United Nations FCCC/SBI/ICA/2015/TATR.1/BRA

Framework Convention on Climate Change

Distr.: General
22 September 2015

English only

Technical report on the technical analysis of the technical annex to the first biennial update report of Brazil submitted in accordance with decision 14/CP.19, paragraph 7, on 31 December 2014

Summary

This technical report covers the technical analysis of the technical annex that was submitted on a voluntary basis by Brazil through its first biennial update report, in accordance with decision 14/CP.19. The technical annex covers data and information on the activity "reducing emissions from deforestation", which is one of the activities included in decision 1/CP.16, paragraph 70, and the same subnational territorial forest area as the assessed forest reference emission level proposed by Brazil for the Amazonia biome, with the aim of transitioning to national implementation in the future.

The technical analysis concluded that the data and information provided by Brazil in the technical annex are transparent and consistent over time and with the assessed forest reference emission level that was established in accordance with decision 1/CP.16, paragraph 71(b), and decision 12/CP.17, chapter II.

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. This report contains the findings of the technical analysis and a few areas identified for further technical improvement, according to decision 14/CP.19, paragraph 14.

GE.15-16084(E)

Contents

I. Introduction, overview and summary

A. Introduction

1. This technical report covers the technical analysis (TA) of the technical annex provided in accordance with decision 14/CP.19,[1] included in the first biennial update report (BUR) of Brazil that was submitted on 31 December 2014 in accordance with decision 2/CP.17.[2] In the technical annex, Brazil provided data and information used in the estimation of 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 the activities referred to in decision 1/CP.16, paragraph 70 (hereinafter referred to as REDD-plus activities).[3] The submission of the technical annex is voluntary and in the context of results-based payments.[4]

2. In this context, Brazil underlined that the submission of the technical annex through the BUR does not modify, revise or adjust in any way the nationally appropriate mitigation actions currently being undertaken by Brazil pursuant to the Bali Action Plan, and neither prejudges any nationally determined contribution by Brazil in the context of a protocol, another legal instrument or an agreed outcome with legal force under the Convention currently being negotiated under the Ad Hoc Working Group on the Durban Platform for Enhanced Action.

3. The TA of the technical annex is part of the international consultation and analysis (ICA) of BURs referred to in decision 2/CP.17, annex IV, paragraph 4. The objective of the ICA is to increase the transparency of mitigation actions and their effects through analysis by a team of technical experts (TTE) in consultation with Brazil and through a facilitative sharing of views, and will result in a separate summary report.[5]

4. Brazil submitted a proposed forest reference emission level (FREL), in accordance with decision 13/CP.19, on 6 June 2014, which was subjected to a technical assessment. The assessed FREL was included in the technical annex to the first BUR in accordance with the guidelines contained in the annex to decision 14/CP.19. The findings of the technical assessment are included in a separate report.[6]

B. Process overview

5. The TA of the first BUR took place (as a centralized activity) from 18 to 22 May 2015 in Bonn, Germany, 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: Ms. Selam Kidane Abebe (Consultative Group of Experts on National Communications from Parties not included in Annex I to the Convention (CGE) member from Ethiopia), Mr. Rizaldi Boer (Indonesia), Mr. Sangay Dorji (Bhutan), Mr. Takeshi Enoki (CGE member from Japan), Mr. Peter Aarup Iversen (Denmark), Ms. Baasansuren

[1] Decision 14/CP.19, paragraph 7.
[2] Decision 2/CP.17, paragraph 41(a), and annex III, paragraph 19.
[3] 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 the following 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.
[4] Decision 14/CP.19, paragraph 8.
[5] FCCC/SBI/ICA/2015/TASR.1/BRA.
[6] FCCC/TAR/2014/BRA, published on 1 December 2014.

Jamsranjav (Mongolia), Mr. Christoph Streissler (Austria) and Mr. Jongikhaya Witi (South Africa). Mr. Enoki and Mr. Witi were the co-leads. Mr. Boer and Mr. Iversen were the land-use, land-use change and forestry (LULUCF) experts that undertook the TA of the technical annex in accordance with decision 14/CP.19, paragraphs 10–13.

6. The TA of the technical annex provided by Brazil 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 of the TTE following decision 14/CP.19, paragraph 14.

7. During the TA, the LULUCF experts and Brazil engaged in technical discussions, during which Brazil provided clarifications to questions raised by the experts. These discussions facilitated a common understanding and the identification of the capacity-building needs and the areas for technical improvement. Following the TA of the technical annex, the LULUCF experts prepared and shared the draft technical report with Brazil for its review and comment.

8. The LULUCF experts responded to and incorporated the comments referred to in paragraph 7 above from Brazil and finalized this technical report in consultation with Brazil.

C. Summary of results

9. 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 and in accordance with their respective capabilities and national circumstances. In the context of results-based payments and in line with decision 12/CP.17, Brazil, on a voluntary basis, proposed a 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 was implemented in the Brazilian Amazon biome that makes up 49.29 per cent of the national territory. The FREL was developed using a dynamic mean of the carbon dioxide (CO_2) emissions associated with gross deforestation since 1996, which is updated every five years. Brazil adopted the dynamic approach for incorporating the progress achieved over time with the implementation of policies and measures to reduce deforestation in the Amazonia biome. In its submission of a technical annex through its first BUR, Brazil reported the results from the implementation of activities to reduce emissions from deforestation for the period 2006–2010, which amount to 2,971.02 million tonnes of carbon dioxide equivalent (Mt CO_2 eq).

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

A. Technical annex

10. For the technical annex to the BUR submitted by Brazil, see the annex to this report.[7]

[7] Decision 14/CP.19, paragraph 14(a).

B. Technical analysis

11. 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 methodologies, definitions, comprehensiveness and the information provided between the assessed FREL and the results of the implementation of the REDD-plus activities;

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

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

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

12. The remainder of this chapter presents the results of the TA of the technical annex to the BUR according to the scope outlined in paragraph 11 above.

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

13. In accordance with paragraph 3 of decision 14/CP.19, the data and information used by Parties in the estimation of anthropogenic forest-related emissions by sources and removals by sinks, forest carbon stocks, and forest carbon stock and forest-area changes related to REDD-plus activities undertaken by Parties should be transparent, and consistent over time and with the established FRELs and/or forest reference levels in accordance with decision 1/CP.16, paragraph 71(b) and (c), and decision 12/CP.17, chapter II.

14. The LULUCF experts note that Brazil has been consistent in using the same methodologies and definitions for developing the FREL and for estimating the results from the implementation of activities to reduce emissions from deforestation during the period 2006–2010. This includes:

(a) Using consistent methodologies and data to generate activity data on gross deforestation of primary forests, in particular, the same forest monitoring system detecting deforestation as areas with a clear-cut pattern, using the same approach (adjusted deforestation increment) to assess the deforestation area for each year, using the same minimum mapping unit (6.25 ha) and using a spatially explicit identification system for identifying deforestation;

(b) Using consistent methodologies and data to generate emission factors, in particular, the same carbon map and the same stratification of primary forest of the Brazilian Amazon biome into 22 different forest types with different carbon stocks depending on forest type and location;

(c) Including the same three carbon pools: above-ground biomass, below-ground biomass and litter;

(d) Including the same gases: CO_2 only;

(e) Covering the same area: the Brazilian Amazon biome of approximately 4,197,000 km^2;

(f) Using the assumption that all carbon from the three carbon pools is lost in the year of the deforestation event and not including any subsequent removals of CO_2 in the area;

(g) Using a forest definition that is fully consistent with the forest definition used for the construction of the FREL.

15. The LULUCF experts conclude that the presentation of the results from the implementation of the activity on reducing emissions from deforestation is consistent with the assessed FREL for the Amazon biome. The LULUCF experts commend Brazil for ensuring full consistency of the data and methodologies described in the FREL for the years 1996–2005 and in the technical annex with results from the implementation of the activity on reducing emissions from deforestation for the years 2006–2010.

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

16. The LULUCF experts note that in its submission, Brazil provided weblinks to additional information, in particular, to sources of activity data and carbon densities of different forest types. In addition, Brazil provided links to the website for the programme for deforestation assessment in the Brazilian Legal Amazonia (PRODES), which uses remote-sensing images and digital image-processing techniques for monitoring deforestation areas. Additional information for each of the years 2006–2010 can be accessed on this website. The LULUCF experts commend Brazil for these efforts to increase the transparency and ensure the completeness[8] of the data and information provided, allowing for the reconstruction of the results.

17. Referring to decision 12/CP.17, paragraph 8, the FREL shall be established by taking into account decision 4/CP.15, paragraph 7, and maintaining consistency with anthropogenic forest-related greenhouse gas (GHG) emissions by sources and removals by sinks as contained in each country's GHG inventory. The assessment team for the FREL noted that, overall, Brazil's FREL maintains consistency, in terms of sources for the activity data and emission factors, with the GHG inventory included in Brazil's second national communication. The LULUCF experts note that this is also true for the estimated results from the implementation of the activity on reducing emissions from deforestation for the period 2006–2010.

18. The LULUCF experts note that the use of spatially explicit identification of gross deforestation over time as undertaken by Brazil ensures that only gross deforestation of primary forests is included in the estimates and that it makes it possible to accurately track deforestation over time. In the view of the LULUCF experts, Brazil has sufficiently justified that no ground truth was required for estimating activity data or emission factors owing to the unequivocal identification of clear-cut patches using remote sensing and the assumption that all carbon from the three carbon pools included was lost in the year of the deforestation event and that any subsequent CO_2 removal was not considered.

19. The LULUCF experts note that Brazil already provided information on uncertainties in its FREL submission in October 2014, and that this remains valid also for the estimated results from the implementation of the activity on reducing emissions from deforestation for the period 2006–2010. This includes: uncertainties associated with the carbon density map, including from data collection; the allometric equations used for calculating the carbon content; the biomass from smaller trees, palms and vines; the aggregation of forest types; and the rules used to estimate the carbon density of forest type per RADAMBRASIL volume.[9]

[8] Complete here means the provision of information that allows for reconstruction of the results.

[9] The RADAMBRASIL project was conducted between 1970 and 1985 and covered the entire Brazilian territory (with a special focus on Amazonia) using airborne radar sensors. The results from the RADAMBRASIL project include texts and thematic maps (geology, geomorphology, pedology, vegetation, potential land use and assessment of natural renewable resources) that are still broadly

20. In response to a question from the LULUCF experts, Brazil clarified that all data (images and annual maps) are publicly available, which allows for reconstruction of the annual increments by stakeholders. Brazil is currently developing a national forest inventory that is expected to provide data that will improve the accuracy of estimates. The LULUCF experts commend Brazil for providing transparent information and continuing to improve the accuracy of estimates.

21. The LULUCF experts conclude that Brazil has provided the necessary information allowing for reconstruction of the results from the implementation of the activity on reducing emissions from deforestation. The data and information provided in the technical annex are considered to be transparent, consistent, complete and accurate to the extent possible.

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

22. Brazil provided data and information on all the elements according to the guidelines contained in the annex to decision 14/CP.19, namely: summary information from the final report containing the assessed FREL; results in tonnes of carbon dioxide equivalent 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 chapter II.B.1 above); a description of forest monitoring systems and the institutional roles and responsibilities for measuring, reporting and verifying the results; necessary information that allows for the reconstruction of the results (as outlined in chapter II.B.2 above); and a description of how the elements contained in decision 4/CP.15, paragraph 1(c) and (d), have been taken into account.

23. In its submission, Brazil provided a summary table with results from the implementation of the activity on reducing emissions from deforestation for the years 2006–2010, consistent with the assessed FREL and allowing for reconstruction of the results. The emission reduction results achieved are listed per year in table 2 of the technical annex and amount to a total of 2,971.02 Mt CO_2 for the five years covered.

24. The LULUCF experts noted that Brazil provided a description of the forest monitoring system and, in table 5 of the technical annex, a summary of the institutional roles and responsibility for the measurement, reporting and verification (MRV) of the results in the technical annex, together with the weblinks for accessing further information. The roles and responsibilities of the agencies and institutions involved in the MRV are transparently provided. During the consultation process, Brazil explained that the team working on the GHG inventory also uses the same tools (e.g. remotely sensed data of the same resolution and minimum mapping area, the same carbon density map, etc.) that are used to compile the data and information for REDD-plus. This helps to ensure greater consistency between the inventory and REDD-plus estimates. In addition, Brazil informed the LULUCF experts that it has also established a multidisciplinary REDD+ Technical Working Group for ensuring good coordination across the agencies involved. The LULUCF experts commend Brazil for sharing this information.

25. The forest monitoring system used is a subnational system covering the Legal Amazonia, which is a slightly larger area than the Amazon biome. The system assesses gross deforestation on an annual basis based on wall-to-wall mapping with a minimum mapping unit of 6.25 ha.

26. According to decision 11/CP.19, paragraph 4(b), the national forest monitoring system (NFMS) should enable the assessment of different types of forest in the country, including natural forest. During the consultation process, Brazil explained that it carried out

used as a reference for the ecological zoning of the Brazilian Amazonia.

spatially explicit identification of 22 different forest types using a carbon density map, and that it considers all forests that are included to be natural forests.

27. Referring to decision 1/CP.16, paragraph 71(c), footnote 7, the subnational monitoring and reporting should include: monitoring and reporting of emissions displacement at the national level, if appropriate, and reporting on how displacement of emissions is being addressed; and on the means to integrate subnational monitoring systems into a national monitoring system. In 2015, Brazil started developing an NFMS to monitor deforestation on an annual basis in other biomes beyond the Amazon. For the period 2006–2010, this was not yet in place, but Brazil explained that it had different monitoring initiatives that can provide information on possible displacement inside and outside of the Legal Amazonia area. This included mapping of deforestation for the Cerrado biome between 2002 and 2008, followed by annual assessments of the deforestation rate for 2009 and 2010. The maps for the period 2002–2008 had some distortions that are not readily identifiable, and Brazil is rebuilding the time series of these maps. Preliminary data from annual assessments since 2008 show that deforestation declined in 2009 and 2010. The Cerrado biome is the second most important biome in Brazil in terms of emissions from deforestation: it contributed to approximately 20 per cent of the total CO_2 emissions from deforestation in Brazil during the period 1994–2002. The Legal Amazon contributed to approximately 70 per cent of the total CO_2 emissions during the same period, according to information from the second national communication.

28. Furthermore, through the DEGRAD programme,[10] Brazil is mapping the occurrence of degraded areas in the Legal Amazonia. Data are available for the period 2007–2010, which indicated that emissions from degradation decreased as emissions from deforestation decreased. While fire is closely associated with climatic conditions in a particular year, there is no causal relationship between reduction in deforestation in some areas and the occurrence of forest degradation. The link to maps generated by DEGRAD, with evidence of forest degradation, is provided on the Brazilian National Institute for Space Research (INPE) website,[11] and can be accessed by the public as part of the INPE policy on open data distribution. The LULUCF experts commend Brazil for the efforts made.

29. The LULUCF experts note that during the period 2006–2010, the forest monitoring system in place did not allow Brazil to fully estimate possible displacement of emissions at the national level. The LULUCF experts looked at available information, such as the harvest data from the Food and Agriculture Organization of the United Nations and the Brazilian Forest Service website, and noted that, thus far, there is no evidence of displacement of emissions. In addition, the annual assessments of the deforestation rate for the years 2009 and 2010 for the Cerrado biome as well as the information on emissions from degradation in the Legal Amazonia for the period 2007–2010 indicated that displacement of emissions has not been a major issue (also refer to paras. 27 and 28 above). Based on this available information, the LULUCF experts note that, so far, there is no evidence of displacement of emissions.

30. Brazil provided a description of how the Intergovernmental Panel on Climate Change (IPCC) guidance and guidelines were taken into account, in accordance with paragraph 1(c) of decision 4/CP.15. For the estimation of emission reduction results in the Amazonia biome, Brazil used a modification of the methodology provided in the 2003 IPCC *Good Practice Guidance for Land Use, Land-Use Change and Forestry* for

[10] Since 2008, Brazil has, through its National Institute for Space Research (INPE), implemented a system to assess the areas affected by degradation in the Amazon biome, through the use of satellite imagery of the same spatial resolution as that used to assess deforestation increments (Landsat images with a resolution of up to 30 m). This system, referred to as DEGRAD, provides detailed maps of areas undergoing a degradation process.

[11] Available at <http://www.obt.inpe.br/degrad/>.

estimation of carbon stocks in forest land converted to other land-use categories, which does not take into account subsequent land use. Accordingly, the gross emissions from deforestation were estimated from 2006 to 2010 by combining activity data (i.e. areas of annual gross deforestation) with the appropriate emission factors (i.e. emissions associated with the corresponding forest type).

4. Accuracy of the results in the technical annex

31. The LULUCF experts note that the estimation of results from the implementation of the activity on reducing emissions from deforestation in the Brazilian Amazon biome has been undertaken using a transparent and consistent approach. The LULUCF experts commend Brazil for the significant long-term efforts in building up a robust NFMS that is capable of providing transparent estimates of emissions from deforestation.

32. Both the established FREL and the results obtained in the period 2006–2010 from the implementation of the activity on reducing emissions from deforestation are based on the assumption that deforestation takes place in areas with intact forests that have carbon content as determined by the carbon density map. The LULUCF experts note that if the carbon densities in these areas have been lowered before a clear-cut event, for example, due to human activities or forest fires, then emissions from deforestation are most likely overestimated.[12] They also note that, because Brazil has used a consistent methodology for estimating emissions in the establishment of the FREL and the results during the period 2006–2010, the net effect will partially cancel out. Furthermore, Brazil clarified that the extent of the degraded area that is subsequently deforested is small (see table b.1 in annex III of the modified FREL submission).

33. As mentioned in paragraph 19 above, Brazil provided some information related to the uncertainties. However, this information was not used in assessing the uncertainties of the emission estimates. Thus, the effect of these uncertainties on the accuracy of the results from the implementation of the activity on reducing emissions from deforestation could not be assessed. Despite this, and based on the assumptions used, the LULUCF experts conclude that the results are accurate, to the extent possible.

C. Areas identified for technical improvement

34. The LULUCF experts conclude that the areas for technical improvement identified in the final report on the technical assessment of Brazil's FREL[13] also apply to the provision of information on results from the implementation of the activity on reducing emissions from deforestation. These include the following:

(a) Continuation in updating and improving the carbon density map, including through the use of improved ground data from Brazil's first national forest inventory, possibly prioritizing geographic areas where deforestation is more likely to occur;

(b) Expansion of the coverage of carbon pools, including improving the understanding of soil carbon dynamics after the conversion of forests to non-forests;

(c) Consideration of the treatment of non-CO_2 gases to maintain consistency with the GHG inventory;

(d) Continuation of the improvements related to monitoring of forest degradation;

(e) Expansion of the forest monitoring system to cover additional biomes.

[12] FCCC/TAR/2014/BRA, paragraph 18(b).
[13] FCCC/TAR/2014/BRA.

35. Furthermore, the LULUCF experts note that Brazil could consider the use of uncertainty analysis for estimates provided, as encouraged by decision 17/CP.8, annex, paragraph 24.

D. Comments and/or responses by the Party concerned

36. During the consultation process, Brazil noted that the collection of data related to emissions from forest degradation could be an area with capacity-building needs. Increasing knowledge of the complex dynamics associated with forest degradation could enable Brazil to potentially include the reduction of emissions from forest degradation as a REDD-plus activity in future FREL submissions.

III. Conclusions

37. The LULUCF experts conclude that Brazil has reported results from the implementation of one activity, "reducing emissions from deforestation", which is defined as gross deforestation of primary forests, and by following a subnational approach covering the Brazilian Amazon biome representing 49.29 per cent of the national territory. The results include estimates of emissions of CO_2 from three carbon pools: above-ground biomass, below-ground biomass and litter from gross deforestation identified as clear cuts of a minimum mapping unit of 6.25 ha for the period 2006–2010. The results of the activity were reported using consistent methodologies, definitions, assumptions and information as used for the assessed FREL.

38. The LULUCF experts consider that the data and information provided in the technical annex are transparent, consistent, complete and accurate.

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

40. The results are accurate to the extent possible, based on the assumptions used. The LULUCF experts note that Brazil has initiated a number of programmes to assess possible displacement of emissions while taking steps to implement an NFMS (refer also to paras. 27 and 28 above on areas identified for technical improvement). In addition, they note that, at present, information from monitoring of other forest biomes and degradation in the Amazon biome indicates that displacement of emissions is not a major issue.

41. In conclusion, the LULUCF experts commend Brazil for showing a strong commitment to continuous improvement of its data and information used for producing results, in line with a stepwise approach, which are consistent with those used to establish its assessed FREL. Some areas for future technical improvements have been identified in this report. At the same time, the LULUCF experts acknowledge that these improvements are subject to national capabilities and circumstances, and note the importance of adequate and predictable support.[14] The LULUCF experts also acknowledge that the TA process was an opportunity for a facilitative and constructive technical exchange of views and information with Brazil.[15]

[14] Decision 2/CP.17, paragraph 57.
[15] Decision 14/CP.19, paragraph 13.

Annex

Technical annex to the biennial update report

Owing to the complexity and length of the submitted technical annex to the biennial update report and in order to maintain the original formatting, the technical annex is not reproduced here. It can be downloaded from the UNFCCC website at <http://unfccc.int/8722>.