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Technical analysis of the second biennial update report of the former Yugoslav Republic of Macedonia submitted on 5 March 2018

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 the former Yugoslav Republic of Macedonia, conducted by a team of technical experts in accordance with the modalities and procedures contained in the annex to decision 20/CP.19.

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Abbreviations and acronyms

2006 IPCC Guidelines	*2006 IPCC Guidelines for National Greenhouse Gas Inventories*
AD	activity data
AFOLU	agriculture, forestry and other land use
BUR	biennial update report
CGE	Consultative Group of Experts on National Communications from Parties not included in Annex I to the Convention
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_2 eq	carbon dioxide equivalent
COP	Conference of the Parties
EF	emission factor
EU	European Union
GHG	greenhouse gas
GWP	global warming potential
HFC	hydrofluorocarbon
ICA	international consultation and analysis
IPCC	Intergovernmental Panel on Climate Change
IPCC good practice guidance	*Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*
IPCC good practice guidance for LULUCF	*Good Practice Guidance for Land Use, Land-Use Change and Forestry*
LULUCF	land use, land-use change and forestry
MOEPP	Ministry of Environment and Physical Planning
MRV	measurement, reporting and verification
N_2O	nitrous oxide
NA	not applicable
NC	national communication
NCCC	National Climate Change Committee
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_X	nitrogen oxides
PFC	perfluorocarbon
QA/QC	quality assurance/quality control
Revised 1996 IPCC Guidelines	*Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*
SF_6	sulfur hexafluoride
SO_2	sulfur dioxide
TTE	team of technical experts
UNDP	United Nations Development Programme
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"
WAM	'with additional measures'
WEM	'with measures'
WOM	'without measures'

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. The former Yugoslav Republic of Macedonia (hereinafter referred to as Macedonia) submitted its first BUR on 26 February 2015, 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, Macedonia participated in the first workshop for the facilitative sharing of views, convened in Bonn on 20 May 2016.

5. This summary report presents the results of the technical analysis of the second BUR of Macedonia, 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. In accordance with the mandate referred to in paragraph 2 above, Macedonia submitted its second BUR on 5 March 2018 as a stand-alone update report. The submission was made more than two years after the submission of the first BUR.

7. During the technical analysis, the Party clarified that the late submission was due to the prolonged political crisis in the country and several postponements of the parliamentary elections.

8. The technical analysis of the BUR took place from 20 to 24 August 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. Patience Damptey (former member of the CGE from Ghana), Ms. Mausami Desai (member of the CGE from the United States of America), Mr. Stephen King'uyu (former member of the CGE from Kenya), Ms. Eva Krtkova (Czechia), Mr. Lawrence Mashungu (Zimbabwe), Mr. Koki Okawa (Japan), Mr. Sachidananda Satapathy (former member of the CGE from India) and Mr. Ching Tiong Tan (Malaysia). Ms. Desai and Mr. Tan were the co-leads. The technical analysis was coordinated by Mr. Tomoyuki Aizawa, Ms. Alma Jean and Mr. Sohel Pasha (secretariat).

9. 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 Macedonia engaged in consultation[1] on the identification of capacity-building needs for the preparation of BURs and participation in the ICA process. Following the technical analysis of Macedonia's second BUR, the TTE prepared and shared a draft summary report with Macedonia on 23 November 2018 for its review and comment. Macedonia, in turn, provided its feedback on the draft summary report on 12 February 2019.

[1] The consultation was conducted via teleconferencing.

10. The TTE responded to and incorporated Macedonia's comments referred to in paragraph 9 above and finalized the summary report in consultation with the Party on 12 February 2019.

II. Technical analysis of the biennial update report

A. Scope of the technical analysis

11. 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).

12. The remainder of this chapter presents the results of each of the three parts of the technical analysis of Macedonia's second BUR outlined in paragraph 11 above.

B. Extent of the information reported

13. The elements of information referred to in paragraph 11(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.

14. 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 13 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.

15. The TTE noted improvements in the reporting in the Party's second BUR compared with that in its first BUR. Information on GHG inventories, mitigation actions and their effects, and needs and support reported in the second BUR demonstrates that the Party has taken into consideration the areas for enhancing transparency noted by the previous TTE in the summary report on the technical analysis of the Party's first BUR. Such enhancements include the provision of information on updated AD and EFs applied; the reporting of fluorinated gases and precursor gases; improved reporting of methodologies and assumptions used for modelling mitigation actions as well as for individual mitigation actions; improved description of mitigation actions, including information on quantitative goals and co-benefits for some of the actions; and improved reporting of information on finance, technology and capacity-building needs.

C. Technical analysis of the information reported

16. The technical analysis referred to in paragraph 11(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 focus of the technical analysis was on the transparency of the information reported in the BUR.

17. 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.

18. 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

19. 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, and they could report similar, information in their BURs, which are an update of their most recently submitted NCs.

20. In its second BUR, Macedonia provided an update on its national circumstances, including geographical, demographic and economic information; sectoral GHG emission overviews for the energy, industrial processes, AFOLU and waste sectors; and the climate policy framework, including the current institutional framework. Although Macedonia is a non-Annex I Party, it is an EU candidate State and thus adheres to EU climate and energy policies, thereby assuming the same commitments as Parties included in Annex I to the Convention. The Party has adopted targets for the Sustainable Development Goals, in particular goal 13, and reported its voluntary efforts, to the extent possible, to follow the UNFCCC reporting principles applicable to Parties included in Annex I to the Convention.

21. Macedonia 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, such as the legal status and roles and responsibilities of the overall coordinating entity, the involvement and roles of other institutions and experts, mechanisms for information and data exchange, QA/QC procedures, provisions for public consultation and other forms of stakeholder engagement, and future improvement plans. The legal framework on climate change currently falls under the Party's Law on Environment, including the details for the development of its national GHG inventories. As an EU candidate State, Macedonia implements EU regulations relating to climate change and submits GHG inventories to the central repository of the European Environment Agency. It conducted QA/QC activities in the national GHG inventory process.

22. The information reported in Macedonia's second BUR on institutional arrangements identifies MOEPP as the lead agency responsible for climate change policy. NCCC and the technical group at the National Council for Sustainable Development participate in the national inventory process, as do other stakeholders such as government, civil society, international institutions and donors. NCCC, which is an intergovernmental body, provides high-level support for and guidance on climate change policy in the country. MOEPP is responsible for supervising the national inventory process and reporting emissions to the UNFCCC. NCCC is part of a multilayer structure that works on QA. Macedonia reported that the development of a continuous reporting process will be undertaken as part of the development of the new Law and Strategy on Climate Action, or through the introduction of new regulatory guidelines on climate reporting.

23. In paragraph 27 of the summary report on the technical analysis of the Party's first BUR, the previous TTE noted areas where the transparency of the reporting on institutional arrangements could be further enhanced. The current TTE noted that Macedonia included

relevant information on the development of the new Law and Strategy on Climate Action, which aims to ensure a continuous reporting process. The TTE commends the Party for this achievement.

24. Macedonia reported on its proposed domestic MRV system, which will build on the existing systems, processes and infrastructure, rendering it cost-effective. The Party reported that it undertook an in-depth analysis of national capacities to operationalize its MRV system. The analysis focused on legal obligations and their practical implications; institutions or organizations with responsibility for implementing specific activities and the approaches they use for monitoring; channels for reporting; and verification of data. MOEPP will lead the proposed MRV system, which will comprise three areas: GHG inventories; mitigation policies and measures and emission projections; and adaptation policies and measures. The Party reported that the organizational scheme for establishing the national MRV system for mitigation policies and measures will necessitate some changes in its national legislation in order to incorporate existing monitoring systems. Regarding GHG inventories and adaptation, organizations may have to adjust their current systems to provide information in the format and to the standard required by Macedonia's international obligations. To facilitate its proposed domestic MRV system, the Party suggested two alternatives for legal regulation: amend the Law on Environment or draft an integrated Law and Strategy on Climate Action, which will include obligations for the establishment of the MRV system. The Party identified some electronic systems needed for monitoring and reporting sectoral data related to climate change commitments and activities (in section 7.2.2 of the BUR). The Party reported that the systems (software, web platform, spreadsheet programme and registry) are either under construction or being tested.

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

25. As indicated in table 1 in annex I, Macedonia reported information on its GHG inventory in its BUR completely 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.

26. Macedonia submitted its second BUR in 2018 and the GHG inventory reported is for 1990–2014, which is consistent with the requirements for the reporting time frame.

27. Macedonia submitted an NIR in conjunction with its second BUR. The relevant sections of the NIR were referenced in the BUR and the document was also made publicly available on the UNFCCC website.[2]

28. GHG emissions and removals for the BUR covering the 1990–2014 inventories were estimated using mainly tier 1 methodology from the 2006 IPCC Guidelines. The TTE commends the Party for using the most recent guidelines.

29. With regard to the methodologies used, information was reported clearly. The inventories were estimated using mainly tier 1 methodology from the 2006 IPCC Guidelines, except for several categories in the energy sector (lignite, residual fuel oil and natural gas for fuel combustion activities), the industrial processes sector (cement production in mineral industry, and iron and steel production and ferroalloys production in metal industry) and the waste sector (waste disposal at solid waste disposal sites), for which tier 2 methodologies were applied. Most of the AD were taken from official national documents (such as statistical yearbooks, energy balances, sectoral reports and the Database of the State Statistical Office of the Republic of Macedonia, and various strategies and reports from relevant institutions) and various international databases, such as United Nations projections for population and gross domestic product, and FAOSTAT.[3] In other cases, AD were calculated using extrapolation. For example, owing to the lack of official data because of the low volume of glass production, the AD for past years were calculated using extrapolation.

30. The Party's total GHG emissions by gas for 2014 are provided in table 1. Information on PFCs and SF_6 and the use of notation keys was reported.

[2] http://unfccc.int/8722.php.

[3] The database of the Food and Agriculture Organization of the United Nations.

Table 1
Greenhouse gas emissions and removals by gas of the former Yugoslav Republic of Macedonia for 2014

Gas	*GHG emissions ($Gg\ CO_2$ eq) including AFOLU*	*% change 1990 –2014*	*GHG emissions ($Gg\ CO_2$ eq) excluding AFOLU*	*% change 1990 –2014*
CO_2	5 272.7	–46.3	8 453.8	–15.8
CH_4	3 125.6	27.2	3 125.6	27.2
N_2O	441.5	–6.2	441.5	–6.2
HFCs	183.5	NA	183.5	NA
PFCs	NO	NA	NO	NA
SF_6	NO, NE	NA	NO, NE	NA
Other	NE	NE	NE	NE
Total	**9 023.2**	**–29.8**	**12 204.3**	**–6.7**

31. Other emissions reported include 18.90 Gg NO_X, 64.85 Gg CO, 17.68 Gg NMVOCs and 116.27 Gg SO_2.

32. Macedonia applied notation keys in tables where numerical data were not provided. The use of notation keys was consistent with the 2006 IPCC Guidelines. The Party clearly reported on the use of notation keys, which enabled the TTE to better understand the information reported.

33. Macedonia reported comparable information addressing 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.

34. The shares of emissions that different sectors contributed to the total GHG emissions in 2014 as calculated by the TTE using information in the BUR are reflected in table 2.

Table 2
Shares of greenhouse gas emissions and removals by sector of the former Yugoslav Republic of Macedonia for 2014

Sector	*GHG emissions ($Gg\ CO_2$ eq)*	*Share (%)*
Energy	7 957.5	65.2
Industrial processes and product use	921.6	7.6
Agriculture (without forestry and other land use)	1 001.8	8.2
Forestry and other land use	–3 181.8	NA
Waste	2 323.4	19.0

35. For the energy sector, information was clearly reported on the types of fuel used in the country. In 2014, coal (predominantly lignite) consumption accounted for about 41 per cent of gross inland consumption, while the consumption of oil products was 34 per cent of gross inland consumption. The NIR provides general information on EFs and data providers. In its BUR (section 3.1), the Party reported that data for 2012 were revised and updated as necessary; however, the reason for and coverage of the revision and update were not reported. During the technical analysis, the Party clarified that preliminary data from the energy balance were available from the State Statistical Office for 2012 only, which were used in the first BUR. Between the publication and preparation of the first and second BURs, the final energy balance data for 2012 were published and used as AD in the NIR, which was submitted in conjunction with the second BUR. The TTE commends Macedonia for the level and detail of the information provided in the NIR. The TTE noted that clarifying the context

of the revision and update of the GHG inventory data in the BUR could facilitate a better understanding of the information reported.

36. For emissions from industrial processes and product use, Macedonia reported numerical values for GHG emissions from mineral industry (2.A), chemical industry (2.B), metal industry (2.C) and product uses as substitutes for ozone-depleting substance (2.F), as well as for other (2.H). For the category SF_6 and PFCs from other product uses (2.G.2), SF_6 emissions were reported as "NE" for 2003, 2008 and 2012–2014. For the category electrical equipment (2.G.1), SF_6 emissions were reported as "NE" for 2003 and for the other years as "NO". In appendix III to the NIR, in tables 90–95, the notation keys "NO" and "NE" were reported for subcategory 2.G (SF_6); however, at the total level, the summary value for total SF_6 was reported as zero. During the technical analysis, Macedonia clarified that "NE" was appropriate for reporting SF_6 for the national total but the IPCC software, which was used for preparing the inventory, is not able to insert notation keys for the total values and inserted zero by default. Macedonia indicated that its inventory team is aware of the issue and is trying to fix it for future submissions. The TTE noted that reporting the national total for SF_6 in the BUR using the appropriate notation key could facilitate a better understanding of the information reported.

37. For the AFOLU sector, Macedonia reported GHG emissions and removals for 1990, 2003, 2008 and 2012–2014. Overall, from 1990 to 2014, the sector contributed to the net removals of CO_2, with the exception of several years (2000, 2007, 2008 and 2012) when forest fires occurred. The highest net removals from the AFOLU sector were 2,686.3 Gg CO_2 eq in 2003, while the highest net emissions were 2,934.1 Gg CO_2 eq in 2012. In 2014, the main emissions sources in the AFOLU sector were livestock (673.7 Gg CO_2 eq) and land, comprising cropland (123.8 Gg CO_2 eq) and grassland (134.9 Gg CO_2 eq). The subcategory forest land was the only net sink of CO_2 in 2014, with total removals of 3,471.2 Gg CO_2 eq.

38. For the waste sector, the subcategories solid waste disposal (4.A), biological treatment of solid waste (4.B), incineration and open burning of waste (4.C) and wastewater treatment and discharge (4.D) were reported with numerical values. CH_4 from solid waste disposal sites and from wastewater treatment and discharge were identified as key categories. Methodologies from the 2006 IPCC Guidelines were applied. Tier 2 methodology was used for solid waste disposal (4.A) and tier 1 methodologies were used for the other subcategories. The TTE commends Macedonia for reporting GHG emissions in its NIR using higher-tier methods.

39. The NIR, as an additional document to the BUR, contains information that provides an update of the first BUR, which addressed anthropogenic emissions and removals for 1990–2012 using the IPCC inventory software. The update was carried out for 1990–2012, revising data as necessary, and the reported emission trends were expanded to include 2013–2014 using the methodologies contained in the 2006 IPCC Guidelines, thus generating a consistent 25-year time series.

40. Macedonia described in its BUR the institutional framework for the preparation of its 1990–2014 GHG inventory. MOEPP is the governmental body responsible for supervising the Party's GHG inventory preparation by the GHG inventory development team, which comprises the Macedonia Academy of Science and Arts and external sectoral experts. The institutional arrangements for the GHG inventory are part of the Party's proposed organizational scheme for establishing a national MRV system for policies and measures. In its BUR, the Party outlined several measures for its national MRV system to comply with UNFCCC and EU requirements, such as maintaining the current practice of inventory preparation, enhancing the reporting on LULUCF and institutionalizing the GHG inventory preparation process (from project to process based).

41. Macedonia reported a key category analysis performed for the level of emissions for 1990 (base year) and 2014 (latest reported year), and for the trend in emissions between 1990 and 2014. The Party identified 26 key categories for both level and trend assessment for 2014. The level assessment identified the five categories with the highest absolute values of Gg CO_2 eq (including both emissions sources and removals): forest land remaining forest land, energy industries – solid fuels, solid waste disposal, road transportation, and manufacturing industries and construction – liquid fuels. The trend assessment for 2014 identified the top

five key categories as solid waste disposal, road transportation, energy industries, other sectors – liquid fuels, and energy industries – liquid fuels. The key category analysis conducted by the Party shows categories without disaggregating GHGs, as suggested in table 4.1 of the 2006 IPCC Guidelines.

42. The BUR and the NIR provide information on Macedonia's approach to QA/QC in the national GHG inventory process. According to the Party, the QA/QC plan reported in the first BUR was followed for the GHG inventory process for the second BUR, with an extension of the QA activities for the energy sector. External QA team members checked and, when needed, proposed corrective actions and verified several matters, including the adequacy of the selected AD and EFs, the adequacy of the applied methodologies, the accuracy and consistency of the calculated emissions, the adequacy of the data documentation, and the correct conduct of the key category analysis and uncertainty management. The final step was the chief technical adviser checking the NIR, proposing corrective actions, if necessary, and verifying the corrective actions taken by the inventory development team members. The process prioritized the key source categories and other source categories where there were significant changes in methods or data. As the energy and waste sectors contributed the most significant emissions, an expert peer review was conducted for the QA of the national GHG estimates for those sectors.

43. Macedonia reported information on CO_2 fuel combustion using both the sectoral and the reference approach. The difference between the sectoral and reference approach estimates, as reported by Macedonia, is –0.019 per cent for CO_2 emissions for 2014.

44. Information was reported on international aviation. CO_2 emissions from international aviation totaled 36.79 Gg in 2014. Marine bunker fuels were reported as "NO".

45. Macedonia reported information on its use of GWP values consistent with those provided by the IPCC in its Second Assessment Report based on the effects over a 100-year time-horizon of GHGs.

46. Macedonia reported information on the uncertainty assessment of its national GHG inventory. The uncertainty analysis applied tier 1 (error propagation) and tier 2 (Monte Carlo) methods for all sectors of the inventories for 2012, 2013 and 2014. The level uncertainty obtained by the error propagation method for the energy sector is approximately 4 per cent, while for the industrial processes and product use sector it is approximately 9.8 per cent and for the AFOLU and waste sectors it exceeds 40 per cent. The Monte Carlo method provided similar results to those obtained using the error propagation method. The TTE commends Macedonia for implementing the tier 2 approach for the first time, as well as for providing in its BUR detailed information on the selected uncertainty values for AD and EFs and the reasons for their selection.

47. The TTE noted that the transparency of the information reported in the BUR on GHG inventories could be enhanced by addressing the areas noted in paragraphs 35 and 36 above.

48. In paragraph 68(c) of the summary report on the technical analysis of Macedonia's first BUR, the previous TTE noted where the transparency of the reporting on methods and associated use of EFs could be further enhanced. The current TTE noted that Macedonia took into consideration this area for improvement and incorporated the required information, which is summarized in table 5 of its second BUR. The TTE commends the Party for enhancing the transparency of the information reported in the second BUR, as well as for providing a summary of its actions in addressing the issues identified in the previous technical analysis.

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

49. As indicated in table 2 in annex I, Macedonia 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.

50. The information reported provides a clear and comprehensive overview of the Party's mitigation actions and their effects. According to the Party, the mitigation analysis conducted for the second BUR builds on previous studies, including its NC3, first BUR and intended

nationally determined contribution.[4] In order to assess the economic and environmental aspects of possible mitigation actions from 2012 to 2035, the Party used two main criteria: the specific cost and the mitigation potential of measures. The results are clearly illustrated for 2030, through a marginal abatement cost curve (figure 25 of the BUR), specific costs (figure 26) and total GHG emission reductions (figure 27). The assessment identified the top five measures with the highest mitigation potential: installing more heat pumps, phasing out incandescent lights, decreasing the number and extent of forest fires, introducing natural-gas-fired combined heat and power plants, and public awareness campaigns and a network of energy efficiency information centres, which all have very low specific costs.

51. The social aspects of the WEM and WAM scenarios (additional benefits) were also assessed in terms of the potential for job creation (figure 28 of the BUR). According to the Party, employment would be generated in the order of 6,200 green jobs within Macedonia by 2035 (additional to 14,000 externally) by implementing energy efficiency measures in buildings and through the low-carbon energy (renewable energy and gas) market. Information was also reported in the BUR on the comparison of the mitigation scenarios with the intended nationally determined contribution and an analysis of the Sustainable Development Goals, using several key indicators related to climate change and energy.

52. The Party reported on the modelling for all sectors recognized by the IPCC, in the context of three scenarios: reference (WOM), mitigation (WEM) and more ambitious (WAM). According to the Party, implementing all policies and measures under the WEM and WAM scenarios would result in a reduction of total GHG emissions by more than 10,940 Gg CO_2 eq, compared with total emissions of 23,177 Gg CO_2 eq under the WOM scenario. Further, for 2017–2035, the Party reported an economic analysis of the WEM and WAM scenarios, which require total investment of EUR 17,056.8 million and 22,638.0 million, respectively. The TTE commends the Party for reporting this detailed and useful information.

53. The Party reported a summary of its mitigation actions in tabular format in accordance with decision 2/CP.17, annex III, paragraph 11. The Party also reported comprehensive information on the WOM scenario, as the reference scenario, which has been updated since its first BUR.

54. The Party reported both the assumptions and results for the WOM scenario, which predicts a gradual increase in GHG emissions from 2012 to 2035 amounting to 25,585 Gg CO_2 eq (an increase of 49 per cent by 2035 compared with the 2012 level). The energy sector shows the largest share of total emissions over the period (68 per cent in 2035 compared with 66 per cent in 2012), with emissions increasing steadily throughout the period, amounting to a 58 per cent increase in sectoral GHG emissions by 2035 compared with 2012. The most significant expected increase in emissions (approximately 130 per cent in 2012–2035) is observed for the waste sector, with solid waste disposal identified as the most significant source of emissions (97.4 per cent share of emissions in 2035). The AFOLU sector is expected to be a net source of emissions as of 2019, but by 2035 emissions are expected to be 32 per cent lower than in 2012.

55. Consistent with decision 2/CP.17, annex III, paragraph 12(a), Macedonia reported on 46 sectoral mitigation actions for the prioritized sectors (energy, AFOLU and waste) in the context of the WEM and WAM scenarios. Names and descriptions of mitigation actions, coverage (sector and gas), quantitative goals and progress indicators were clearly reported in the BUR (table 6 and annexes 5 and 6). The mitigation actions are mainly in the areas of improving energy efficiency (transport, buildings) and promoting renewable energy sources (hydro, solar, wind).

56. The Party reported 35 measures under the WEM scenario in its mitigation action plan (annex 5 to the BUR). A clear description of the methodologies and underlying assumptions used for estimating the impacts of the mitigation actions and their objectives was reported. Information on the steps taken and envisaged to implement the measures was reported for all except two actions (tables 91 and 92, annex 6 to the BUR). During the technical analysis, the Party clarified that those actions were taken from the Third National Energy Efficiency

[4] Available at http://klimatskipromeni.mk/Default.aspx?LCID=213.

Action Plan, which did not indicate the steps taken. The TTE noted that reporting this information in the BUR could facilitate a better understanding of the information reported. According to the Party, the mitigation measures under the WEM scenario are likely to be achieved and are either ongoing or to be initiated. The results achieved include additional benefits (see para. 51 above), GHG emission reductions and estimated outcomes. By 2035, total GHG emissions are predicted to decrease by 25.2 per cent compared with the WOM scenario. GHG emissions are expected to increase continuously from 2015 to 2032, but show an overall increase of 2.6 per cent by 2035 compared with 2012, peaking in 2032 at 18,130 Gg CO_2 eq. The energy sector accounts for the largest share of emissions (60.9 per cent) in 2035, while forestry in the AFOLU sector shows the most significant reduction of GHG emissions (95 per cent by 2035).

57. The Party reported that the WAM scenario includes all the measures under the WEM scenario (in table 6 of the BUR) plus 11 additional measures. A clear description of the methodologies and underlying assumptions used for estimating the impacts of the mitigation actions and the objectives of all the mitigation actions were reported. Information on steps taken or envisaged to implement the measures was also reported for all except three actions (in tables 70, 73 and 80 of the BUR). During the technical analysis, the Party clarified that those actions were new and additional. With the exception of one of these measures (construction of a railway line to Bulgaria), all WAM measures are planned but less likely to be achieved. The results achieved under the WAM scenario included additional benefits (see para. 51 above), GHG emission reductions and estimated outcomes. By 2035, GHG emissions are predicted to decrease by 27.8 per cent compared with the WOM scenario. GHG emissions are expected to increase continuously from 2015 to 2032, but show an overall decrease by 14 per cent by 2035 compared with 2012, peaking in 2032 at 17,510 Gg CO_2 eq. The energy sector comprises the most significant share of emissions (53.8 per cent in 2035), while the forestry sector is a significant sink under the WAM scenario.

58. Macedonia did not provide information on its involvement in international market mechanisms as a Party to the Kyoto Protocol. During the technical analysis, the Party clarified that the information on international market mechanism reported in its first BUR is still valid. The TTE noted that reporting this information in the BUR could facilitate better understanding.

59. Macedonia reported information on its domestic MRV arrangements in accordance with decision 2/CP.17, annex III, paragraph 13. The information reported indicates that the Party is in the process of developing, designing and testing a domestic MRV system for mitigation actions. The system includes software to partially automate data collection for the preparation of the energy balance; a monitoring and verification web platform to monitor the implementation of the National Energy Efficiency Action Plan; software for monitoring energy consumption in municipalities; a special tool for monitoring the energy market in Macedonia; software for emission monitoring in industry; and a vehicle registry. Further, the Party provided details of the MRV system for monitoring and reporting sectoral data related to climate change commitments and activities and its recommendations on the way forward, including the need to amend the Law on Environment to provide a legal basis for establishing the national MRV system for mitigation actions. The Party outlined the steps on a proposed pathway to defining mitigation accounting standards, monitoring data-collection responsibilities, defining reporting obligations and defining verification approaches and roles.

60. The TTE noted that the transparency of the information reported in the BUR on mitigation actions and their effects could be enhanced by addressing the areas noted in paragraphs 56 and 58 above.

61. In paragraphs 50 and 51 of the summary report on the technical analysis of Macedonia's first BUR, the previous TTE noted that the transparency of the reporting on the results of existing actions could be enhanced by translating them into emission reductions (in Mt CO_2 eq); including information on the availability of funding for actions; and providing a clear description of the nature and use of international market mechanisms as referred to in decision 2/CP.17, annex III, paragraph 12(e). In its second BUR the Party clearly outlined (in section 4.8) how it addressed those areas. The current TTE noted that Macedonia took into consideration the areas for improvement related to reporting results in annex 6 (tables

61–106) and providing information on funding in annex 8 (table 107) of its second BUR, and commends the Party for enhancing the transparency of the information reported.

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

62. As indicated in table 3 in annex I, Macedonia 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.

63. Macedonia reported information on constraints and gaps, and related financial, technical and capacity-building needs, in accordance with decision 2/CP.17, annex III, paragraph 14. In its BUR (sections 5.31 and 5.3.2) Macedonia identified various institutional, regulatory, legislative and human resources capacity and financial constraints. On financial constraints, it identified lack of access to capital investment in energy-efficient appliances and energy-efficient retrofitting, energy pricing that does not reflect the environmental and economic cost of consumption and production, and difficulty in ascertaining the energy-related operating costs of consumer products. The Party reported that its financial, technical and capacity-building needs are in institutional strengthening, human capacity development at the national and local level, climate change research, and investment in the energy and waste sectors. Technical and capacity-building needs at the national level were identified in the BUR (section 5.2.1, tables 9, 10 and 11), including the need to increase human resources at MOEPP, the Ministry of Economy, and the Energy Agency. Technical and capacity-building needs related to climate change research include the need to adopt a systemic approach to fostering climate research and systematic observation, and continuous funding.

64. Macedonia reported information on financial resources, technology transfer, capacity-building and technical support received in accordance with decision 2/CP.17, annex III, paragraph 15. In its BUR (tables 19 and 20), information was reported on the significant financial, capacity-building and technical support received from bilateral and multilateral agencies in 2014–2017. According to Macedonia, it has contributed EUR 18,845 million as co-financing of climate change projects from its domestic budget. Over the period 2015–2017 the Fund for Innovation and Technology Development financed five climate-related projects with a value of EUR 447,592. The city of Skopje anticipates spending USD 1.952 million on climate-related investments and programmes. Table 22 of the BUR gives a summary of the support received from bilateral and multilateral agencies for projects with direct and indirect climate mitigation impacts and climate co-benefits. In its BUR Macedonia reported that it received USD 352,000 from the Global Environment Facility for the preparation of its second BUR, which also included USD 73,000 in co-financing, provided in the form of a grant from UNDP (USD 43,900), a grant from MOEPP (USD 15,000) and in-kind support from MOEPP (USD 15,000). UNDP also provided support for activities relating to stakeholder inclusion, planning and identifying innovative approaches to data collection and modelling inputs. The information reported in the BUR indicates that Macedonia utilized in-kind technical and administrative support from the Global Support Programme for Preparation of National Communications and Biennial Update Reports by non-Annex I Parties.

65. Macedonia reported information on technology support received and nationally determined technology needs with regard to the development and transfer of technology in accordance with decision 2/CP.17, annex III, paragraph 16. In its BUR the Party identified and analysed a series of important climate technologies in the energy and waste sectors. It reported that it intends to analyse its technology needs in greater depth when resources are available. In section 5.5 of the BUR it reported that the Fund for Innovation and Technology Development currently provides financial support for innovation and technology transfer in Macedonia. Its mission is to encourage and support innovation activities in micro, small and medium-sized enterprises in order to achieve dynamic technological development based on knowledge transfer, development research and innovations that contribute to job creation, economic growth and development, as well as improving the business environment for the increased competitiveness of companies. In table 22 of its BUR the Party reported a USD 24 million contribution from the World Bank for technology transfer.

5. Any other information

66. Macedonia reported the development of a primary information portal that serves as a one-stop-shop to support its education and public awareness activities related to climate change under Article 6 of the Convention. The Party has developed a communications strategy with four objectives: one on general communication and the other three targeting particular groups (cities, workplaces and households). The Party is planning to have a gender climate action plan that will outline concrete steps and responsibilities relating to the integration of gender considerations into its subsequent reporting to the UNFCCC. In 2016, UNDP and MOEPP conducted an online survey to provide a snapshot of public knowledge about climate change and people's perceptions. According to the Party, when compared with a previous online survey, the results indicated that respondents are more knowledgeable on climate change. In 2014, UNDP, the United States Agency for International Development, the Swedish Embassy, the Social Innovation Hub and MOEPP initiated the Climate Challenge, which invited the public to submit their own innovative proposals for tackling climate change and resulted in 10 finalists and two winners. Building on that success and for continuity, a second campaign was undertaken in 2015 with a focus on recycling and sorting plastic waste.

D. Identification of capacity-building needs

67. In consultation with Macedonia, the TTE identified the following needs for capacity-building that could facilitate the preparation of subsequent BURs and participation in ICA:

(a) Related to mitigation actions and their effects:

(i) Create enabling environments for the implementation of mitigation measures, including the development of incentivization schemes (e.g. for energy efficiency and renewable energy);

(ii) Develop mechanisms for tracking investment in climate change mitigation, including quantifiable and measurable indicators for related MRV;

(iii) Enhance capacity for evaluating and communicating the co-benefits of mitigation measures such as green jobs, and for using them among the criteria to prioritize mitigation measures;

(iv) Enhance capacity to access international market mechanisms and international finance to support implementation of mitigation measures;

(v) Enhance capacity to develop the institutional and legal framework for establishing MRV;

(vi) Enhance capacity to collect MRV-related data and develop data-sharing protocols and formats in line with domestic and international reporting standards and requirements;

(vii) Enhance capacity to develop and operationalize a comprehensive MRV system for mitigation actions;

(viii) Enhance capacity to develop MRV for adaptation measures;

(ix) Train MRV personnel at MOEPP on data collection;

(x) Strengthen national institutions for sustainable (long-term) transparency-related activities in line with national priorities;

(xi) Develop relevant tools, training and assistance for meeting the transparency provisions under Article 13 of the Paris Agreement;

(xii) Elaborate an MRV system for each mitigation measure in line with the EU monitoring mechanism regulation;

(xiii) Maintain the extensive analytical work for scenario development and emission projection, creating a solid analytical base for future revisions;

(b) Related to needs and support:

(i) Enhance institutional capacity by providing additional manpower at the national and local level;

(ii) Enhance capacity for the development and implementation of the national adaptation plan and Law and Strategy on Climate Action;

(iii) Enhance national capacity to determine climate change additionality;

(iv) Enhance capacity to conduct technology needs assessments.

68. The TTE noted that, in addition to those identified during the technical analysis, Macedonia reported several capacity-building needs in section 5.6.1 of its BUR in the main thematic areas of:

(a) Climate policy development;

(b) Climate-related institutional capacity development;

(c) Climate finance;

(d) Climate change related research.

69. In paragraph 67 of the summary report on the technical analysis of Macedonia's first BUR, the previous TTE, in consultation with Macedonia, identified and prioritized capacity-building needs. In its second BUR (annex 10), Macedonia reflected that some of those capacity-building needs, in the areas of the GHG inventory, mitigation, MRV and climate finance, were addressed in 2014–2017 through various training events, seminars, conferences and workshops.

III. Conclusions

70. The TTE conducted a technical analysis of the information reported in the second BUR of Macedonia 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 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; proposed domestic MRV; and any other information relevant to the achievement of the objective of the Convention. The TTE also concludes that the information analysed is mostly transparent.

71. Macedonia reported information on the institutional arrangements relevant to the preparation of its BURs. MOEPP is responsible for supervising the national inventory process and reporting emissions to the UNFCCC. NCCC is part of a multilayer structure that works on QA. Macedonia also reported that the development of a continuous reporting process will be undertaken as part of the development of the new Law and Strategy on Climate Action, or through the introduction of new regulatory guidelines on climate reporting. It has taken significant steps to establish institutional arrangements that allow for the sustainable preparation of its BURs, including organizational improvements and knowledge-sharing procedures to facilitate sectoral information transfer.

72. In its second BUR, submitted in 2018, Macedonia reported information on its national GHG inventory for 1990–2014. This includes GHG emissions and removals of CO_2, CH_4 and N_2O for all relevant sources and sinks as well as the precursor gases. Estimates of fluorinated gases and other GHGs were also provided. The inventory was developed on the basis of the 2006 IPCC Guidelines. The total GHG emissions for 2014 were reported as 12,204.3 CO_2 eq (excluding AFOLU) and 9,023.2 CO_2 eq (including AFOLU). Seventeen

key categories were identified, with CO_2 and the energy sector identified as the main gas and key category, respectively.

73. Macedonia reported information on 46 mitigation actions and their effects, in the context of three mitigation scenarios for 2012–2035 (WOM, WEM and WAM), with WOM identified as the reference scenario. Comprehensive information on the Party's detailed assessment of sectoral measures under the scenarios was reported, including a marginal abatement curve and specific costs for the WEM and WAM scenarios (EUR 17,056.8 million and 22,638.0 million, respectively). The methodologies and assumptions for the mitigation actions and their objectives were clearly reported. Information on steps envisaged or achieved was reported for most of the mitigation measures reported. The results achieved include additional benefits (such as the generation of employment), estimated outcomes and emission reductions. According to the Party, implementing all policies and measures under the WEM and WAM scenarios would result in a reduction of total GHG emissions by more than 10,940 Gg CO_2 eq, compared with total emissions of 23,177 Gg CO_2 eq under the WOM scenario.

74. Macedonia reported information on key constraints, gaps and related needs in terms of institutional, regulatory, legislative and human resources capacity and financial constraints. The Party reported that its financial, technical and capacity-building needs are in institutional strengthening, human capacity development at the national and local level, climate change research, and investment in the energy and waste sectors. Information was reported on the significant financial, technical and capacity-building support received from bilateral and multilateral agencies in 2014–2017.

75. The TTE, in consultation with Macedonia, identified the 17 capacity-building needs listed in chapter II.D above and needs for capacity-building that aims 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 the former Yugoslav Republic of Macedonia 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 the former Yugoslav Republic of Macedonia

Decision	*Provision of the reporting guidelines*	*Yes/partly/ no/NA*	*Comments on the extent of the information provided*
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	Macedonia submitted its second BUR in March 2018; the GHG inventories reported are for 1990, 2003, 2008, 2012 and 2013–2014.
Decision 2/CP.17, annex III, paragraph 4	Non-Annex I Parties should use the methodologies established in the latest UNFCCC guidelines for the preparation of NCs from non-Annex I Parties approved by the COP or those determined by any future decision of the COP on this matter.	Yes	Macedonia used the 2006 IPCC Guidelines.
Decision 2/CP.17, annex III, paragraph 5	The updates of the section on 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 EFs may be made in the subsequent full NC.	Yes	
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:	Yes	Macedonia used the 2006 IPCC Guidelines and comparable information was provided in the NIR (appendix III, tables 90–95).
	(a) The tables included in annex 3A.2 to the IPCC good practice guidance for LULUCF;	Yes	Comparable information was reported.
	(b) The sectoral report tables annexed to the Revised 1996 IPCC Guidelines.	Yes	Comparable information was reported.
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 its previous NCs.	Yes	Macedonia reported a consistent time series of emissions using the 2006 IPCC Guidelines. Historical emissions for 1990–2014 were presented.
Decision 2/CP.17, annex III, paragraph 8	Non-Annex I Parties that have previously reported on their national GHG inventories contained in their NCs are encouraged to submit summary information tables of inventories for previous submission years (e.g. for 1994 and 2000).	Yes	This information was reported for 1990 and 2000.
Decision 2/CP.17, annex III, paragraph 9	The inventory section of the BUR should consist of an NIR as a summary or as an update of the information contained in decision 17/CP.8, annex, chapter III (National greenhouse gas inventories), including:	Yes	
	(a) Table 1 (National greenhouse gas inventory of anthropogenic emissions by sources and removals by	Yes	Comparable information was reported in the NIR (appendix III, tables 90–95).

Decision	*Provision of the reporting guidelines*	*Yes/partly/ no/NA*	*Comments on the extent of the information provided*
	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 SF_6).	Yes	Comparable information was reported in the NIR (appendix III, tables 90–95).
Decision 2/CP.17, annex III, paragraph 10	Additional or supporting information, including sector-specific information, may be supplied in a technical annex.	Yes	The Party submitted an NIR as an annex to its BUR.
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	Information on the national inventory process was reported in the NIR.
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_2;	Yes	
	(b) CH_4;	Yes	
	(c) N_2O.	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;	Yes	
	(b) PFCs;	Yes	
	(c) SF_6.	Yes	SF_6 was reported as “NE”.
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;	Yes	
	(b) NO_X;	Yes	
	(c) NMVOCs.	Yes	
Decision 17/CP.8, annex, paragraph 17	Other gases not controlled by the Montreal Protocol, such as sulfur oxides, included in the Revised 1996 IPCC Guidelines may be included at the discretion of Parties.	Yes	The Party reported on other gases, such as SO_2.
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_2 fuel combustion emissions using both the sectoral and the reference approach and to explain any large differences between the two approaches.	Yes	
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.	NA	
Decision 17/CP.8, annex, paragraph 20	Non-Annex I Parties wishing to report on aggregated GHG emissions and removals expressed in CO_2 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.	Yes	

Decision	*Provision of the reporting guidelines*	*Yes/partly/ no/NA*	*Comments on the extent of the information provided*
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 EFs and AD. 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;	Yes	
	(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	
	(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.	Yes	
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	
	(b) Underlying assumptions;	Yes	
	(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 the former Yugoslav Republic of Macedonia

Decision	*Provision of the reporting guidelines*	*Yes/partly/no*	*Comments on the extent of the information provided*
Decision 2/CP.17, annex III, paragraph 11	Non-Annex I Parties should provide information, in 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;	Yes	
	(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;	Partly	Information on steps taken was not reported for four mitigation actions (tables 73, 80, 91 and 92 of the BUR), while that on steps envisaged was not provided for one action (table 70 of the BUR).
	(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.	No	
Decision 2/CP.17, annex III, paragraph 13	Parties should provide information on domestic MRV arrangements.	Yes	

[a] *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 the former Yugoslav Republic of Macedonia

Decision	*Provision of the reporting requirements*	*Yes/partly/no*	*Comments on the extent of the information provided*
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) Nationally determined technology needs;	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

"Composition, modalities and procedures of the team of technical experts for undertaking the technical analysis of biennial update reports from Parties not included in Annex I to the Convention". Annex to decision 20/CP.19. Available at http://unfccc.int/resource/docs/2013/cop19/eng/10a02.pdf#page=12.

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Summary report on the technical analysis of the first BUR of the former Yugoslav Republic of Macedonia. Available at http://unfccc.int/national_reports/non-annex_i_parties/ica/technical_analysis_of_burs/items/10054.php.

"UNFCCC biennial update reporting guidelines for Parties not included in Annex I to the Convention". Annex III to decision 2/CP.17. Available at http://unfccc.int/resource/docs/2011/cop17/eng/09a01.pdf.