



United Nations

FCCC/SBI/ICA/2016/TATR.1/ECU



Framework Convention on  
Climate Change

Distr.: General  
2 August 2017

English only

---

## **Technical report on the technical analysis of the technical annex to the first biennial update report of Ecuador submitted in accordance with decision 14/CP.19, paragraph 7, on 21 September 2016**

### *Summary*

This technical report covers the technical analysis of the technical annex that was submitted on a voluntary basis by Ecuador in 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 national territorial forest area as the assessed forest reference emission level proposed by Ecuador in its modified submission of April 2015.

Ecuador reported the results of that activity for the period 2009–2014, which amount to emission reductions of 28,990,071 tonnes of carbon dioxide equivalent. The technical analysis concluded that the data and information provided by Ecuador 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, in accordance with decision 14/CP.19, paragraph 14.

GE.17-13227(E)



\* 1 7 1 3 2 2 7 \*

Please recycle 



## Contents

	<i>Paragraphs</i>	<i>Page</i>
I. Introduction, overview and summary .....	1–8	3
A. Introduction .....	1–3	3
B. Process overview .....	4–7	3
C. Summary of results .....	8	4
II. Technical analysis of information reported in the technical annex to the biennial update report .....	9–36	4
A. Technical annex .....	9	4
B. Technical analysis.....	10–31	4
C. Areas identified for technical improvement.....	32–34	10
D. Comments and/or responses by the Party concerned .....	35–36	11
III. Conclusions .....	37–41	11
 Annex		
Technical annex to the biennial update report.....		13

## 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,<sup>1</sup> included in the first biennial update report (BUR) of Ecuador, which was submitted on 21 September 2016 in accordance with decision 2/CP.17.<sup>2</sup> In the technical annex, Ecuador provided the data and information used in its 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).<sup>3</sup> The submission of the technical annex is voluntary and in the context of results-based payments.<sup>4</sup>

2. 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 ICA is to increase the transparency of mitigation actions and their effects through analysis by a team of technical experts (TTE) in consultation with the Party and through a facilitative sharing of views, which will result in a separate summary report.<sup>5</sup>

3. Ecuador submitted a proposed forest reference emission level (FREL), in accordance with decision 13/CP.19, on 8 December 2014, which was subject to a technical assessment. Taking into consideration the technical inputs of the assessment team, Ecuador submitted a modified submission of its proposed FREL on 28 April 2015. The assessed FREL was included in the technical annex to the Party's first BUR in accordance with the guidelines contained in the annex to decision 14/CP.19. The findings of that technical assessment are included in a separate report.<sup>6</sup>

### B. Process overview

4. The TA of the first BUR of Ecuador took place (as a centralized activity) from 5 to 10 December 2016 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. Zuelclady Maria Fernanda Araujo Gutiérrez (Mexico), Mr. Manuel Estrada (Mexico), Ms. Rocio Lichte (Consultative Group of Experts on National Communications from Parties not included in Annex I to the Convention (CGE) member from Germany), Ms. Tahira Munir (Pakistan), Ms. Anne Nyatichi Omambia (CGE member from Kenya), Mr. José Manuel Ramirez Garcia (Spain), Ms. Mayra Rocha (Brazil), Ms. María José Sanz Sánchez (Spain), Mr. Marius Taranu (Republic of Moldova) and Ms. Tian Wang (China). Ms. Lichte and Ms. Omambia were the co-leads. Mr. Estrada and Ms. Sanz Sánchez 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.

<sup>1</sup> Decision 14/CP.19, paragraph 7.

<sup>2</sup> Decision 2/CP.17, paragraph 41(a), and annex III, paragraph 19.

<sup>3</sup> 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.

<sup>4</sup> Decision 14/CP.19, paragraph 8.

<sup>5</sup> At the time of this report, the summary report was still under preparation.

<sup>6</sup> FCCC/TAR/2015/ECU, published on 2 October 2015.

5. The TA of the technical annex provided by Ecuador 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.

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

7. The LULUCF experts responded to and incorporated the comments referred to in paragraph 6 above from Ecuador and finalized this technical report in consultation with the Party.

### **C. Summary of results**

8. 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, Ecuador, 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 100 per cent of the national continental territory of Ecuador (i.e. excluding the Galápagos Islands). The FREL was developed from the average annual carbon dioxide (CO<sub>2</sub>) emissions associated with gross deforestation for the historical reference period of 2000–2008. In the technical annex to its first BUR, Ecuador reported the results of the implementation of the activity reducing emissions from deforestation for the period 2009–2014,<sup>7</sup> which amount to emission reductions of 28,990,071 t CO<sub>2</sub> eq.

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

### **A. Technical annex**

9. For the technical annex to the first BUR submitted by Ecuador, see the annex to this report.<sup>8</sup>

### **B. Technical analysis**

10. 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;

---

<sup>7</sup> Regrowth of biomass after deforestation events was not considered in the estimation of the results or in the construction of the FREL.

<sup>8</sup> Decision 14/CP.19, paragraph 14(a).

- (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 decision 14/CP.19, paragraph 9;
- (d) The results are accurate, to the extent possible.

11. The remainder of this chapter presents the results of the TA of the technical annex to the first BUR of Ecuador according to the scope outlined in paragraph 10 above.

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

12. 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 their REDD-plus activities should be transparent and consistent over time and with their 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.

13. The LULUCF experts note that Ecuador has been consistent in using the same methodologies and definitions for developing the FREL and for estimating the results of the implementation of activities to reduce emissions from deforestation during the period 2009–2014. This includes:

- (a) Using consistent methodologies and data to generate activity data on gross deforestation of natural forests;
- (b) Using consistent methodologies and data to generate emission factors, in particular the same emission factors and the same stratification of forest for nine different forest types with different country-specific carbon stocks derived from the sampling conducted between 2011 and 2013;
- (c) Including the same four carbon pools: above-ground biomass, below-ground biomass (including understory), deadwood and litter;
- (d) Including the same gases: CO<sub>2</sub> only;
- (e) Covering the same area: 100 per cent of the continental territory of Ecuador, totalling approximately 24,898,059.90 ha;
- (f) Using the assumption that all carbon from the carbon pools indicated in paragraph 4(c) above is lost in the year of the deforestation event and not including any subsequent removals of CO<sub>2</sub> in the area;
- (g) Using forest and deforestation definitions that are fully consistent with the definitions used for the construction of the FREL;
- (h) Ensuring that emissions from deforestation in natural forests of less than 10 years old (regeneration of natural forests on non-forest land) are included in both the FREL submitted in April 2015 and the results period of 2009–2014, with the average emission factors for the nine types of forest applied to the estimates;
- (i) Identifying areas where conversions of natural forests to plantations occurred. Conversions were reported for the periods 2000–2008 and 2009–2014.

14. The LULUCF experts conclude that the presentation of the results of the implementation of the activity reducing emissions from deforestation is consistent with the assessed FREL of the continental territory of Ecuador. They commend Ecuador for

ensuring full consistency between the data and methodologies described in the FREL submission for the years 2000–2008 and in the technical annex with the results of the implementation of the activity reducing emissions from deforestation for the years 2009–2014.

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

15. The LULUCF experts note that, in its technical annex, Ecuador provided weblinks to additional information, in particular: land-use maps for 1990, 2000, 2008 and 2014; a map of potential forest types; the spreadsheet used for the estimation of the FREL; and a land-use change matrix for the years 1990, 2000 and 2008. Upon request by the LULUCF experts during the TA week, Ecuador provided a spreadsheet containing the calculation of the results as well as the land-use change matrix for the period 2009–2014. The LULUCF experts note the importance of those additional data and information for their own reconstruction of the results. Moreover, they note that including more disaggregated data in the technical annex (i.e. a table containing the activity data, emission factors and resulting emissions for the period 2009–2014) would have increased the transparency of the information provided therein. The LULUCF experts commend Ecuador for its efforts during the TA week to increase the transparency and ensure the completeness<sup>9</sup> of the data and information, which allowed for the reconstruction of the results. In response to the suggestions received from the LULUCF experts, Ecuador uploaded the requested information on its Ministry of Environment website, System of Environmental Information,<sup>10</sup> in order to improve transparency and facilitate access to the information.

16. The LULUCF experts note that the data and information provided in the technical annex are consistent with the data and information used for the construction of Ecuador's FREL. Activity data for gross deforestation are determined by comparing independent land-use maps generated through classification of remotely sensed data (for the period 2000–2008 for the FREL and 2009–2014 for the results). The emission factors used for the FREL and the results period were the same and were obtained from Ecuador's national forest assessment.<sup>11</sup>

17. Referring 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 anthropogenic forest-related greenhouse gas (GHG) emissions by sources and removals by sinks as contained in each country's GHG inventories. The LULUCF experts noted that Ecuador's technical annex did not include sufficient information to assess consistency with the data used in the construction of the FREL and those used in the latest GHG inventories available (the one included in the Party's second national communication and the summary of the inventory included in its first BUR). Ecuador explained that, since the submission of its second national communication in 2011,<sup>12</sup> the activity data used in the construction of the FREL have undergone significant improvements and the methods have been updated. Ecuador also explained that, hence, the data to be used in its third national communication can be expected to be consistent with those used in the construction of the FREL and the results presented in the technical annex and the summary of the GHG inventory included in its first BUR. Ecuador further explained to the LULUCF experts that in order to maintain consistency, all data and methods used for the construction of Ecuador's FREL were taken

---

<sup>9</sup> Complete here means the provision of information that allows for the reconstruction of the results.

<sup>10</sup> <<http://suia.ambiente.gob.ec/en/anexos-nivel-referencia>>.

<sup>11</sup> The national forest assessment has three components: the national forest inventory, the geographic component for the development of the forest carbon map, and a socioeconomic component aimed at identifying the relationship between natural forests and local populations.

<sup>12</sup> <<http://unfccc.int/resource/docs/natc/ecunc2.pdf>>.

into account in the GHG estimates for the LULUCF sector included in its national GHG inventory for 2010.<sup>13</sup> At the time of the TA, the publication of the national inventory report (NIR) was pending. After considering the explanations and the draft of the NIR for the 2010 GHG inventory provided by Ecuador during the TA week,<sup>14</sup> the LULUCF experts noted that the activity data and emission factors used for the estimation of the 2010 GHG inventory and those applied to calculate the emissions for the 2009–2014 results period are consistent. However, the experts found two areas of inconsistency in the estimations arising from the assumptions used between the construction of the FREL and the results and the estimation of the emissions and removals from the LULUCF sector for the 2010 GHG inventory: (1) for the FREL and the results, Ecuador considered the conversion of natural forests to non-forest land and to forest plantations as deforestation, while for the 2010 GHG inventory this transition was considered as forest land remaining forest land and the conversion of forest plantations to non-forest land is considered as forest land converted to other land (deforestation); and (2) in the FREL and the results, the post-deforestation carbon stocks were not taken into account and thus it was assumed that all the carbon in the included pools was emitted, whereas the deforestation estimates in the 2010 GHG inventory include the carbon stocks in post-deforestation land uses. Ecuador explained to the LULUCF experts that: the conversion from natural forests to forest plantations is not estimated because the structure of the GHG inventory calculation process makes it difficult to analyse the transition, which is considered as forest land remaining forest land; and for the conversion of forest plantations to non-forest land, the analysis of the change in carbon stocks for the GHG inventory is performed for all types of forest, including forest plantations.

18. The LULUCF experts note that Ecuador already provided information on uncertainties in its FREL modified submission,<sup>15</sup> and that it remains valid also for the estimated results of the implementation of activity on reducing emissions from deforestation for the period 2009–2014.

19. Considering all the information provided during the TA week, the LULUCF experts were able to reconstruct the results provided by Ecuador for the period 2009–2014. The LULUCF experts commend Ecuador for providing transparent and complete information during the TA.

20. The LULUCF experts conclude that Ecuador provided the necessary information allowing for the reconstruction of the results of the implementation of the activity on reducing emissions from deforestation. The data and information provided are considered to be transparent, consistent, complete and accurate to the extent possible. The LULUCF experts note that making available all the information that was not included in the technical annex on a web page (for example on the website of the Ministry of Environment) would improve the transparency of the technical annex. In response, Ecuador made available all the necessary data and information on the Ministry's website<sup>16</sup> prior to the finalization of this report. The LULUCF experts commend Ecuador for these additional efforts to promote transparency of the country's REDD-plus submissions.

---

<sup>13</sup> A summary of the 2010 GHG inventory is provided in chapter 2, section 4, of the first BUR of Ecuador, available at <<http://unfccc.int/resource/docs/natc/ecubur1.pdf>>.

<sup>14</sup> After the technical analysis week, Ecuador made available its national inventory report that contains its GHG inventory for 2010 on the UNFCCC website. The report is available at: <<http://unfccc.int/8722>>.

<sup>15</sup> <[http://redd.unfccc.int/files/submission\\_frel\\_ecuador.pdf](http://redd.unfccc.int/files/submission_frel_ecuador.pdf)>.

<sup>16</sup> <<http://suia.ambiente.gob.ec/en/anexos-nivel-referencia>> and also on the UNFCCC website, see footnote 14.

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

21. The LULUCF experts note that Ecuador provided data and information on all the elements required according to the guidelines contained in the annex to decision 14/CP.19 both in its technical annex as well as during the TA week, including the following: summary information from the final report containing the assessed FREL; results in t CO<sub>2</sub> 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 chapter II.B.1 above); a description of forest monitoring systems that Ecuador is developing and the institutional roles and responsibilities in relation to 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 across several subsections of the technical annex.

22. In its technical annex, Ecuador provided a summary table with the results of the implementation of the activity on reducing emissions from deforestation for the years 2009–2014, which are consistent with the assessed FREL for the period 2000–2008. The emission reductions achieved with respect to the FREL period are listed for each year included in the results period 2009–2014 in table 4 of the technical annex and amount to a total of 28,990,071 t CO<sub>2</sub> eq for the six years covered.

23. The LULUCF experts noted that Ecuador provided a description of the country's forest monitoring system and a summary of the institutional roles and responsibilities in relation to the measurement, reporting and verification 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 measurement, reporting and verification are transparently provided. During the technical exchanges with the LULUCF experts, Ecuador indicated that the team working on the GHG inventory also uses the input data provided by the national forest monitoring team; the latter used the data to construct the FREL and deforestation results (e.g. remotely sensed data of the same resolution and minimum mapping area and the same emission factors). This helps to ensure greater consistency between the GHG inventory and the estimates for the FREL and the results. The LULUCF experts commend Ecuador for sharing this information and for the coordination between the GHG inventory team and the national forest monitoring team.

24. 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, Ecuador confirmed that explicit identification of nine types of natural forest is being carried out for the purpose of both the FREL and the estimation of results (see table 1 of the technical annex). This identification is being done by combining the land-use and land-cover maps with the potential forest map, which also enables distinguishing plantations from natural forests. Ecuador also indicated during the TA that the analysis of the remote-sensing images did not allow stratification by age class within each of the nine types of forest, and therefore young forests (forests of less than 10 years old) could not be distinguished from older forests.

25. Referring to decision 1/CP.16, paragraph 71(c), footnote 7, the subnational monitoring and reporting should include: monitoring and reporting of emission 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. Ecuador considers in its FREL and the results period its entire continental territory, excluding the Galápagos Islands. Therefore, Ecuador's FREL and the associated results can be considered to be on a national scale.

26. Ecuador only considered emissions from deforestation in natural forest in the construction of its FREL and for the results period. Ecuador explained 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 FREL and estimation of emission reductions for the results, Ecuador used the 2003 IPCC *Good Practice Guidance for Land Use, Land-Use Change and Forestry* for estimating changes in carbon stocks in forest land converted to other land-use categories, assuming zero stock in the subsequent land use. Accordingly, the gross emissions from deforestation of natural forest were estimated for 2009–2014 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).

27. Ecuador included in its FREL and its estimates of results the most significant pools and GHGs. Overall, the exclusion of soil organic carbon (SOC) and non-CO<sub>2</sub> GHGs is adequately justified. The LULUCF experts commend Ecuador for the intention expressed by Ecuador to obtain better information on SOC and non-CO<sub>2</sub> GHGs with the aim of including them in future FRELS and results-period estimates as part of the stepwise approach.

#### **4. Accuracy of the results in the technical annex**

28. The LULUCF experts note that the estimation of the results of the implementation of the activity on reducing emissions from deforestation in the continental territory of Ecuador was undertaken using a transparent and consistent approach. They commend Ecuador for its NFMS, which is capable of providing transparent estimates of emissions from deforestation, and encourage Ecuador to continue with its efforts to improve the system.

29. Both the established FREL and the results obtained for the period 2009–2014 from the activity on reducing emissions from deforestation of natural forest are based on the assumption that deforestation takes place in areas of natural forest. The carbon content of the natural forests is determined by the type of forest as indicated in the potential forest map. The LULUCF experts noted that Ecuador was not able to detect if degradation was occurring in its natural forests or in the successional stages of the forests (age of forest). On the latter issue, Ecuador explained that the national forest inventory reported information by each type of forest, including young and mature forests, and assuming as an emission factor the average for each stratum in order to avoid extremes in carbon content values. Ecuador further indicated that it is considering disaggregating forests and their related carbon content into successional stages, depending on available human and economic resources, as an area for future technical improvement. The LULUCF experts consider the provision of more information on carbon stocks at the different successional stages as an area for future improvement, with the aim of showing that there is no likely overestimation or underestimation of emissions and to enhance transparency of its future submissions. They also note that, because Ecuador has used a consistent methodology for estimating emissions in the establishment of the FREL and the results for the period 2009–2014, the net effect of any overestimation or underestimation of emissions will be partially cancelled out.

30. Ecuador provided information related to the uncertainties associated with the maps used to derive the activity data (area deforested) and the emission factors used to attribute carbon stocks to the nine types of natural forest (tables 7 and 8 of the technical annex). According to Ecuador's technical annex and modified FREL submission, the overall accuracy of the maps was estimated at 73 per cent for the 2000 land-use map, 76 per cent for the 2008 land-use map and 85 per cent for the 2014 land-use map. An independent accuracy assessment of the 2000 and 2008 land-use maps was carried out after collapsing

all non-forest categories into one single category termed “non-forest”. The overall accuracy was then estimated at 95.5 per cent for the 2000 map and 94.0 per cent for the 2008 map. However, as indicated in the technical assessment report on the FREL, the assessment team indicated that, in the context of REDD-plus, the accuracy of the land-use changes is more important than that of the land-use maps. Taking into account this recommendation and within a process of continuous improvement, Ecuador included the uncertainty of the land-use changes for the overall period 2008–2104 in table 6 of the technical annex, which the LULUCF experts recognize as an improvement and commend Ecuador for the effort.

31. Uncertainties for the emission factors were reported for the nine types of natural forest for each pool by type of natural forest and were in the range of 6–20 per cent, with 6 per cent corresponding to the Amazon Lowland Evergreen Forest, which is the most significant in terms of area covered. However, those uncertainties and the uncertainties for the deforestation maps indicated in paragraph 30 above were not used in assessing the uncertainties of the emission estimates. Thus, the effect of the uncertainties on the accuracy of the results of the implementation of the activity on reducing emissions from deforestation could not be assessed. Taking this into account, the LULUCF experts conclude that the results are accurate, to the extent possible, and note that the estimation of the uncertainty of the emissions from deforestation is an area for technical improvement in the future.

### **C. Areas identified for technical improvement**

32. The LULUCF experts conclude that the areas for technical improvement identified in the report of the technical assessment of Ecuador’s FREL<sup>17</sup> also apply to the provision of information on the results of the implementation of the activity on reducing emissions from deforestation. The areas include the following:

(a) Consideration of the collection of data on forest degradation (possibly including, as an interim step, proxy or subnational data), as Ecuador did not include emissions from forest degradation in its FREL owing to the lack of a definition of forest degradation and the associated data required;

(b) Consideration of the feasibility of direct classification of deforestation by comparing multi-temporal composite images (potentially more accurate than comparing maps estimated from images), at least for areas with homogeneous environmental conditions;

(c) Incorporation of the uncertainty analysis of land-use change in future FREL/forest reference level submissions and results as well as further disaggregation according to the time series under consideration;

(d) Consideration of the application of the verification techniques and procedures for activity data recommended by the IPCC.<sup>18</sup> For instance, Ecuador could compare the results of global data sets of forest cover changes with its data for specific forest types (e.g. dense humid forest). This could potentially provide useful insights to help in further increasing the confidence in the data underlying the FREL and the results-period estimates;

(e) Consideration of the provision of more information on carbon stocks across successional stages, as well as provision of more disaggregated activity data according to successional stages (age classes), to address potential overestimation or underestimation of

---

<sup>17</sup> See footnote 6.

<sup>18</sup> As described in section 5.7 of the 2003 IPCC *Good Practice Guidance for Land Use, Land-Use Change and Forestry*.

emissions due to the use of average emission factors including mature and young forest (see para. 29 above).

33. Ecuador included in its FREL and results-period estimates the most significant pools and GHGs. Overall, the exclusion of SOC and non-CO<sub>2</sub> GHGs is adequately justified. The LULUCF experts commend Ecuador for the intention expressed by Ecuador to obtain better information on SOC and non-CO<sub>2</sub> GHGs with the aim of including them in future FRELS and results estimates as part of the stepwise approach.

34. Furthermore, the LULUCF experts note that Ecuador provided uncertainty estimates for the activity data and emission factors, and that it could consider, as a future technical improvement, the use of uncertainty analysis also for the estimates of emissions from deforestation as encouraged in decision 17/CP.8, annex, paragraph 24.

#### **D. Comments and/or responses by the Party concerned**

35. During the consultation process, Ecuador 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 Ecuador to potentially include the reduction of emissions from forest degradation as a REDD-plus activity in future FREL submissions.

36. Ecuador considers that the identified areas for technical improvement will be implemented under the assumption that resources will exist and taking into account its national circumstances for the process to be sustainable over time.

### **III. Conclusions**

37. The LULUCF experts conclude that Ecuador reported the results of the implementation of one activity, “reducing emissions from deforestation”, covering 100 per cent of the continental territory of the country. The results include estimates of emissions of CO<sub>2</sub> from the carbon pools above-ground biomass, below-ground biomass, deadwood and litter from deforestation identified as clear cuts of a minimum mapping unit of 1 ha for the period 2009–2014. 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 to the extent possible. The LULUCF experts note that all relevant data and information, including those which was not provided in the technical annex, were made available on the Ministry of Environment website to improve transparency (see para. 20).

39. The LULUCF experts find the data and information provided in the technical annex to be consistent with the guidelines referred to in decision 14/CP.19, paragraph 11.

40. The results are accurate to the extent possible, based on the assumptions used. The LULUCF experts note that Ecuador is taking steps to further implement and consolidate its NFMS.

41. In conclusion, the LULUCF experts commend Ecuador for showing a strong commitment to the continuous improvement of the data and information used for producing its results, in line with the stepwise approach, which are consistent with those used to establish its assessed FREL. Some areas for future technical improvement 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.<sup>19</sup> The LULUCF experts also acknowledge that the TA process was an opportunity for a facilitative and constructive technical exchange of views and information<sup>20</sup> with Ecuador, and commend Ecuador for making available on the Ministry of Environment's website the data shared during the TA but not included in the technical annex.

---

<sup>19</sup> Decision 2/CP.17, paragraph 57.

<sup>20</sup> 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>>.

---