accordance with decision 13/CP.19 and its annex. The activity is being implemented in Colombia's Amazon biome, which covers an area of 458,961 km^2, comprising nearly 40 per cent of the national territory and 67 per cent of the country's total forest land. The assessed FREL of Colombia is 51,612,072.9 t CO_2 eq/year (see footnote 2 above and para. 21 below).

11. The Party's FREL is based on its annual average historical CO_2 emissions associated with gross deforestation for the reference period 2000–2012. Forest is defined as land with tree cover with a minimum canopy density of 30 per cent, a minimum canopy height (in situ) of 5 m at the time of identification and a minimum area of 1 ha. Under the provisions contained in decision 12/CP.17, paragraph 9, Colombia adjusted its proposed FREL upwards by 10 per cent compared with the historical average emissions for 2000–2012 in order to take into account national circumstances affecting historical deforestation. Colombia reported the results of the implementation of the deforestation activity for 2015–2016, calculated against the FREL, which amount to emission reductions of 19,365,884.7 t CO_2 eq for 2015 and 12,109,048.8 t CO_2 for 2016.

12. Colombia submitted its first FREL for technical assessment in 2014.[5] The value of the assessed FREL was 51,612,072.9 t CO_2 eq/year for the reference period 2000–2012. Measured against this value, Colombia also submitted results amounting to emission reductions of 13,544,112.3 t CO_2 eq for 2013 and 15,439,415.1 t CO_2 eq for 2014.

II. Technical analysis of the information reported in the technical annex to the second biennial update report

A. Technical annex

13. For the technical annex to the second BUR submitted by Colombia, see annex I.[6]

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[5] See document FCCC/TAR/2015/COL.
[6] In accordance with decision 14/CP.19, para. 14(a).

B. Technical analysis

14. The scope of the TA is outlined in decision 14/CP.19, paragraph 11, according to which the TTE shall analyse the extent to which:

(a) There is consistency in the methodologies, definitions, comprehensiveness and information provided between the assessed FREL and the results of the implementation of REDD+ activities;

(b) The data and information provided in the technical annex are consistent, complete, mostly transparent and accurate;

(c) The data and information provided in the technical annex are consistent with the guidelines referred to in decision 14/CP.19, paragraph 9;

(d) The results are accurate, to the extent possible.

15. The remainder of this chapter presents the results of the TA of the technical annex to the second BUR according to the scope outlined in paragraph 14 above.

1. Consistency in the methodologies, definitions, comprehensiveness and information provided between the assessed reference level and the results in the technical annex

16. In accordance with decision 14/CP.19, paragraph 3, the data and information used by Parties for estimating anthropogenic forest-related emissions by sources and removals by sinks, forest carbon stocks, and forest carbon stock and forest-area changes related to REDD+ activities undertaken by them should be transparent and consistent over time and with their established FREL in accordance with decision 1/CP.16, paragraph 71(b–c), and decision 12/CP.17, section II.

17. The LULUCF experts noted that Colombia ensured consistency between its FREL and its estimation of the results of the implementation of the activity reducing emissions from deforestation for 2015–2016 by:

(a) Using consistent methodologies and data to generate AD on reducing gross emissions from deforestation, based on data from SMByC, with the same area and forest definition, and a mapping unit of 1 ha;

(b) Using consistent methodologies and data to generate EFs, in particular by using the same above-ground biomass stock per ha estimated for the FREL region and the same bioclimatic classification for stratification into the three forest types (tropical rain forest, wet tropical forest and west premontane forest) based on the Holdridge classification system (Holdridge et al., 1971);

(c) Including the same two carbon pools, above-ground biomass and below-ground biomass, while explaining that the deadwood and soil organic carbon pools are not included because no information is currently available;

(d) Including the same gas: CO_2 only;

(e) Covering the same area: Colombia's Amazon biome;

(f) Assuming that all carbon from the two carbon pools (above-ground biomass and below-ground biomass) is lost in the year of the deforestation event;

(g) Using the same forest definition as that used in constructing its FREL.

18. The LULUCF experts noted that Colombia adjusted the FREL upwards by 10 per cent compared with the historical average emissions for 2000–2012 in order to take into account national circumstances that affect historical deforestation and the prospect of a successful outcome of the negotiations to end the armed conflict with FARC in the Amazon biome. The 10 per cent adjustment is based on future deforestation in a post-conflict scenario (see annex C to the FREL submission), assuming a five-year transitional period of increasing deforestation followed by a decreasing trend and eventual stabilization of the deforestation rate. The LULUCF experts noted that the adjustment to account for the post-agreement increase in deforestation was also applied for the second period of results 2015–2016 despite

the fact that the peace agreement was signed towards the end of that period (on 24 November 2016). The LULUCF experts requested the Party to provide data on gross deforestation in 2017 to better understand the trend in emissions from deforestation in the five-year transition period. In response, Colombia provided information supporting the trend in gross deforestation, including information showing an increasing trend of bigger patches of deforestation and expansion of the cultivation of illegal crops (from 20,718 ha in 2013 to 48,923 ha in 2016), which was accompanied by a decrease in social problems such as homicides and forced disappearances and displacements. The LULUCF experts noted that this information shows an increase in human pressure on forest resources since 2013.

19.   The LULUCF experts noted that Colombia conducted successful negotiations with FARC in 2013–2016, which culminated in the signing of a peace agreement in 2016. The LULUCF experts also noted that, even though in the technical assessment report on Colombia's FREL it was concluded that the application of the adjustment to the current FREL would not apply if an agreement to end the conflict were not reached under the current peace process, the information provided by Colombia during the TA indicates that the post-conflict effects causing an increase in deforestation began with the start of the negotiations for a peace agreement in 2013, and thus the second period of results 2015–2016 is within the post-conflict period. In addition, on the basis of the information on the amount of gross deforestation reported for 2016–2017, the LULUCF experts noted that the deforestation rate does not show a decreasing or stabilizing trend, with the highest rate of deforestation (69,781 ha/year and 144,020 ha/year, respectively) occurring in the final two years (2015–2017) of the five-year transition period (2013–2017).

20.   The LULUCF experts thus consider that the data provided by Colombia indicate that the transition period preceding a decrease in or stabilization of the deforestation rate is likely to be longer than the five years reported in the FREL. The LULUCF experts noted that Colombia recognizes in the FREL that, depending on the evolution of peace negotiations, the resulting agreement and available data on causal relationships of deforestation, the FREL will be updated, including by adjustment using better and actual data on national circumstances. As such, in accordance with the observations in the technical assessment report on Colombia's FREL and the technical report on the TA of the first set of results, the LULUCF experts noted that Colombia may wish to conduct more in-depth research and analysis to justify the adjustment for national circumstances, due to economic and social trends following a peace agreement, by taking into account the rate at which conditions change following cessation of conflict, which should be assessed as part of the TA of any future FREL submission of Colombia.

21.   The LULUCF experts noted a difference in the values of total emission reductions for 2013–2014 reported in the technical annexes to Colombia's first and second BURs (26,228,336.0 and 28,983,527.5 t CO_2, respectively). During the TA, in response to a question from the LULUCF experts, Colombia clarified that the value of total emission reductions for 2013–2014 reported in the technical annex to its second BUR was correctly calculated by comparing it with the corrected value of the FREL of 51,612,072.9 t CO_2 eq instead of 51,599,618.7 t CO_2 eq. The LULUCF experts noted that this correction was already mentioned in the technical report on the TA of the technical annex to Columbia's first BUR (see para. 24 of the technical report).

22.   The LULUCF experts noted that Colombia applied a biennial frequency for the monitoring of deforestation for the reference period 2000–2012 used in the construction of the FREL, while it applied annual monitoring for the period of results (2013–2016). During the TA, in response to a question from the LULUCF experts, Colombia clarified that the monitoring of the deforested area is carried out by implementing the same procedures and using the same inputs as described in annex A to the FREL submission. The monitoring is carried out through a semi-automatic process for detecting the changes identified in the satellite images (mainly Landsat) for a calendar year at the national level, followed by a process of quality control, visual verification and evaluation of the thematic accuracy of the results. Since 2013, as part of improving the reporting, the monitoring of deforestation has been carried out annually.

23.   In view of the above, the LULUCF experts concluded that the results presented of the implementation of the activity reducing emissions from deforestation are consistent with the assessed FREL for Colombia's Amazon biome.

2.   Transparency, consistency, completeness and accuracy of the data and information provided in the technical annex

24.   The LULUCF experts noted that, as part of the TA process, Colombia provided additional information, in particular AD, EFs, methods (protocols), examples of estimations of emission reductions and information on the implementation of actions related to REDD+, including relevant links where more detailed information could be accessed. The information on AD included areas of historical deforestation used in the FREL and the technical annex to the first BUR (2012–2014). Colombia also provided additional information on the methodology and EFs used for calculating the emissions from deforestation, including detailed spreadsheets for calculations, databases, quality assurance and quality control procedures, routines of analyses, carbon estimation from field inventory data at the individual tree, plot and strata level and the assumptions used in estimating the results, which are also available in the FREL submission and its annexes. Colombia further provided a document on the methods used for estimating results (IDEAM, 2018). The LULUCF experts commend Colombia for providing this information, which contributed to greater understanding of the technical annex and allowed for reconstruction of the results.

25.   The LULUCF experts noted that the web location of the data needed to reconstruct the results required credentials to access, which were provided by the Party during the TA. In response to a question from the LULUCF experts, Colombia clarified that all AD (images and annual maps) and EFs (plot data and biomass estimations) are partly publicly available, which enables reconstruction of the annual emission estimates. The LULUCF experts noted that, as an area for future technical improvement, to facilitate greater understanding of the results, Colombia may wish to provide additional information in the technical annex for reconstructing the calculations, including publicly accessible links to where the information can be found.

26.   The LULUCF experts noted that Colombia's technical annex to its second BUR provides the areas of gross deforestation of the Amazon biome aggregated in one forest stratum for 2015–2016, namely tropical rainforest, which covers 99 per cent of the biome area. During the TA, in response to a question from the LULUCF experts, the Party explained that historical information on areas of deforestation in the Amazon biome for 2013–2016 is available on the SMByC website[7] and is referred to in Colombia's FREL submission. In addition, Colombia provided the annual deforestation maps for 2013–2014 used for the technical annex to its first BUR. The LULUCF experts noted that, as an area for future technical improvement, Colombia may wish to include areas of gross deforestation disaggregated by forest strata in the technical annex.

27.   According to decision 12/CP.17, paragraph 8, the FREL shall be established taking into account decision 4/CP.15, paragraph 7, and maintaining consistency with the anthropogenic forest-related GHG emissions by sources and removals by sinks reported in the Party's GHG inventory. The team assessing Colombia's FREL noted that the Party maintained consistency between the FREL and the GHG inventory included in its first BUR as an area of improvement.[8] The LULUCF experts noted that, to estimate the results of the implementation of the activity reducing emissions from deforestation for 2015–2016, the Party used the AD from the GHG inventory in its second BUR. However, the LULUCF experts noted that the EFs for the Amazon biome used for the calculation of the FREL and of the results reported in the technical annex to the second BUR are not consistent with those used for the inventory estimates reported in Colombia's second BUR (see section 2.1.3.1 of the BUR and annex 13 to the NIR). During the TA, in response to a question from the LULUCF experts, the Party clarified that it is in the process of improving the EFs with new data from the NFI, and noted that, while its second BUR includes the new EFs estimated using the NFI data (30 per cent of the first cycle of the NFI), the EFs used for the FREL,

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[7] smbyc.ideam.gov.co.

[8] See https://unfccc.int/documents/192226 (in Spanish).

which are derived from forest sampling between 1990 and 2014, will be updated for future FREL submissions as part of the stepwise approach.

28. The LULUCF experts concluded that Colombia provided the necessary information to allow for the reconstruction of the results of the implementation of the activity reducing emissions from deforestation. The data and information provided in the technical annex are considered transparent, consistent, complete and accurate to the extent possible.

3. Consistency with the guidelines on elements to be included in the technical annex

29. Colombia provided data and information on all the required elements in accordance with the guidelines contained in the annex to decision 14/CP.19, namely summary information from the final report containing the assessed FREL; results in t CO_2 eq per year, consistent with the assessed FREL; a demonstration that the methodologies used to produce the results are consistent with those used to establish the assessed FREL (as outlined in chap. II.B.1 above); a description of forest monitoring systems and the institutional roles and responsibilities in the MRV of the results; the information necessary for the reconstruction of the results (as outlined in chap. II.B.2 above); and a description of how the elements contained in decision 4/CP.15, paragraph 1(c–d), have been taken into account.

30. In its submission, Colombia provided a summary table with the results of the implementation of the activity reducing emissions from deforestation for 2015–2016, consistent with the assessed FREL and allowing for reconstruction of the results. The emission reductions achieved are listed in table 2 of the technical annex and amount to 31,474,933.5 t CO_2 eq/year for the two years covered.

31. The LULUCF experts noted that Colombia provided a description of the NFMS and a summary of the institutional roles and responsibilities for the MRV of the results in the technical annex, together with weblinks for accessing further information. The roles and responsibilities of the agencies and institutions involved in MRV were transparently explained. The two public institutions responsible for MRV of REDD+ activities are the Ministry of Environment and Sustainable Development and IDEAM. SMByC provides the processes, methodologies, protocols and tools for the country to generate periodic information on forest cover and forest-cover change, amount of carbon stocks in natural forest, and emissions and removals of GHGs related to deforestation and forest degradation. IDEAM has overall responsibility for the operation of SMByC and the NFI, including its administration, coordination and operation. The LULUCF experts commend Colombia for sharing this information.

32. The forest monitoring system used by Colombia is a national system covering the subnational Amazon biome. The system estimates the AD for deforestation in the Amazon biome by semi-automatically comparing digitally pre-processed Landsat image pairs covering successive two-year periods in order to produce a change map. The minimum mapping unit used for this work is 1 ha. The EFs used to produce the results of the 2015–2016 estimates are derived using data from 721 sampling forest plots (dasometric variables from trees) established between 1990 and 2014 by applying a country-specific allometric equation for tropical humid forest to estimate the above-ground biomass and carbon stocks and a generic allometric equation to estimate the below-ground biomass and carbon stocks. The AD and EFs are then used in the tier 2 methodology provided in the 2006 IPCC Guidelines and the IPCC good practice guidance for LULUCF to estimate the emissions.

33. In accordance with decision 11/CP.19, paragraph 4(b), the NFMS should enable the assessment of different types of forest in the country, including natural forest. During the TA, Colombia explained that the Amazon biome has three types of natural forest within the vegetation system classified by biozone (Holdridge et al., 1971), with the tropical rainforest covering 99 per cent of the area and the wet tropical forest and wet premontane forest covering the remaining territory. SMByC enables the estimation of AD and EFs for the deforestation of all the forest in Colombia, and specifically in the Amazon biome aggregated in one representative forest type (tropical rainforest).

34. According to decision 1/CP.16, paragraph 71(c), footnote 7, subnational monitoring and reporting should include monitoring and reporting emission displacement at the national level, if appropriate, and reporting on how the displacement of emissions is being addressed

and on the means of integrating subnational monitoring systems into a national monitoring system. During the TA, in response to a question from the LULUCF experts, Colombia explained that SMByC is a national forest and carbon monitoring system and will serve as the basis for developing a national FREL. The Party also explained that SMByC covers the whole country and thus could generate information on the increasing or decreasing deforestation rates inside or outside the areas covered by the FREL. However, in order to identify the regional deforestation dynamics or displacement of emissions, it is important to develop procedures to monitor the drivers and underlying causes of deforestation. The Party further explained that it is making efforts to create a module within SMByC to detect the displacement of emissions. In accordance with the observations contained in the technical report on the TA of the first set of results and the FREL technical assessment report, the LULUCF experts note that, as an area for future technical improvement, the Party may wish to further strengthen its efforts to monitor and report displacement of emissions at the national level (e.g. by developing procedures to monitor the drivers and underlying causes of deforestation) or implement a national FREL.

35.   Colombia provided a description of how the IPCC guidance and guidelines were taken into account in accordance with decision 4/CP.15, paragraph 1(c). To estimate the emission reduction results in the Amazon biome from the deforestation activity, Colombia used the methodology provided in the 2006 IPCC Guidelines for estimating the changes in carbon stocks in forest land converted to other land-use categories, combining AD (i.e. areas of annual deforestation) with the appropriate EFs (i.e. emissions associated with the corresponding forest type).

36.   Colombia maintained consistency of the results with the FREL by including the most significant pools (above-ground biomass and below-ground biomass) and gases (CO_2). The LULUCF experts commend Colombia for expressing its intention to obtain better information on dead organic matter, soil organic carbon and non-CO_2 gases with the aim of including them in future FREL submissions and estimates of results as part of the stepwise approach.

4.   Accuracy of the results proposed in the technical annex

37.   The LULUCF experts noted that the Party's estimation of the results of the implementation of the activity reducing emissions from deforestation in Colombia's subnational Amazon biome was undertaken using a transparent and consistent approach. They commend Colombia for its significant long-term efforts to build up a robust NFMS that is capable of providing transparent estimates of emissions from deforestation.

38.   Both the established FREL and the results obtained in 2015–2016 from the implementation of the activity reducing emissions from deforestation are based on the assumption that gross deforestation occurs in a specific area of monitoring in natural forests of the Amazon biome, defined by the FREL, and is represented by a single and static EF, which is based on the calculation of the loss of the entire above-ground and below-ground biomass stocks of trees calculated using data from forest inventory plots.

39.   As mentioned in paragraph 33 above, SMByC provides the AD and EFs for the calculation of the FREL and the results of the implementation of the activity reducing emissions from deforestation. However, the LULUCF experts noted that Colombia did not include information on the uncertainty of the results in the technical annex to its second BUR, which would allow the LULUCF experts to assess its accuracy. They also noted that, as indicated in the protocols described by Colombia in the FREL submission (in annexes a and b), the Party can calculate the uncertainty of AD and EFs. During the TA, in response to a question from the LULUCF experts, Colombia explained that it has made progress in estimating the uncertainty associated with AD and EFs, and noted that its FREL submission includes information on the uncertainty of EFs, which is the same as that reported for the results. The Party also provided information on the uncertainty of AD in terms of the measurement of errors associated with the results of the area of deforestation monitoring for 2015 and 2016 from IDEAM (2018). Using the information provided by the Party, the LULUCF experts could assess the accuracy of the estimation of carbon stocks in the Amazon biome and the AD. Given the assumptions used, the LULUCF experts concluded that the results are accurate to the extent possible. In accordance with the observations in the technical

report on the TA of Colombia's first set of results, the LULUCF experts noted the provision of information on the uncertainty of the results as an area for future technical improvement for the Party.

C. Areas identified for technical improvement

40. The LULUCF experts concluded that the following areas for technical improvement identified in the report on the technical assessment of Colombia's FREL[9] and areas for improvement identified by the LULUCF experts in the TA of the first set of results[10] also apply to the provision of information on the results of the implementation of the activity reducing emissions from deforestation:

(a) Implementing and strengthening quality assurance and quality control procedures to reduce errors in the submitted technical annex;

(b) Ensuring consistency between the FREL and the GHG inventory;

(c) Expanding the coverage of carbon pools;

(d) Considering the treatment of non-CO_2 emissions;

(e) Monitoring and reporting displacement of emissions at the national level and/or moving from subnational to national coverage;

(f) Expanding activities to include forest degradation;

(g) Using the NFI for statistical sampling of above-ground and below-ground biomass and for eventually including additional pools and improving stratification with NFI data to reduce the uncertainty in the estimation of forest carbon stocks;

(h) Conducting more in-depth research and analysis to justify the adjustment for national circumstances, due to economic and social trends following a peace agreement, by taking into account the rate at which conditions change following cessation of conflict;

(i) Considering the feasibility of adopting a definition of forest and deforestation based on land use;

(j) Providing the uncertainty assessment of the results.

41. Furthermore, the LULUCF experts noted that Colombia could consider:

(a) Providing sufficient information in the technical annex for reconstructing the calculations, including by providing readily accessible links to where this information may be found;

(b) Including areas of gross deforestation of the Amazon biome disaggregated by forest strata.

D. Comments and responses of the Party

42. During the consultation process, Colombia noted a number of areas of capacity-building needs. Addressing those needs could potentially enable Colombia to improve its data and methodologies and include additional activities and gases in future FREL submissions. In addition, as per the improvement plan included in the NIR submitted with its second BUR, which takes into account the areas for improvement identified in the report on the technical assessment of Colombia's FREL and technical report on the TA of the technical annex to its first BUR, in the context of the stepwise approach, the Party plans to improve its next FREL submission by incorporating better data, using improved methodologies and including additional pools while maintaining consistency with the national GHG inventory. After exchanges with the LULUCF experts and in its improvement plan included in its NIR, Colombia identified the following capacity-building needs:

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[9] FCCC/TAR/2015/COL.
[10] See document FCCC/SBI/ICA/2016/TATR.1/COL.

(a)   Improving the estimation of the area of land-use change from forest land to other land use (deforestation) and using the land-use classification implemented for 2013 and 2014 in the second BUR for all biannual and annual temporal series;

(b)   Improving the values of carbon stocks in various pools used for calculating emissions, including above-ground biomass, below-ground biomass, soil organic carbon, deadwood and litter in natural forests, using all NFI data available in 2020;

(c)   Developing within SMByC a spatially explicit geodatabase of areas under forest plantation to differentiate them from natural forests;

(d)   Collecting spatially explicit data on the areas under organic soils (histosols) at the subnational level.

III. Conclusions

43.   The LULUCF experts conclude that Colombia reported the results of the implementation of the activity reducing emissions from deforestation, which is defined as gross deforestation of primary forests. Forest is defined as land with tree cover with a minimum canopy density of 30 per cent, a minimum canopy height (in situ) of 5 m at the time of identification and a minimum area of 1 ha. The technical annex covers the same area of the FREL, namely Colombia's Amazon biome, comprising an area of 458,961 km^2, representing about 40 per cent of the national territory and 67 per cent of the country's total forest area, by following a subnational approach. The results include estimates of emissions of CO_2 from above-ground biomass and below-ground biomass from natural forest in 2015–2016 from deforestation, which is detected by change assessment using remote sensing imagery. The results of the activity were reported using definitions, assumptions and information consistent with those used for the assessed FREL.

44.   The LULUCF experts consider the data and information provided in the technical annex to be transparent, consistent, complete and accurate.

45.   The LULUCF experts found that the data and information provided in the technical annex are consistent with the guidelines referred to in decision 14/CP.19, paragraph 11.

46.   The results are accurate to the extent possible, based on the assumptions used. The LULUCF experts note that Colombia's FREL is subnational. However, the Party is making efforts to monitor the displacement of emissions at the national level by implementing within SMByC a module for detecting displacement of emissions from deforestation.

47.   In conclusion, the LULUCF experts commend Colombia for showing a strong commitment to the continuous improvement of the data and information used for calculating the results, in line with the stepwise approach, which are consistent with those used to establish its assessed FREL. Some areas for future technical improvement and capacity-building needs identified by Colombia have been identified in this report. At the same time, the LULUCF experts acknowledge that such improvements are subject to national capabilities and circumstances, and note the importance of adequate and predictable support.[11] The LULUCF experts also acknowledge that the TA process was an opportunity for a facilitative and constructive technical exchange of views and information with Colombia.[12]

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[11] In accordance with decision 2/CP.17, para. 57.
[12] In accordance with decision 14/CP.19, paras. 12–13.

Annex I

Technical annex to the biennial update report

Owing to the complexity and length of the submitted technical annex to the BUR, and in order to maintain the original formatting, the technical annex is not reproduced here. It is available on the UNFCCC website at https://unfccc.int/BURs.

Annex II

Summary of the main features of the proposed results of the implementation of the activities referred to in decision 1/CP.16, paragraph 70, based on information provided by Colombia

	Key elements	*Remarks*
Results reported	2015: 19 365 884.7 t CO_2 eq/year 2016: 12 109 048.8 t CO_2 eq/year	Colombia reported the results of the implementation of the deforestation activity for 2015–2016, calculated against the FREL, which is based on the average of CO_2 emissions associated with gross deforestation for 2000–2012 (see para. 11 of this document)
Results period	2015–2016	
Assessed FREL	51 612 072.9 t CO_2 eq/year	
Reference period	2000–2012	
National/subnational	Subnational	Colombia proposed a subnational FREL for its Amazon biome, which covers an area of 458 961 km^2, comprising nearly 40 per cent of the national territory and 67 per cent of the country's total forest land (see para. 10 of this document)
Activity included	Reducing emissions from deforestation	Colombia's FREL covers the activity reducing emissions from deforestation (see para. 10 of this document)
Pools included	Above-ground biomass Below-ground biomass	Colombia excluded from its FREL the deadwood, litter and soil organic carbon pools owing to lack of information (see para. 36 of this document)
Gases included	CO_2	Colombia excluded from its FREL non-CO_2 gases owing to lack of information (see para. 36 of this document)
Consistency between assessed FREL and the results	Methods, definitions and information used for the assessed FREL are consistent with the results	See paragraph 23 of this document
Description of NFMS and institutional roles	Included	SMByC provides the processes, methodologies, protocols and tools for generating periodic information on forest cover, carbon stocks and their changes and associated GHG emissions and removals (see para. 31 of this document)
Identification of future technical improvements	Included	Some areas for future technical improvement were identified (see paras. 40–41 of this document)

Annex III

Documents and information used during the technical analysis

A. Reference documents

First and second BURs of Colombia. Available at https://unfccc.int/BURs.

First FREL submission of Colombia. Available at https://redd.unfccc.int/submissions.html?country=colhttps://unfccc.int/documents/8106.

"Guidelines and procedures for the technical assessment of submissions from Parties on proposed forest reference emission levels and/or forest reference levels". Annex to decision 13/CP.19. Available at https://unfccc.int/resource/docs/2013/cop19/eng/10a01.pdf.

"Guidelines for submissions of information on reference levels". Annex to decision 12/CP.17. Available at https://unfccc.int/resource/docs/2011/cop17/eng/09a02.pdf.

IPCC. 2003. *Good Practice Guidance for Land Use, Land-Use Change and Forestry*. J Penman, M Gytarsky, T Hiraishi, et al. (eds.). Hayama, Japan: Institute for Global Environmental Strategies.
Available at http://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf.html.

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.

NIR of Colombia submitted in 2019. Available at https://unfccc.int/sites/default/files/resource/NIR_BUR2_Colombia.pdf.

Report on the technical assessment of the proposed FREL of Colombia submitted in 2015. FCCC/TAR/2015/COL. Available at https://unfccc.int/resource/docs/2015/tar/col.pdf.

Technical report on the TA of the technical annex to the first BUR of Colombia. FCCC/SBI/ICA/2016/TATR.1/COL. Available at https://unfccc.int/resource/docs/2016/tatr/col.pdf.

B. Additional information provided by the Party

The following documents[1] were provided by the Party in response to requests for clarification or additional information during the TA:

González J, Cubillos M, Zúñiga E, et al. 2018. *Escenarios de deforestación para la toma de decisiones: propuesta metodológica y ámbito de aplicación*.

Holdridge L, Grenke W, Hatheway W, et al. 1971. *Forest Environments in Tropical Life Zones: A Pilot Study*. Oxford: Pergamon Press.

IDEAM. 2018. *Reporte de Reducción de Emisiones Bajo el Acuerdo REDD Early Movers (REM)*. Available at http://visionamazonia.minambiente.gov.co/content/uploads/2019/01/Reporte_REs-REM2015_09262018.pdf.

IDEAM. 2019. *Sistema de monitoreo de bosques y carbono*. Available at http://smbyc.ideam.gov.co/MonitoreoBC-WEB/reg/indexLogOn.jsp.

Phillips JF, Duque AJ, Scott C, et al. 2014. *Aportes técnicos del Sistema de Monitoreo de Bosques y Carbono a la propuesta de preparación de Colombia para REDD+: datos de actividad y factores de emisión*.

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[1] Reproduced as received from the Party.

Phillips JF, Duque AJ, Scott C, et al. 2011. *Estimación de las reservas actuales (2010) de carbono almacenadas en la biomasa aérea en bosques naturales de Colombia. Estratificación, alometría y métodos análiticos*.

Phillips JF, Duque AJ, Scott C, et al. 2016. Live aboveground carbon stocks in natural forests of Colombia. *Forest Ecology and Management*. 374: pp.119–128.

2017. *Decreto 1655 de 2017. Por medio del cual se adiciona al Libro 2, parte 2, Titulo 8, Capitulo 9 del Decreto 1076 de 2015, cinco nuevas secciones en el sentido de establecer la organización y funcionamiento del Sistema Nacional de Información Forestal, el Inventario Forestal Nacional y el Sistema de Monitoreo de Bosques y Carbono que hacen parte del Sistema de Información Ambiental para Colombia, y se dictan otras disposiciones.* 1655.

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