



United Nations

FCCC/SBI/ICA/2018/TASR.2/VNM



Framework Convention on  
Climate Change

Distr.: General  
9 October 2018

English only

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## **Technical analysis of the second biennial update report of Viet Nam submitted on 20 November 2017**

### **Summary report by the team of technical experts**

#### *Summary*

According to decision 2/CP.17, paragraph 41(a), Parties not included in Annex I to the Convention (non-Annex I Parties), consistently with their capabilities and the level of support provided for reporting, were to submit their first biennial update report (BUR) by December 2014. Further, paragraph 41(f) of that decision states that non-Annex I Parties shall submit a BUR every two years, either as a summary of parts of their national communication in the year in which the national communication is submitted or as a stand-alone update report. As mandated, the least developed country Parties and small island developing States may submit BURs at their discretion. This summary report presents the results of the technical analysis of the second BUR of Viet Nam conducted by a team of technical experts in accordance with the modalities and procedures contained in the annex to decision 20/CP.19.

GE.18-16554(E)



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## Abbreviations and acronyms

2006 IPCC Guidelines	<i>2006 IPCC Guidelines for National Greenhouse Gas Inventories</i>
AD	activity data
BUR	biennial update report
CDM	clean development mechanism
CGE	Consultative Group of Experts on National Communications from Parties not included in Annex I to the Convention
CH <sub>4</sub>	methane
CO	carbon monoxide
CO <sub>2</sub>	carbon dioxide
CO <sub>2</sub> eq	carbon dioxide equivalent
EF	emission factor
GHG	greenhouse gas
GWP	global warming potential
HFC	hydrofluorocarbon
ICA	international consultation and analysis
IE	included elsewhere
IPCC	Intergovernmental Panel on Climate Change
IPCC good practice guidance	<i>Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories</i>
IPCC good practice guidance for LULUCF	<i>Good Practice Guidance for Land Use, Land-Use Change and Forestry</i>
LULUCF	land use, land-use change and forestry
MRV	measurement, reporting and verification
N <sub>2</sub> O	nitrous oxide
NA	not applicable
NAMA	nationally appropriate mitigation action
NC	national communication
NDC	nationally determined contribution
NE	not estimated
NIR	national inventory report
NMVOC	non-methane volatile organic compound
NO	not occurring
non-Annex I Parties	Parties not included in Annex I to the Convention
NO <sub>x</sub>	nitrogen oxides
PFC	perfluorocarbon
QA/QC	quality assurance/quality control
Revised 1996 IPCC Guidelines	<i>Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories</i>
SF <sub>6</sub>	sulfur hexafluoride
SO <sub>x</sub>	sulfur oxides
TTE	team of technical experts
UNFCCC guidelines for the preparation of NCs from non-Annex I Parties	“Guidelines for the preparation of national communications from Parties not included in Annex I to the Convention”
UNFCCC reporting guidelines on BURs	“UNFCCC biennial update reporting guidelines for Parties not included in Annex I to the Convention”

## **I. Introduction and process overview**

### **A. Introduction**

1. The process of ICA consists of two steps: a technical analysis of the submitted BUR and a facilitative sharing of views under the Subsidiary Body for Implementation, resulting in a summary report and record, respectively.
2. According to decision 2/CP.17, paragraph 41(a), non-Annex I Parties, consistently with their capabilities and the level of support provided for reporting, were to submit their first BUR by December 2014. In addition, paragraph 41(f) of that decision states that non-Annex I Parties shall submit a BUR every two years, either as a summary of parts of their NC in the year in which the NC is submitted or as a stand-alone update report.
3. Further, according to paragraph 58(a) of the same decision, the first round of ICA is to commence for non-Annex I Parties within six months of the submission of the Parties' first BURs. The frequency of developing country Parties' participation in subsequent rounds of ICA, depending on their respective capabilities and national circumstances, and the special flexibility for small island developing States and the least developed country Parties, will be determined by the frequency of the submission of BURs.
4. Viet Nam submitted its first BUR on 8 December 2014, which was analysed by a TTE in the first round of technical analysis of BURs from non-Annex I Parties, conducted from 18 to 22 May 2015. After the publication of its summary report, Viet Nam participated in the first workshop for the facilitative sharing of views, convened in Bonn, Germany, on 21 May 2016.
5. This summary report presents the results of the technical analysis of the second BUR of Viet Nam undertaken by a TTE in accordance with the provisions on the composition, modalities and procedures of the TTE under ICA contained in the annex to decision 20/CP.19.

### **B. Process overview**

6. Viet Nam submitted its second BUR on 20 November 2017, which is more than two years since the submission of its first BUR.
7. The technical analysis of the BUR took place from 5 to 9 March 2018 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: Ms. Selam Abebe (former member of the CGE from Ethiopia), Mr. Oluseyi Adefisan (Nigeria), Mr. Takeshi Enoki (former member of the CGE from Japan), Ms. Olga Gavrilova (Estonia), Ms. Valentina Idrissova (Kazakhstan), Ms. Neranda Maurice-George (Saint Lucia), Mr. John Steller (United States of America) and Mr. Daniel Tutu-Benefoh (Ghana). Ms. Abebe and Mr. Enoki were the co-leads. The technical analysis was coordinated by Ms. Marion Vieweg-Mersmann and Ms. Karen Ortega (secretariat).
8. During the technical analysis, in addition to the written exchange, through the secretariat, to provide technical clarifications on the information reported in the BUR, the TTE and Viet Nam engaged in consultation<sup>1</sup> on the identification of capacity-building needs for the preparation of BURs and participation in the ICA process. Following the technical analysis of Viet Nam's second BUR, the TTE prepared and shared a draft summary report with Viet Nam on 30 May 2018 for its review and comment. Viet Nam, in turn, provided its feedback on the draft summary report on 16 September 2018.
9. The TTE responded to and incorporated the Party's comments referred to in paragraph 8 above and finalized the summary report in consultation with Viet Nam on 1 October 2018.

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<sup>1</sup> The consultation was conducted via teleconferencing.

## **II. Technical analysis of the biennial update report**

### **A. Scope of the technical analysis**

10. The scope of the technical analysis is outlined in decision 20/CP.19, annex, paragraph 15, according to which the technical analysis aims to, without engaging in a discussion on the appropriateness of the actions, increase the transparency of mitigation actions and their effects and shall entail the following:

(a) The identification of the extent to which the elements of information listed in paragraph 3(a) of the ICA modalities and guidelines (decision 2/CP.17, annex IV) have been included in the BUR of the Party concerned (see chapter II.B below);

(b) A technical analysis of the information reported in the BUR, specified in the UNFCCC reporting guidelines on BURs (decision 2/CP.17, annex III), and any additional technical information provided by the Party concerned (see chapter II.C below);

(c) The identification, in consultation with the Party concerned, of capacity-building needs related to the facilitation of reporting in accordance with the UNFCCC reporting guidelines on BURs and to participation in ICA in accordance with the ICA modalities and guidelines, taking into account Article 4, paragraph 3, of the Convention (see chapter II.D below).

11. The remainder of this chapter presents the results of each of the three parts of the technical analysis of Viet Nam's BUR outlined in paragraph 10 above.

### **B. Extent of information reported**

12. The elements of information referred to in paragraph 10(a) above include the national GHG inventory report; information on mitigation actions, including a description of such actions, an analysis of their impacts and the associated methodologies and assumptions, and the progress made in their implementation; information on domestic MRV; and information on support needed and received.

13. According to decision 20/CP.19, annex, paragraph 15(a), in undertaking the technical analysis of the submitted BUR, the TTE is to identify the extent to which the elements of information listed in paragraph 12 above have been included in the BUR of the Party concerned. The TTE considers that the reported information is mostly consistent with the UNFCCC reporting guidelines on BURs. Specific details on the extent of the information reported for each of the required elements are provided in annex I.

14. The TTE noted improvements in the reporting in the second BUR of Viet Nam compared with the first BUR. The information on GHG inventories and mitigation actions and their effects in the second BUR demonstrates that the Party has taken into consideration the areas for enhancing transparency noted by the TTE in the summary report on the technical analysis of its first BUR, including reporting GHG emissions in units of mass, and providing information on the estimation of CO<sub>2</sub> emissions from fuel combustion using the reference approach, on methodologies and assumptions associated with mitigation actions, and on international market mechanisms.

### **C. Technical analysis of the information reported**

15. The technical analysis referred to in paragraph 10(b) above aims to increase the transparency of mitigation actions and their effects, without engaging in a discussion on the appropriateness of those actions. Accordingly, the technical analysis focused on the transparency of the information reported in the BUR.

16. For information reported on national GHG inventories, the technical analysis also focused on the consistency of the methods used for preparing those inventories with the

appropriate methods developed by the IPCC and referred to in the UNFCCC reporting guidelines on BURs.

17. The results of the technical analysis are presented in the remainder of this chapter.

**1. Information on national circumstances and institutional arrangements relevant to the preparation of national communications on a continuous basis**

18. As per the scope defined in paragraph 2 of the UNFCCC reporting guidelines on BURs, the BUR should provide an update to the information contained in the most recently submitted NC, including information on national circumstances and institutional arrangements relevant to the preparation of NCs on a continuous basis. In their NCs, non-Annex I Parties report on their national circumstances following the reporting guidance contained in decision 17/CP.8, annex, paragraphs 3–5.

19. In accordance with decision 17/CP.8, annex, paragraph 3, Viet Nam reported in its first BUR information on its national circumstances and provided an update thereon in its second BUR. The Party provided information on features of the country's geography, climate and climate change scenarios, and of its social, environmental and economic profile that may affect its ability to deal with mitigating and adapting to climate change.

20. In addition, as encouraged in decision 17/CP.8, annex, paragraph 4, Viet Nam provided a summary of relevant information regarding its national circumstances in tabular format. The information transparently describes the national circumstances, in particular climate conditions and scenarios, population, and economic growth of income, including societal income and status.

21. Gross domestic product increased by 5.91 per cent on average per year in the period 2011–2015 in Viet Nam, within which the agriculture, forestry and fishing sector achieved 3.12 per cent average growth per year, the industry and construction sector 7.22 per cent per year and the service sector 6.68 per cent per year. Inflation decreased from 13.62 per cent in 2011 to 2.05 per cent in 2015. The share of poor households decreased from 12.60 per cent in 2011 to 7.00 per cent in 2015. The economic structure shifted to reflect the decreasing proportional contribution to gross domestic product of the agriculture, forestry and fishing sector and the increasing proportional contribution of the industry, construction and service sectors.

22. Viet Nam has made significant achievements in its efforts to formulate policies and strategies, including the formation and development of the institutional system, in accordance with sustainable development requirements. Sustainable development has become the strategy and vision of the Government of Viet Nam. Accordingly, the Government has issued a number of policies, programmes and plans relating to climate change, in particular the National Action Plan for implementing the 2030 Agenda for Sustainable Development, the Viet Nam Renewable Energy Development Plan Strategy up to 2030 with a vision to 2050, a decision on institutional arrangements for implementing the national GHG inventory system, a decision to approve the Paris Agreement and the adoption of the national Plan for Implementation of the Paris Agreement, approved in March 2016.

23. Viet Nam transparently described in its BUR the existing institutional arrangements relevant to the preparation of its NCs and BURs on a continuous basis. The description covers key aspects of the institutional arrangements. The Government of Viet Nam designated the Ministry of Natural Resources and Environment as the national focal point for implementing the Convention and its Kyoto Protocol as well as other relevant international treaties on climate change and as the permanent acting agency of the National Committee on Climate Change, which is chaired by the Ministry of Natural Resources and Environment and composed of representatives of relevant ministries. The Ministry of Natural Resources and Environment also presides over and coordinates with other relevant ministries, branches, agencies, localities and socio-political organizations in order to carry out national strategies and programmes on climate change, and activities and plans for implementing the Convention, the Kyoto Protocol and the Paris Agreement and to achieve the sustainable development goals of Viet Nam. The Party reported in its BUR on mechanisms for information and data exchange, QA/QC procedures, and provisions for

public consultation and other forms of stakeholder engagement. The Party's second BUR was developed with support from the United Nations Environment Programme. Viet Nam is still in the process of defining and establishing its systems but it has taken significant steps to create institutional arrangements that allow for the sustainable preparation of BURs, including organizational improvements and knowledge-sharing procedures to facilitate sectoral information transfer.

## 2. National greenhouse gas emissions by sources and removals by sinks

24. As indicated in table 1 in annex I, Viet Nam reported information on its GHG inventory in its BUR mostly in accordance with paragraphs 3–10 of the UNFCCC reporting guidelines on BURs and paragraphs 8–24 of the UNFCCC guidelines for the preparation of NCs from non-Annex I Parties, contained in the annex to decision 17/CP.8.

25. Viet Nam submitted its second BUR in 2017 and the GHG inventory reported is for 2013, which is consistent with the requirements for the reporting time frame.

26. GHG emissions and removals for the BUR submission covering 2013 were estimated using the Revised 1996 IPCC Guidelines, the IPCC good practice guidance and the IPCC good practice guidance for LULUCF, as appropriate. A tier 1 approach was applied to estimate emissions for the energy and IPPU sectors and for some categories in the agriculture, waste and LULUCF sectors. A tier 2 methodology was used for estimating emissions from manure management, rice cultivation, changes in forest and other woody biomass, and solid waste disposal on land.

27. With regard to the methodologies used, information on guidelines, methodological tiers and sources of AD and EFs was provided (p.20 and table 2.1 of the BUR). However, the TTE noted that information on which methodologies were applied for specific categories and actual values of AD were not included in the BUR. During the technical analysis, Viet Nam clarified the tiers and methodologies used by category. The TTE noted that referring specifically in the BUR to the IPCC methodologies and sources of EFs used by subcategory could facilitate a better understanding of the information reported.

28. The total GHG emissions for 2013 reported in the BUR, including and excluding LULUCF, amounted to 259,024.1 and 293,263.9 Gg CO<sub>2</sub> eq, respectively, representing an increase of 2.5 and 7.3 per cent, respectively, since 2010 (from 252,621 Gg CO<sub>2</sub> eq and 273,342 Gg CO<sub>2</sub> eq, respectively). The GHG emissions excluding LULUCF reported for 2013 include 156,969.3 Gg CO<sub>2</sub>, 101,023.4 Gg CO<sub>2</sub> eq CH<sub>4</sub> and 33,303.7 Gg CO<sub>2</sub> eq N<sub>2</sub>O. Viet Nam also reported emissions of HFCs, which amounted to 1,967.6 CO<sub>2</sub> eq. During the technical analysis, Viet Nam clarified that emissions of PFCs and SF<sub>6</sub> were not reported owing to difficulties with AD collection, but confirmed that the emissions are assumed to be very low, in the case of SF<sub>6</sub> because aluminium is currently not produced in the country.

29. Other emissions reported include 51.4 Gg NO<sub>x</sub> and 1,693.6 Gg CO. However, the TTE noted that no reference to the particular methodology for estimating these emissions was provided. Emissions of SO<sub>x</sub> and NMVOCs were reported as "NE". During the technical analysis, Viet Nam explained that information on the methodologies used is contained in the NIR 2013, which was being translated for submission to the secretariat at the time of preparation of the BUR, while emissions of NMVOCs and SO<sub>x</sub> were not estimated owing to a lack of data and time constraints.

30. Viet Nam applied the notation keys "NO", "NA", "NE" and "IE" when reporting emissions for which numerical data were not provided. In some cases (e.g. "NE" for HFCs from mineral products and "NA" for dead organic matter on forest land), the incorrect notation keys were reported. In addition, all notation keys were reported without providing explanations in the BUR; this is particularly relevant in the following cases: "IE" for CO<sub>2</sub> emissions from ammonia production, "IE" for CO<sub>2</sub> emissions from international aviation bunkers and "NE" for CO<sub>2</sub> emissions from international marine bunkers. During the technical analysis, Viet Nam provided additional information on its use of notation keys. Providing such information in the BUR could enhance the transparency of the information reported.

31. Viet Nam reported emissions consistently with the tables included in annex 3A.2 to the IPCC good practice guidance for LULUCF and the sectoral reporting tables annexed to the Revised 1996 IPCC Guidelines.

32. The shares of emissions that various sectors contributed to the total GHG emissions, excluding LULUCF, as reported by the Party in 2013 are: energy, 52 per cent; industrial processes, 11 per cent; agriculture, 30 per cent; and waste, 7 per cent. LULUCF was responsible for removals of 34,239.8 Gg CO<sub>2</sub> eq.

33. GHG emissions in 2013 from the energy sector amounted to 151,402.5 Gg CO<sub>2</sub> eq. A description of fuel types used in Viet Nam was provided, but data on fuel use by source and type of transport were not. During the technical analysis, Viet Nam clarified that additional information is contained in the NIR 2013. The TTE noted that clarifying in the BUR the types of fuel used in the country could enhance transparency and facilitate a better understanding of the information reported.

34. Industrial process emissions amounted to 31,767.4 Gg CO<sub>2</sub> eq, with Viet Nam reporting only on cement, lime, and iron and steel production, as well as HFC emissions from consumption of halocarbons. The TTE noted that the notation key “IE” was used for reporting emissions from ammonia production but no explanation was given of where those emissions were included. During the technical analysis, Viet Nam clarified that additional information is contained in the NIR 2013. The TTE noted that the transparency of the GHG inventory for the industrial processes sector would benefit from a brief description of the industrial processes occurring and an explanation of the emission allocation.

35. For the agriculture sector, Viet Nam reported GHG emissions of 89,407.8 Gg CO<sub>2</sub> eq, with CH<sub>4</sub> emissions from rice cultivation and enteric fermentation being identified as key categories. The TTE commends Viet Nam for the use of country-specific EFs for rice cultivation and manure management, where IPCC default values were used in the first BUR. No information was reported on rice cultivation practices, livestock population or fertilizers used. During the technical analysis, Viet Nam clarified that additional information is contained in the NIR 2013. The TTE noted that reporting actual AD (e.g. on number of livestock and agricultural practices) and country-specific parameters in the BUR could enhance transparency and facilitate a better understanding of the emission estimates reported.

36. For the LULUCF sector, the net removals reported for 2013 amounted to 34,239.8 CO<sub>2</sub> eq, or 13 per cent of the total national GHG emissions, including LULUCF, in 2013. The TTE noted that sources and sinks in the sector were not described. During the technical analysis, Viet Nam clarified that additional information is contained in the NIR 2013. The TTE noted that providing a description of sources and sinks for the sector in the BUR could facilitate a better understanding of the emission estimates reported.

37. For the waste sector, Viet Nam reported emissions of 20,686.2 Gg CO<sub>2</sub> eq, with CH<sub>4</sub> from wastewater handling and from solid waste disposal sites being key categories. There was no information provided on whether waste incineration was used for energy purposes. During the technical analysis, Viet Nam clarified that additional information is contained in the NIR 2013. The TTE noted that reporting information on waste treatment practices in the BUR could enhance transparency and facilitate a better understanding of the information reported.

38. Viet Nam included in its BUR an update of its emission estimates for 1994, 2000 and 2010. The TTE noted that the consistency of the inventories across years was not discussed in the BUR. No information was provided on the drivers of emission fluctuations. During the technical analysis, Viet Nam confirmed that, owing to limited time and resources, only the emission estimates for 2010 were recalculated. The 1994 and 2000 inventories were prepared using different approaches and were not consistent with the 2010 and 2013 emission estimates. During the technical analysis, the Party acknowledged that reporting a consistent time series to improve understanding of the emission trends in Viet Nam requires further capacity-building.

39. Viet Nam described in its BUR the institutional framework for the preparation of its 2013 GHG inventory. The Department of Climate Change of the Ministry of Natural Resources and Environment is responsible for GHG inventory planning, cooperation with related agencies in the national GHG inventory system and the preparation of technical reports. The Institute of Strategy and Policy on Natural Resources and Environment is in charge of QA/QC procedures.



40. Viet Nam reported a key category analysis performed for the level of emissions. The BUR provides information on general QA/QC measures for all sectors. The TTE commends Viet Nam for providing information in accordance with the IPCC good practice guidance.

41. The Party reported information on CO<sub>2</sub> fuel combustion using both the sectoral and the reference approach, with the estimate under the sectoral approach being 1.4 per cent higher than that under the reference approach. The TTE noted that the Party reported reasons for the difference in the estimates, but also noted that providing more detailed information on the reasons for the difference between the sectoral and reference approaches would enhance the transparency of the reporting.

42. Emissions from international aviation bunker fuels were reported as “IE”, whereas emissions from marine bunker fuels were reported as “NE”. During the technical analysis, Viet Nam clarified that additional information is contained in the NIR 2013, but acknowledged that capacity-building is required in relation to information systems for international bunkers to enable their future reporting.

43. Viet Nam reported information on its use of GWP values consistent with the Fourth Assessment Report of the IPCC for 2013. Consistency with the GWP values used for previous years (1994, 2000 and 2010) was not discussed in the BUR.

44. Viet Nam reported information on the uncertainty assessment (level) of its GHG estimates for key sources (and total emissions by sector). The uncertainty analysis was based on the tier 1 approach. The total uncertainty of the national GHG inventory amounted to 14 per cent (table 2.17 of the BUR). The TTE noted that, alongside IPCC default uncertainty values, Viet Nam also used expert judgment. No information was reported on the specific uncertainty level of AD and EFs. During the technical analysis, Viet Nam provided detailed information on the uncertainty level of AD, EFs and underlying assumptions. The TTE noted that adding that information to the BUR would improve the transparency of the reporting and help the Party prioritize efforts for further improvement of the GHG inventory.

45. In paragraphs 40–44 and 47–49 of the summary report on the technical analysis of Viet Nam’s first BUR, the TTE noted where the transparency of reporting could be enhanced. The present TTE noted that Viet Nam had improved the transparency and completeness of its GHG inventory reporting since its first BUR by estimating HFC emissions, using notation keys, and providing additional information on methodologies and QA/QC procedures and information on uncertainty analysis. The TTE commends the Party for enhancing the transparency of the information reported.

### **3. Mitigation actions and their effects, including associated methodologies and assumptions**

46. As indicated in table 2 in annex I, Viet Nam reported in its BUR, mostly in accordance with paragraphs 11–13 of the UNFCCC reporting guidelines on BURs, information on mitigation actions and their effects, to the extent possible.

47. The information reported provides a clear and comprehensive overview of the Party’s mitigation actions and their effects, including national context. In its BUR, Viet Nam frames its national mitigation planning and actions in the context of the national climate change strategy and elaborates on the national emission reduction target for 2030. Most of the mitigation actions are in the energy, construction, industrial processes, waste, agriculture and LULUCF sectors. Viet Nam reported that climate change, including mitigation, has been mainstreamed and integrated into its development plans, and that to date, the implemented mitigation actions have contributed to emission reductions. Viet Nam also reported that the set of mitigation actions contained in its NDC is expected to lead to an 8 per cent GHG emission reduction compared with the ‘business as usual’ scenario by 2030, which could be increased to 25 per cent if international support is received. The TTE noted the improvements in the reporting on mitigation actions in the second BUR, but observed that the contributions of the individual mitigation actions to achieving the broader mitigation policy target were not reported. During the technical analysis, in response to a request from the TTE for technical clarification, the Party explained that there are plans, as part of its MRV system, to monitor and report the

aggregate effects of mitigation actions and their relationship with the mitigation policy target.

48. The Party reported a summary of its mitigation actions in tabular format. Consistent with decision 2/CP.17, annex III, paragraph 12(a), Viet Nam reported on several mitigation actions at different stages of implementation under three broad categories: cross-sectoral mitigation actions, NAMAs, and mitigation actions by sector. Under each category, the Party comprehensively reported information on sector, gas, status of implementation and progress indicators of mitigation actions. However, descriptions of mitigation actions and information on quantitative goals were not clearly reported in the BUR and transparency could be enhanced by providing clearer information in the next BUR. During the technical analysis, Viet Nam clarified that it reported all quantitative information available at the time of preparing the BUR.

49. The reporting on cross-sectoral mitigation actions includes information on the methodologies and underlying assumptions used, which the Party indicated were based on selected approved CDM methodologies and internal calculations, with further details on the methodologies clearly reported in the BUR. The mitigation actions are mainly in the areas of low-carbon transition in energy efficiency (e.g. the low-carbon transition in energy efficiency and the energy efficiency for industrial enterprises projects) and carbon market readiness. The objectives of the mitigation actions as well as the steps taken to implement them were reported. The Party also reported that its mitigation measures were derived from projects that are being implemented. Its ongoing low-carbon transition in energy efficiency commenced in 2013 and is expected to yield total emission reductions of 286, 288.04 t CO<sub>2</sub> eq by mid-2017.

50. Additional mitigation actions were reported under the category NAMAs. The information reported on NAMAs includes methodologies and underlying assumptions used, which the Party indicated were based on the LEAP<sup>2</sup> model, the various IPCC guidelines for GHG inventories and approved CDM methodologies, with further details on the methodologies clearly reported in the BUR. The mitigation actions are mainly in the areas of wind energy development, energy efficiency and technology transfer in the chemical fertilizer industry, NAMA readiness plan development for the cement industry, low-carbon buses, value addition to waste resources, biogas technology for pig farms, and low-emission beef production. The Party reported that the mitigation measures were derived from projects that are being planned and seeking investment. Viet Nam reported updates on three NAMAs, of which two have been officially registered in the NAMA registry as seeking support and the other is currently being improved for registration.

51. Furthermore, the Party reported mitigation actions by sector, namely key sectoral policies in the following sectors: energy (e.g. the development and promotion of LED technology for general lighting), construction and industrial processes (e.g. the development and promotion of LED technology for general lighting and setting national technical standards for energy-efficient buildings), transport (e.g. the Green Transport pilot project), agriculture (e.g. the System of Rice Intensification Program) and LULUCF (e.g. the UN-REDD Viet Nam Phase II Programme). Information was included on the methodologies and underlying assumptions used, which the Party indicated were based on selected approved CDM methodologies and internal calculations, with further details on the methodologies clearly reported in the BUR. The aggregate effect of the set of mitigation actions relative to the broad policy target, such as information on indicators, assumptions and methodology for measuring progress towards achieving the policy target, was not reported. During the technical analysis, the Party indicated that it is working on improving the linkages across mitigation actions, overall policy and the overall commitment under the NDC. The TTE noted that the transparency of information would be enhanced if this information was reported in the next BUR.

52. Viet Nam, a Party to the Kyoto Protocol, provided information on its involvement in international market mechanisms. Viet Nam reported 255 CDM projects and 10 CDM programmes of activities approved by its designated national authority and registered by the CDM Executive Board. Of those, 69 (68 CDM projects and 1 CDM programme of activities) have been verified and received 17,793,032 certified emission reductions in the

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<sup>2</sup> Long-range Energy Alternatives Planning.

CDM process. The statistics provided in the BUR include information on the total number of projects, sectors covered and the quantity of certified emission reductions issued from the CDM, the joint crediting mechanism and other mechanisms, such as the Verified Carbon Standard Program and the Gold Standard.

53. Viet Nam reported information on its domestic MRV arrangements consistently with decision 2/CP.17, annex III, paragraph 13. Further, Viet Nam reported consistently with the voluntary general guidelines for domestic MRV of domestically supported NAMAs contained in decision 21/CP.19. The Party outlined the steps on a proposed pathway to establishing an enhanced MRV system, as mandated in its Plan for Implementation of the Paris Agreement. The steps include establishing institutional arrangements, defining mitigation accounting standards, monitoring data collection responsibilities, defining reporting obligations, and defining verification approaches and roles. Implementation is scheduled to be completed within 2018. Line ministries have been assigned to develop sectoral MRV systems, and an MRV system at the local level is also being piloted in Ho Chi Minh City through the Support the Planning and Implementation of NAMAs project.

54. In paragraphs 50 and 53 of the summary report on the technical analysis of Viet Nam's first BUR, the TTE noted where the transparency of reporting could be enhanced. The present TTE noted that more information was provided in the second BUR compared with the first BUR, including information on specific mitigation actions in tabular format, as required by the UNFCCC reporting guidelines on BURs.

#### **4. Constraints and gaps, and related technology, financial, technical and capacity-building needs, including a description of support needed and received**

55. As indicated in table 3 in annex I, Viet Nam reported in its BUR, completely in accordance with paragraphs 14–16 of the UNFCCC reporting guidelines on BURs, information on finance, technology and capacity-building needs and support received.

56. Viet Nam reported detailed information on constraints and gaps and related financial, technical and capacity-building needs. Viet Nam provided information on financial needs for climate change activities in the period 2016–2020 (table 5.1 of the BUR) and financial needs for the implementation of the Target Programme to Respond to Climate Change and Green Growth, including funding to be provided from the national budget (table 5.2 of the BUR).

57. On capacity-building needs, Viet Nam reported continued demand for capacity-building in the areas reported in the first BUR. Additional needs have arisen from the implementation of training and education programmes to raise awareness of the implementation of the Paris Agreement.

58. Viet Nam reported on its technology needs for mitigation and for the implementation of its NDC. Following the technology needs assessment for responding to climate change reported in the first BUR, the Ministry of Natural Resources and Environment coordinated with the relevant agencies to carry out a renewable energy technology needs assessment under the project Facilitating Implementation and Readiness for Mitigation (2012–2015) in collaboration with the UNEP DTU Partnership<sup>3</sup> with the primary objective of prioritizing alternative renewable energy technologies. Viet Nam provided information on the prioritized renewable energy technology needs (table 5.3 of the BUR).

59. Viet Nam also provided information on the technology needs for the implementation of its NDC by sector, namely energy, transport, agriculture, forestry and waste management (table 5.4 of the BUR).

60. Information was reported on the gaps, constraints and needs included in the first BUR that have been overcome, including the establishment of a national GHG inventory system, the improvement of QA/QC procedures, the strengthening of awareness of NAMAs, and the development of policies to facilitate the implementation of NAMAs.

<sup>3</sup> The Partnership, formerly known as the UNEP Risoe Centre, operates under a tripartite agreement between Denmark's Ministry of Foreign Affairs, the Technical University of Denmark (DTU) and the United Nations Environment Programme (UNEP).

61. Viet Nam reported information on financial resources, capacity-building and technical support received. It reported that it received financial, technical and capacity-building support particularly financial support for the preparation of its second BUR from the Global Environment Facility and technical and capacity-building support from Deutsche Gesellschaft für Internationale Zusammenarbeit, namely for collecting and synthesizing information and AD for the GHG inventory, NAMAs and mitigation actions.

62. Detailed information was provided in the BUR on international and bilateral financial and technological support received as well as on ongoing support for mitigation, adaptation actions and green growth projects provided by the Agence Française de Développement, the Asian Development Bank, the Canadian International Development Agency, European Union member States, the Food and Agricultural Organization of the United Nations, the Global Environment Facility the Global Green Growth Institute, the Japan International Cooperation Agency, the United Nations Development Programme, the World Bank, and others. The TTE commends Viet Nam for the information provided with regard to support needed and received.

#### **D. Identification of capacity-building needs**

63. In consultation with Viet Nam, the TTE identified the following capacity-building needs related to the facilitation of the preparation of subsequent BURs and participation in ICA:

(a) Strengthening the technical capacity to collect AD in order to report a consistent time series;

(b) Strengthening the technical capacity to collect AD in order to disaggregate emissions from international aviation bunkers and marine bunker fuels;

(c) Strengthening the technical capacity to collect AD in order to estimate and report emissions of PFCs and SF<sub>6</sub>;

(d) Strengthening the technical capacity to determine the impact of each mitigation measure on economic growth and the sustainable development of the economy.

64. The TTE noted that, in addition to those identified during the technical analysis, Viet Nam reported the following capacity-building needs in its BUR:

(a) Developing and implementing training courses for officials and staff;

(b) Developing and implementing education programmes and increasing knowledge on climate change within the national education system in accordance with the requirements of the Paris Agreement;

(c) Raising awareness of the implementation of the Paris Agreement in Viet Nam.

65. The TTE noted that several capacity-building needs were identified in Viet Nam's first BUR and in paragraph 70 of the summary report on the technical analysis thereof. In its second BUR, Viet Nam reflected that many of those capacity-building needs have been addressed. The capacity-building needs referred to in paragraph 63(a–d) above are the needs that remain valid of those previously identified.

### **III. Conclusions**

66. The TTE conducted a technical analysis of the information reported in the second BUR of Viet Nam in accordance with the UNFCCC reporting guidelines on BURs. The TTE concludes that the reported information is mostly consistent with the UNFCCC reporting guidelines on BURs and provides an overview of: national circumstances and institutional arrangements relevant to the preparation of NCs and BURs on a continuous basis; the national inventory of anthropogenic emissions by sources and removal by sinks of all GHGs not controlled by the Montreal Protocol, including an NIR; mitigation actions and their effects, including associated methodologies and assumptions; constraints and gaps and related financial, technical and capacity-building needs, including a description of

support needed and received; the level of support received to enable the preparation and submission of BURs; and domestic MRV. The TTE concluded that the information analysed is mostly transparent.

67. Viet Nam reported information on the institutional arrangements relevant to the preparation of BURs. Viet Nam is still in the process of defining and establishing its systems but it has taken significant steps to create institutional arrangements that allow for the sustainable preparation of BURs. The TTE commends Viet Nam on its progress and noted that the planned improvement of the overall MRV system of GHG emissions and reductions, as outlined in the BUR, would contribute to achieving sustainable reporting to the UNFCCC.

68. In its second BUR, submitted in 2017, Viet Nam reported information on its national GHG inventory for 2013. This included GHG emissions and removals of CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O for all relevant sources and sinks as well as CO and NO<sub>x</sub>. Emissions of HFCs were also reported. The inventory was developed on the basis of a combination of the Revised 1996 IPCC Guidelines, the IPCC good practice guidance and the IPCC good practice guidance for LULUCF, as well as the 2006 IPCC Guidelines, which were applied for individual key categories. The total GHG emissions for 2013 were reported as 293,263.9 CO<sub>2</sub> eq excluding LULUCF and 259,024.1 CO<sub>2</sub> eq including LULUCF. A total of 34 key categories were identified, with CH<sub>4</sub> from rice cultivation and CO<sub>2</sub> from public electricity production identified as the main gases and key categories. During the technical analysis Viet Nam clarified that the NIR 2013 contains additional and clear information. However, the NIR was not submitted together with the BUR. The transparency of the BUR would be enhanced if the NIR were submitted in conjunction with the BUR (e.g. as an annex) and referenced in it and/or made publicly available on the UNFCCC website.

69. Viet Nam reported information on mitigation actions and their effects, including the mitigation goal of reducing emissions by 8 per cent compared with 'business as usual' levels by 2030, which could be increased to 25 per cent if international support is received. The mitigation actions were categorized as cross-sectoral mitigation actions, NAMAs or sector-specific mitigation actions, and GHG emission reductions achieved as a result of selected actions were reported. The aggregate effect of the set of mitigation actions relative to the broad policy target was not reported. During the technical analysis, the Party indicated that it is working on improving the linkages across mitigation actions, overall policy and the overall commitment under the NDC. The TTE commends the Party for the marked progress in its second BUR in the reporting on mitigation actions and the plans to improve reporting on the linkages between mitigation actions and overall climate policy.

70. Viet Nam reported information on key constraints, gaps and related needs in a transparent manner. The BUR includes an annex that clearly identifies the needs related to the development of the national GHG inventory. During the technical analysis, Viet Nam provided additional information on key challenges and needs, such as designing and implementing a systematic methodology for identifying constraints, gaps and needs, and translating the identified needs into financial, technical, technological and capacity-building needs. Information on support needed and received was reported. Viet Nam also reported on the challenge of establishing a standardized and sustainable system for monitoring the financial support received. Information on technology needs and technology received was also reported in the BUR.

71. The TTE, in consultation with Viet Nam, identified the four capacity-building needs listed in paragraph 63 above that aim to facilitate reporting in accordance with the UNFCCC reporting guidelines on BURs and participation in ICA in accordance with the ICA modalities and guidelines, taking into account Article 4, paragraph 3, of the Convention.

## Annex I

## Extent of the information reported by Viet Nam in its second biennial update report

Table 1

**Identification of the extent to which the elements of information on greenhouse gases are included in the second biennial update report of Viet Nam**

<i>Decision</i>	<i>Provision of the reporting guidelines</i>	<i>Yes/partly/no/NA</i>	<i>Comments on the extent of the information provided</i>
Decision 2/CP.17, paragraph 41(g)	The first BUR shall cover, at a minimum, the inventory for the calendar year no more than four years prior to the date of the submission, or more recent years if information is available, and subsequent BURs shall cover a calendar year that does not precede the submission date by more than four years.	Yes	Viet Nam submitted its second BUR in 2017 and the GHG inventory reported is for 2013.
Decision 2/CP.17, annex III, paragraph 4	Non-Annex I Parties should use the methodologies established by the latest UNFCCC guidelines for the preparation of NCs from non-Annex I Parties approved by the Conference of the Parties or those determined by any future decision of the Conference of the Parties on this matter.	Yes	Viet Nam used a combination of the Revised 1996 IPCC Guidelines, the IPCC good practice guidance and the 2006 IPCC Guidelines. No information was provided on the methodology applied for estimating each source or sink.
Decision 2/CP.17, annex III, paragraph 5	The updates of the sections on the national inventories of anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol should contain updated data on activity levels based on the best information available using the Revised 1996 IPCC Guidelines, the IPCC good practice guidance and the IPCC good practice guidance for LULUCF; any change to the EF may be made in the subsequent full NC.	Partly	No AD were reported. Details were provided in the NIR 2013, submitted during the technical analysis.
Decision 2/CP.17, annex III, paragraph 6	Non-Annex I Parties are encouraged to include, as appropriate and to the extent that capacities permit, in the inventory section of the BUR:		
	(a) Tables included in annex 3A.2 to the IPCC good practice guidance for LULUCF;	Yes	
	(b) The sectoral report tables annexed to the Revised 1996 IPCC Guidelines.	Yes	
Decision 2/CP.17, annex III, paragraph 7	Each non-Annex I Party is encouraged to provide a consistent time series back to the years reported in the previous NCs.	Partly	Only the 2010 inventory was updated (tables 2.15, 2.16 and 2.19). The 1994 and 2000 emission estimates were inconsistent with the 2010 and 2013 inventories. The Party clarified that this is planned to be further improved in the next inventory cycle.
Decision 2/CP.17, annex III, paragraph 8	Non-Annex I Parties that have previously reported on their national GHG inventories contained in their national communications are encouraged to submit summary information tables of inventories for previous submission years (e.g. for 1994 and	Yes	

<i>Decision</i>	<i>Provision of the reporting guidelines</i>	<i>Yes/partly/no/NA</i>	<i>Comments on the extent of the information provided</i>
	2000).		
Decision 2/CP.17, annex III, paragraph 9	The inventory section of the BUR should consist of a national inventory report as a summary or as an update of the information contained in decision 17/CP.8, annex, chapter III (National greenhouse gas inventories), including:  (a) Table 1 (National greenhouse gas inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol and greenhouse gas precursors);  (b) Table 2 (National greenhouse gas inventory of anthropogenic emissions of HFCs, PFCs and SF6).	Yes     Partly	     Only HFC emissions were reported (table 2.8) based on current available data.
Decision 2/CP.17, annex III, paragraph 10	Additional or supporting information, including sector-specific information, may be supplied in a technical annex.	Yes	Annexes 1–5 to the BUR contain estimated sectoral emissions by subcategory.
Decision 17/CP.8, annex, paragraph 13	Non-Annex I Parties are encouraged to describe procedures and arrangements undertaken to collect and archive data for the preparation of national GHG inventories, as well as efforts to make this a continuous process, including information on the role of the institutions involved.	Yes	
Decision 17/CP.8, annex, paragraph 14	Each non-Annex I Party shall, as appropriate and to the extent possible, provide in its national inventory, on a gas-by-gas basis and in units of mass, estimates of anthropogenic emissions of:  (a) CO <sub>2</sub> ;  (b) CH <sub>4</sub> ;  (c) N <sub>2</sub> O.	  Yes  Yes  Yes	
Decision 17/CP.8, annex, paragraph 15	Non-Annex I Parties are encouraged, as appropriate, to provide information on anthropogenic emissions by sources of:  (a) HFCs;  (b) PFCs;  (c) SF <sub>6</sub> .	  Yes  Yes  Yes	   Emissions of PFCs were reported as “NE” (table 2.8).  Emissions of SF <sub>6</sub> were reported as “NE” (table 2.8).
Decision 17/CP.8, annex, paragraph 16	Non-Annex I Parties are encouraged, as appropriate, to report on anthropogenic emissions by sources of other GHGs, such as:  (a) CO;  (b) NO <sub>x</sub> ;  (c) NMVOCs.	  Yes  Yes  Yes	   Reported as “NE” (table 2.7).
Decision 17/CP.8, annex, paragraph 17	Other gases not controlled by the Montreal Protocol, such as SO <sub>x</sub> , included in the Revised 1996 IPCC Guidelines may be included at the	Yes	Reported as “NE” (table 2.7).

<i>Decision</i>	<i>Provision of the reporting guidelines</i>	<i>Yes/partly/no/NA</i>	<i>Comments on the extent of the information provided</i>
	discretion of the Parties.		
Decision 17/CP.8, annex, paragraph 18	Non-Annex I Parties are encouraged, to the extent possible and if disaggregated data are available, to estimate and report CO <sub>2</sub> fuel combustion emissions using both the sectoral and the reference approach and to explain any large differences between the two approaches.	Yes	The difference in the estimated emissions between the two approaches is 1.4 per cent.
Decision 17/CP.8, annex, paragraph 19	Non-Annex I Parties should, to the extent possible and if disaggregated data are available, report emissions from international aviation and marine bunker fuels separately in their inventories:		
	(a) International aviation;	Yes	
	(b) Marine bunker fuels.	Yes	
Decision 17/CP.8, annex, paragraph 20	Non-Annex I Parties wishing to report on aggregated GHG emissions and removals expressed in CO <sub>2</sub> eq should use the GWP provided by the IPCC in its Second Assessment Report based on the effects of GHGs over a 100-year time-horizon.	NA	The Party used the GWP values provided in the Fourth Assessment Report of the IPCC in order to align with the methodology used for NDC projections.
Decision 17/CP.8, annex, paragraph 21	Non-Annex I Parties are encouraged to provide information on methodologies used in the estimation of anthropogenic emissions by sources and removals by sinks of GHGs not controlled by the Montreal Protocol, including a brief explanation of the sources of emission factors and activity data. If non-Annex I Parties estimate anthropogenic emissions and removals from country-specific sources and/or sinks that are not part of the Revised 1996 IPCC Guidelines, they should explicitly describe the source and/or sink categories, methodologies, EFs and AD used in their estimation of emissions, as appropriate. Parties are encouraged to identify areas where data may be further improved in future communications through capacity-building:		
	(a) Information on methodologies used in the estimation of anthropogenic emissions by sources and removals by sinks of GHGs not controlled by the Montreal Protocol;	Yes	
	(b) Explanation of the sources of EFs;	Partly	Country-specific parameters were noted in table 2.1 (e.g. for rice cultivation, manure management and coal mining), but not their source. Details were provided in the NIR 2013, submitted during the technical analysis.
	(c) Explanation of the sources of AD;	Yes	
	(d) If non-Annex I Parties estimate anthropogenic emissions and removals from country-specific sources and/or sinks that are not part of the Revised 1996 IPCC Guidelines, they should explicitly describe:	NA	No description was provided for any emission sources or sinks. Details were provided in the NIR 2013, submitted during the technical analysis.



<i>Decision</i>	<i>Provision of the reporting guidelines</i>	<i>Yes/partly/no/NA</i>	<i>Comments on the extent of the information provided</i>
	(i) Source and/or sink categories;		
	(ii) Methodologies;		
	(iii) EFs;		
	(iv) AD;		
	(e) Parties are encouraged to identify areas where data may be further improved in future communications through capacity-building.	No	Details were provided in the NIR 2013, submitted during the technical analysis.
Decision 17/CP.8, annex, paragraph 22	Each non-Annex I Party is encouraged to use tables 1 and 2 of the guidelines annexed to decision 17/CP.8 in reporting its national GHG inventory, taking into account the provisions established in paragraphs 14–17. In preparing those tables, Parties should strive to present information that is as complete as possible. Where numerical data are not provided, Parties should use the notation keys as indicated.	Yes	
Decision 17/CP.8, annex, paragraph 24	Non-Annex I Parties are encouraged to provide information on the level of uncertainty associated with inventory data and their underlying assumptions, and to describe the methodologies used, if any, for estimating these uncertainties:		
	(a) Level of uncertainty associated with inventory data;	Yes	Total uncertainty levels were reported (tables 2.17 and 2.18).
	(b) Underlying assumptions;	No	Details were provided in the NIR 2013, submitted during the technical analysis.
	(c) Methodologies used, if any, for estimating these uncertainties.	Yes	

*Note:* The parts of the UNFCCC reporting guidelines on BURs on reporting information on GHG emissions by sources and removals by sinks in BURs are contained in decision 2/CP.17, paragraphs 3–10 and 41(g). Further, as per paragraph 3 of those guidelines, non-Annex I Parties are to submit updates of their national GHG inventories in accordance with paragraphs 8–24 of the UNFCCC guidelines for the preparation of NCs from non-Annex I Parties, contained in the annex to decision 17/CP.8. The scope of such updates should be consistent with the non-Annex I Party’s capacity and time constraints and the availability of its data, as well as the level of support provided by developed country Parties for biennial update reporting.

Table 2

**Identification of the extent to which the elements of information on mitigation actions are included in the second biennial update report of Viet Nam**

<i>Decision</i>	<i>Provision of the reporting guidelines</i>	<i>Yes/partly/no</i>	<i>Comments on the extent of the information provided</i>
Decision 2/CP.17, annex III, paragraph 11	Non-Annex I Parties should provide information, in a tabular format, on actions to mitigate climate change by addressing anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol.	Yes	
Decision 2/CP.17, annex III, paragraph 12	For each mitigation action or group of mitigation actions, including, as appropriate, those listed in document FCCC/AWGLCA/2011/INF.1, developing country Parties shall provide the following information, to the extent possible:		
	(a) Name and description of the mitigation action, including information on the nature of the action, coverage (i.e. sectors and gases), quantitative goals and progress indicators;	Partly	Information on the quantitative goals and progress indicators was reported for most but not all cross-sectoral mitigation actions, NAMAs and sector-specific mitigation actions.
	(b) Information on:		
	(i) Methodologies;	Yes	
	(ii) Assumptions;	Yes	
	(c) Information on:		
	(i) Objectives of the action;	Yes	
	(ii) Steps taken or envisaged to achieve that action;	Yes	
	(d) Information on:		
	(i) Progress of implementation of the mitigation actions;	Yes	
	(ii) Progress of implementation of the underlying steps taken or envisaged;	Yes	
	(iii) Results achieved, such as estimated outcomes (metrics depending on type of action) and estimated emission reductions, to the extent possible;	Yes	
	(e) Information on international market mechanisms.	Yes	
Decision 2/CP.17, annex III, paragraph 13	Parties should provide information on the description of domestic MRV arrangements.	Yes	

*Note:* The parts of the UNFCCC reporting guidelines on BURs on the reporting of information on mitigation actions in BURs are contained in decision 2/CP.17, annex III, paragraphs 11–13.

Table 3

**Identification of the extent to which the elements of information on finance, technology and capacity-building needs and support received are included in the second biennial update report of Viet Nam**

<i>Decision</i>	<i>Provision of the reporting requirements</i>	<i>Yes/partly/no</i>	<i>Comments on the extent of the information provided</i>
Decision 2/CP.17, annex III, paragraph 14	Non-Annex I Parties should provide updated information on:		
	(a) Constraints and gaps;	Yes	
	(b) Related financial, technical and capacity-building needs.	Yes	
Decision 2/CP.17, annex III, paragraph 15	Non-Annex I Parties should provide:		
	(a) Information on financial resources received, technology transfer and capacity-building received;	Yes	
	(b) Information on technical support received from the Global Environment Facility, Parties included in Annex II to the Convention and other developed country Parties, the Green Climate Fund and multilateral institutions for activities relating to climate change, including for the preparation of the current BUR.	Yes	
Decision 2/CP.17, annex III, paragraph 16	With regard to the development and transfer of technology, non-Annex I Parties should provide information on:		
	(a) Technology needs, which are nationally determined;	Yes	
	(b) Technology support received.	Yes	

*Note:* The parts of the UNFCCC reporting guidelines on BURs on the reporting of information on finance, technology and capacity-building needs and support received in BURs are contained in decision 2/CP.17, annex III, paragraphs 14–16.

## Annex II

### Documents and information used during the technical analysis

#### Reference documents

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