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Summary report on the technical analysis of the first biennial update report of the former Yugoslav Republic of Macedonia submitted on 26 February 2015

In accordance with decision 2/CP.17, paragraph 41(a), Parties not included in Annex I to the Convention (non-Annex I Parties), consistent with their capabilities and the level of support provided for reporting, should submit their first biennial update report (BUR) by December 2014. The least developed country Parties and small island developing States may submit BURs at their discretion.

Further, in accordance with paragraph 58(a) of the same decision, the first round of international consultation and analysis (ICA) will be conducted for non-Annex I Parties commencing within six months of the submission of their first BURs. The process of ICA includes two steps: the technical analysis of the submitted BURs, followed by a workshop on the facilitative sharing of views under the Subsidiary Body for Implementation.

This summary report presents the results of the technical analysis of the first BUR of the former Yugoslav Republic of Macedonia undertaken 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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I. Introduction and process overview

A. Introduction

1. In accordance with decision 2/CP.17, paragraph 41(a), Parties not included in Annex I to the Convention (non-Annex I Parties), consistent with their capabilities and the level of support provided for reporting, should submit their first biennial update report (BUR) by December 2014. The least developed country Parties and small island developing States may submit BURs at their discretion. Further, in accordance with paragraph 58(a) of the same decision, the first round of international consultation and analysis (ICA) will be conducted for non-Annex I Parties commencing within six months of the submission of their first BURs. The process of ICA includes two steps: the technical analysis of the submitted BURs, resulting in a summary report for each BUR analysed, followed by a workshop on the facilitative sharing of views under the Subsidiary Body for Implementation.

2. This summary report presents the results of the technical analysis of the first BUR of the former Yugoslav Republic of Macedonia (hereinafter referred to as Macedonia) undertaken by a team of technical experts (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

3. Macedonia submitted its first BUR on 26 February 2015.

4. The technical analysis of the BUR took place from 18 to 22 May 2015 in Bonn, Germany, and was undertaken by the following TTE, drawn from the UNFCCC roster of experts on the basis of the criteria defined in decision 20/CP.19, annex, paragraphs 2–6: Ms. Estefania Ardila Robles (Consultative Group of Experts on National Communications from Parties not included in Annex I to the Convention member from Colombia), Ms. Diana Barba (Colombia), Ms. Mausami Desai (United States of America), Mr. Cristobal Felix Diaz Morejon (Cuba), Ms. Thelma Krug (Brazil) and Ms. Maria Jose Lopez (Belgium). Ms. Ardila Robles and Ms. Desai were the co-leads. Ms. Alma Jean and Ms. Ting Li (secretariat) provided administrative support to the TTE.

5. 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 also engaged in discussion via videoconferencing, primarily to reach a common understanding on the identification of the capacity-building needs. Following the technical analysis of the BUR, the TTE prepared and shared a draft summary report with Macedonia on 5 August 2015 for its review and comments. Macedonia, in turn, provided its feedback on the draft summary report on 17 September 2015.

6. The TTE finalized, in consultation with Macedonia, the summary report on 17 September 2015.

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

A. Scope of the technical analysis

7. 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 these actions, increase transparency of mitigation actions and their effects, and shall entail the following:

(a) Identification of the extent to which the elements of information listed in the ICA guidelines contained in decision 2/CP.17, annex IV, paragraph 3(a), are included in the BUR of the Party concerned (see chapter II.B);

(b) A technical analysis of the information contained in the BUR, specified in the "UNFCCC biennial update reporting guidelines for Parties not included in Annex I to the Convention" (hereinafter referred to as the UNFCCC reporting guidelines on BURs) contained in annex III to decision 2/CP.17, and any additional technical information provided by the Party concerned (see chapter II.C);

(c) Identification of, in consultation with the Party concerned, capacity-building needs related to the facilitation of reporting in accordance with annex III to decision 2/CP.17 and to the participation in ICA in accordance with annex IV to decision 2/CP.17, taking into account Article 4, paragraph 3, of the Convention (see chapter II.D).

8. The remainder of this chapter presents the results of each of the three parts of the technical analysis of Macedonia's BUR outlined in paragraph 7 above.

B. Overview of the elements of information reported

9. The elements of information referred to in paragraph 7(a) above include: the national greenhouse gas (GHG) inventory report; 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 measurement, reporting and verification (MRV); and support received.

10. Further, in accordance with decision 20/CP.19, annex, paragraph 15(a), in undertaking the technical analysis of the submitted BUR, the TTE shall identify the extent to which the elements of information listed in the guidelines contained in decision 2/CP.17, annex IV, paragraph 3(a), are included in the BUR of the Party concerned. The results of this analysis are presented in tables 1, 2 and 3 below.

1. National greenhouse gas inventory

11. 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, paragraph 41(g), and annex III, paragraphs 3–10, of the same decision. Further, as per decision 2/CP.17, annex III, paragraph 3, non-Annex I Parties should submit updates of national GHG inventories according to paragraphs 8–24 of the "Guidelines for the preparation of national communications from Parties not included in Annex I to the Convention" as contained in the annex to decision 17/CP.8. The scope of the updates on national GHG inventories should be consistent with capacities, time constraints, data availabilities and the level of support provided by developed countries Parties for biennial update reporting.

12. Table 1 below presents results of the identification of the extent to which the elements of information on GHGs are included in the first BUR of Macedonia in accordance with the relevant parts of the UNFCCC reporting guidelines on BURs.

Table 1
Identification of the extent to which the elements of information on greenhouse gases are included in the first biennial update report of the former Yugoslav Republic of Macedonia

Decision	*Reporting requirements*	*Yes/ Partly/No*	*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	Yes	The inventory covers the period 1990–2012
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 for National GHG Inventories, the IPCC good practice guidance and Uncertainty Management in National GHG Inventories, and the IPCC good practice guidance for LULUCF; any change to the emission factor may be made in the subsequent full national communication	Partly	The Party reports in the BUR that the activity data were updated and the 2006 IPCC Guidelines were used for the period 1990–2012. However, neither the updated activity data nor the emission factors used are provided in the BUR
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:	Partly	The BUR provides an update of the inventory section in the third national communication submitted in 2014, in which 2003–2009 is the inventory time frame. However, some information in tables 1 and 2 is missing
	• 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)	Partly	Provided for 1990 and 2012. Macedonia includes table 1 in annex 2 to the BUR, but the table does not provide the disaggregated information for LULUCF
	• Table 2 (National greenhouse gas inventory of anthropogenic emissions of HFCs, PFCs and SF_6)	Partly	A table containing F-gases is provided in annex 2 to the BUR, but only PFCs from the metal industry are estimated
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:		
	• Tables included in annex 3A.2 to chapter 3 of the IPCC good practice guidance for LULUCF	No	The tables are not reported in the BUR
	• The sectoral report tables annexed to the Revised 1996 IPCC Guidelines	No	The tables are not reported in the BUR
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 national communications	Yes	Provided in table 3-1 of the BUR
Decision	Non-Annex I Parties that have previously reported on	Partly	Annex 2 to the BUR contains

Decision	*Reporting requirements*	*Yes/ Partly/No*	*Comments on the extent of the information provided*
2/CP.17, annex III, paragraph 8	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 2000)		this information; however, it includes it only for the years 1990 and 2012. The previously submitted national communications cover the periods 1990–1998, 1999–2002 and 2003–2009
Decision 2/CP.17, annex III, paragraph 10	Additional or supporting information, including sector-specific information, may be supplied in a technical annex	Yes	Sector-specific information is provided in sections 3.3–3.6 of the 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	The information is provided in section 3.1 of the BUR
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 the following gases by sources and removals by sinks:		
	• CO_2	Yes	Provided for 1990 and 2012 in table 1 of annex 2 to the BUR
	• CH_4	Yes	Provided for 1990 and 2012 in table 1 of annex 2 to the BUR
	• N_2O	Yes	Provided for 1990 and 2012 in table 1 of annex 2 to the BUR
Decision 17/CP.8, annex, paragraph 15	Non-Annex I Parties are encouraged, as appropriate, to provide information on anthropogenic emissions by sources of HFCs, PFCs and SF_6	Partly	A table containing F-gases is provided in annex 2 to the BUR, but only PFCs from the metal industry are estimated
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:		
	• International aviation	Yes	Provided for 1990 and 2012
	• Marine bunker fuels	Yes	Provided for 1990 and 2012
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:		
	• CO	No	Although the BUR indicates that CO is included in the inventory database
	• NO_x	No	Although the BUR indicates that NO_x is included in the inventory database
	• NMVOCs	No	Although the BUR indicates

Decision	*Reporting requirements*	*Yes/ Partly/No*	*Comments on the extent of the information provided*
			that NMVOCs are included in the inventory database
Decision 17/CP.8, annex, paragraph 17	Other gases not controlled by the Montreal Protocol, such as SO_x, included in the Revised 1996 IPCC Guidelines, may be included at the discretion of the Parties	No	Although the BUR indicates that SO_2 is included in the inventory database
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, emission factors and activity data 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:		
	• Information on methodologies used in the estimation of anthropogenic emissions by sources and removals by sinks of GHGs not controlled by the Montreal Protocol	Partly	The methodological tier used (1 or 2) for most sources and sinks is indicated in the BUR. However, this information is missing for some sources (e.g. managed soils), and the calculation equations are not provided
	• Explanation of the sources of emission factors	Yes	
	• Explanation of the sources of activity data	Yes	
	• 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: o Source and/or sink categories o Methodologies o Emission factors o Activity data	NA	The Party did not report on any country-specific sources or sinks
	• Parties are encouraged to identify areas where data may be further improved in future communications through capacity-building	Yes	An improvement plan is presented
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:		
	• Level of uncertainty associated with inventory data	Yes	Although very general, a summary is provided on the level of uncertainty for the

Decision	*Reporting requirements*	*Yes/ Partly/No*	*Comments on the extent of the information provided*
			inventory and also the trend of uncertainties. Uncertainties at the sector or subsector levels are not provided
	• Underlying assumptions	No	No information is provided on assumptions applied, such as the use of IPCC default values
	• Methodologies used, if any, for estimating these uncertainties	Yes	The use of the 2006 IPCC inventory software to apply a Monte Carlo algorithm is indicated, but additional details are not provided

Abbreviations: BUR = biennial update report, F-gas = fluorinated gas, GHG = greenhouse gas, 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, Macedonia = the former Yugoslav Republic of Macedonia, NA = not applicable, NMVOC = non-methane volatile organic compound, Revised 1996 IPCC Guidelines = *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*, 2006 IPCC Guidelines = *2006 IPCC Guidelines for National Greenhouse Gas Inventories.*

2. Mitigation actions and their effects

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

14. Macedonia did report mitigation actions in its first BUR. The mitigation actions reported are provided in tabular format.

15. Table 2 below presents results of the identification of the extent to which the elements of information on mitigation actions are included in the first BUR of Macedonia in accordance with the relevant parts of the UNFCCC reporting guidelines on BURs.

Table 2
Identification of the extent to which the elements of information on mitigation actions are included in the first biennial update report of the former Yugoslav Republic of Macedonia

Decision	*Reporting requirements*	*Yes/ Partly /No*	*Comments on the extent of the information provided*
Decision 2/CP.17, annex III, paragraph 12	For each mitigation action or groups 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	Mitigation measures are described in section 4.3 and annex 3 to the BUR. In some instances, information is missing on quantitative goals or it is not explicitly stated. Progress indicators associated with mitigation actions are

Decision	*Reporting requirements*	*Yes/ Partly /No*	*Comments on the extent of the information provided*
			not consistently explained (e.g. they are missing for action 4.3.2, or mitigation action 11 in annex 1)
(b)	Information on methodologies and assumptions:		
	• Methodologies	Partly	The tabular presentation of mitigation actions in annex 1 contains a field to describe methodologies to complement descriptions in section 4.3. However, the methodologies describe steps envisaged, along with enabling conditions to implement actions, rather than describing the methodologies chosen to estimate reductions
	• Assumptions	Partly	Similar to methodologies above, the tabular presentation of mitigation actions in annex 1 contains a field on assumptions describing enabling conditions to implement potential actions. Economic assumptions related to modelling individual mitigation actions and associated reductions are described in section 4.3
(c)	Objectives of the action and steps taken or envisaged to achieve that action:		
	• Objectives of the action	Yes	A field within the tabular format is not provided, but objectives can be inferred from the descriptions of actions in section 4.3 and annex 1
	• Steps taken or envisaged to achieve that action	Partly	A field within the tabular format provides this information in annex 1, but information is not consistently provided across the proposed or planned mitigation actions in section 4.3 and annex 1. In addition, information related to steps taken or envisaged to achieve actions is included in the descriptions of the methodologies section of annex 1 for each action

Decision	*Reporting requirements*	*Yes/ Partly /No*	*Comments on the extent of the information provided*
(d)	Information on the progress of implementation of the mitigation actions and the underlying steps taken or envisaged, and the results achieved, such as estimated outcomes (metrics depending on type of action) and estimated emission reductions, to the extent possible:		
	• Progress of implementation of the mitigation actions	Partly	Implementation status (conceptual, planned, adopted, etc.) can be inferred through the descriptions in section 4.3 and annex 1 tabular format for most actions. However, information on progress, such as time frames for implementation, is not consistently or clearly provided for all actions (e.g. provided for actions 4.3.2 and 4.3.6, but not provided for action 4.3.12; provided generally for the WEM scenario in annex 3)
	• Underlying steps taken or envisaged	Partly	Information is provided via descriptions in the annex 1 tabular format, in addition to this information being included within the methodology field in annex 1. In some instances, this information is also provided in descriptions within section 4.3, but information is not consistently or clearly provided for all actions (e.g. missing for some actions such as actions 4.3.11 and 4.3.12 (mitigation actions 3 and 9))
	• Results achieved, such as estimated outcomes (metrics depending on type of action) and estimated emission reductions, to the extent possible	Yes	The projected emission reductions are provided for each mitigation action in kt CO_2 eq in section 4.3 and annex 1. For mitigation actions where implementation is under way, some interim results are provided that are consistent with progress indicators identified (e.g. action 3.3 or mitigation action 13)
(e)	Information on international market mechanisms	Partly	Section 2.3.1 indicates a national CDM strategy. Some mitigation actions in annex 1 include a field on international market mechanisms (e.g. mitigation

Decision	*Reporting requirements*	*Yes/ Partly /No*	*Comments on the extent of the information provided*
			actions 35, 37 and 38)
Decision 2/CP.17, annex III, paragraph 13	Parties should provide information on the description of domestic measurement, reporting and verification arrangements	Yes	This information is provided in section 7 of the BUR

Abbreviations: BUR = biennial update report, CDM = clean development mechanism, CO_2 eq = carbon dioxide equivalent, WEM = 'with existing measures'.

3. Finance, technology and capacity-building needs and support received

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

17. Table 3 below presents results of the identification of the extent to which the elements of information on finance, technology and capacity-building needs and support received are included in the BUR of Macedonia in accordance with the relevant parts of the UNFCCC reporting guidelines on BURs.

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 first biennial update report of the former Yugoslav Republic of Macedonia

Decision	*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 constraints and gaps, and related financial, technical and capacity-building needs:		
	• Constraints and gaps	Yes	Constraints and gaps are provided in section 5 of the BUR
	• Related financial, technical and capacity-building needs	Partly	Although technical and capacity-building needs have been outlined, related financial support required has not been included in the BUR
Decision 2/CP.17, annex III, paragraph 15	Non-Annex I Parties should also provide updated information on financial resources, technology transfer, capacity-building and technical support received from the GEF, Annex II Parties and other developed country Parties, the GCF and multilateral institutions for activities relating to climate change, including for the preparation of the current BUR	Partly	The information focuses mainly on the support received for BUR and capacity-building activities. The information is not disaggregated by support provider and type of support
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 technology needs, which must be nationally determined, and technology support received:		
	• Technology needs, which must be nationally determined	No	The BUR does not include this information
	• Technology support received	No	The BUR does not include this information

Abbreviations: BUR = biennial update report, GCF = Green Climate Fund, GEF = Global Environment Facility.

C. Technical analysis of the information reported

18. The technical analysis referred to in paragraph 7(b) above aims to, without engaging in discussion on the appropriateness of these actions, increase transparency of mitigation actions and their effects. Accordingly, the technical analysis focused on the transparency of information reported in BURs.

19. In addition to covering the information in the BUR and any additional technical information provided by the Party concerned, the technical analysis also focused, in relation to information reported on national GHG inventories, on the consistency of the methods used for developing those inventories with the appropriate methods developed by the Intergovernmental Panel on Climate Change (IPCC) and referred to in the UNFCCC reporting guidelines on BURs. The results of the technical analysis are presented in the remainder of the chapter.

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

20. As per the scope defined in decision 2/CP.17, annex III, paragraph 2, the BURs should provide an update to information contained in the most recently submitted national communications, including, among other things, information on national circumstances and institutional arrangements relevant to the preparation of national communications on a continuous basis. For national communications, non-Annex I Parties report national circumstances following reporting guidance contained in decision 17/CP.8, annex, paragraphs 3–5.

21. In accordance with decision 17/CP.8, annex, paragraph 3, Macedonia, in its BUR, reported the following information on national circumstances: climatic, geographical, political and demographic information; economic information (macroeconomic indicators and relative contributions of sectors to the overall economy); national and regional development priorities and objectives, including national cross-cutting policies; and the climate policy framework, with its current institutional structure for implementation. Both in the BUR and in its communication with the TTE, Macedonia identified the accession to the European Union (EU) as a national priority, which has influenced the climate actions by the Party, as well as aspects of its reporting to the Convention.

22. Macedonia provides graphs and tables to illustrate the items listed in paragraph 21 above. This information adequately describes the national circumstances, in particular, the biophysical, demographic, political and economic features of Macedonia.

23. The TTE notes that this information, in particular, that related to population growth and sectoral characteristics, is consistent with and provides adequate background to understanding sections of the BUR, particularly the GHG inventory and mitigation actions.

24. Macedonia, in its BUR, described its institutional arrangements relevant to the preparation of national communications and BURs on a continuous basis. The description covers key aspects of the institutional arrangements such as the legal status and roles of the national entity in charge of reporting to the UNFCCC (Ministry of Environment and Physical Planning). The involvement and roles of other institutions, as well as plans to enhance their participation in the preparation of BURs, are also described.

25. In addition, the Party describes its plans to make the GHG inventory a continuous process by building capacities within relevant entities, implementing nationally developed knowledge-transfer tools and mechanisms and a national inventory system that includes the systematization of data collection from the industry, using the Emission Monitoring in Industry (EMI) software. Macedonia states that this online tool, recently prototyped during

the Third National Communication project and completed during the preparation of the BUR, enables and harmonizes data collection on air pollution, GHG emissions, wastewater treatment and discharge emissions directly from the source. Macedonia is planning to make EMI a legally binding e-tool, which is an effort driven by EU accession requirements. In communication with the Party, the TTE was able to identify that appropriate links between data providers and Macedonia's GHG inventory team have been established, training activities on building the national capacity are under way, and relevant changes have been made to the existing Law on Environment, in order to improve data collection for the inventories within appropriate institutions. This information provided by the Party shows that although GHG inventory arrangements might have been partially implemented at the time of the BUR submission, Macedonia is undertaking efforts to enable the sustainable preparation of GHG inventories.

26. As per decision 21/CP.19, Macedonia has volunteered to provide a description of a proposed institutional structure and the roles of the entities potentially involved in the implementation of an MRV system of mitigation actions, as well as of the steps envisaged in this process, preliminary MRV quality indicators and conditions to enable implementation. The TTE notes that these efforts would improve the continuity of reporting.

27. In communication with the Party, the TTE notes that the proposed arrangements for the MRV of mitigation actions will also consider the need for collecting information on support required and received, which, as contained in decision 2/CP.17, annex III, paragraphs 14–16, should be included in BURs.

28. The information reported transparently describes some parts of the institutional arrangements of Macedonia and also demonstrates that Macedonia has taken steps to ensure that existing and planned arrangements are able to meet the requirements of the preparation of national communications and BURs on a continuous basis.

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

29. Macedonia has included in the BUR a national inventory report containing an update of its inventory presented in the second national communication, which addressed anthropogenic emissions and removals for the period 2003–2009. The BUR extends the time series to add the period 2010–2012 using the methodologies established in the *2006 IPCC Guidelines for National Greenhouse Gas Inventories* (hereinafter referred to as the 2006 IPCC Guidelines). In order to ensure consistency with the estimates provided in previous national inventories, Macedonia has recalculated the entire time series from 1990 to 2012.

30. Macedonia provided a time-series table (table 3-1) with the total national emissions and also included an updated key category analysis (table 3-2) identifying significant emissions sources.

31. The inventory covers most of the categories and gases for which GHG emissions occur in Macedonia and for which information was available. However, emissions from some categories were not estimated or reported, and explanations were not provided clarifying their occurrence or not, or if they were not estimated due to lack of data or some other cause. The TTE notes that the use of notation keys would improve the transparency of the inventory.

32. The BUR inventory is detailed and complete with regard to emission estimates, trends and contributions of the sectors and categories to the total national emissions. Macedonia has provided adequate information on methods and descriptions of the tiers used, as well as on the sources of activity data and emission factors and how they have been used in the estimation of emissions, thus making it possible to understand the GHG

estimate calculations performed. In addition, the methods used are consistent throughout the entire time series.

33. Macedonia has taken into account the need to continuously improve the transparency, consistency, comparability, completeness and accuracy of its national GHG inventories, and is planning adequate steps and institutional arrangements in order to support continuous improvement. Macedonia mentions in the BUR that a national system of inventories of GHG emissions will be established and that this system will provide a database of relevant information for the preparation of GHG inventories as well as the monitoring of the implementation of agreements regarding climate change. This system will incorporate the collection, processing, assessment, verification, quality assurance and management of uncertainty, as well as storage, use, distribution and presentation of data and information derived from entities holding data for anthropogenic emissions by sources and removals by sinks of GHGs. Further as noted in paragraph 25 above, under the Third National Communication project, Macedonia has developed country-specific training materials to guide future staff on the GHG inventory preparation process.

34. Consistent with the IPCC *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*, Macedonia has estimated carbon dioxide (CO_2) emissions from fuel combustion using both the reference approach and the sectoral approach, and indicated that the difference between both approaches is below 5 per cent. Macedonia has also reported emissions from domestic and international aviation but not from marine fuels. In the energy sector, Macedonia plans to develop country-specific emission factors for fuels and to generate detailed activity data for road transport. While the analysis is complete, transparency could have been enhanced with the provision of a comparison of the reference and sectoral approaches, in addition to country-specific emission factors.

35. Estimates, an explanation of trends and planned improvements are adequately and transparently provided in most industrial processes and product use (IPPU) subsectors for minerals, metals and chemicals. For all fluorinated gases (F-gases) except perfluorocarbons from the metal industry and all indirect gases (carbon monoxide, nitrogen oxides, non-methane volatile organic compounds and sulphur dioxide), the Party reported a numerical value of zero. Following communications with the Party during the technical analysis week, Macedonia confirmed that "NE" (not estimated) should be reported instead of "0" (zero). Adequate information is provided on the sources of data, in addition to potential new sources of data (e.g. EMI). While the Party indicates application of the tier 1 methodology that typically applies default emission factors, the Party also notes use of the emission factors and other technical parameters from the IPCC Emission Factor Database, which suggests the application of higher tier methods. The transparency of methods including emission factors could be further enhanced to understand the basis for calculations to estimate IPPU sector emissions through provision of this information.

36. Similar to the IPPU sector, sources of activity data, estimates, an explanation of trends and planned improvements are adequately and transparently provided for the waste sector. The Party transparently explains methods, in addition to how data gaps were estimated using tier 1 methods and default disposal rates. For the waste sector and subsectors, Macedonia plans to generate more detailed activity data, for example, a national study for key first-order decay model parameters such as the average composition of waste.

37. Similar to other sectors, sources of activity data, an explanation of trends and planned improvements are transparently provided for the agriculture, forestry and other land use sector. However, the methods and the use of emission factors are not adequately or transparently explained for some agriculture sources, including an indication of the IPCC methodological tier. An indication of the methodological tier is provided for only livestock-related categories (enteric fermentation and manure management).

38. Sources of activity data, an explanation of trends and planned improvements are provided for the land use, land-use change and forestry (LULUCF) sector. However, methods and use of emission factors are not adequately or transparently explained.

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

39. As indicated in table 2 above, Macedonia reported, in its BUR, information on mitigation actions and their effects.

40. Macedonia is still developing its climate change mitigation plans and analysing mitigation measures, including some measures that are already being implemented. The BUR summarizes Macedonia's comprehensive and extensive analysis assessing mitigation potentials through to 2030 under three scenarios: 'without measures' (WOM, which is the reference scenario), 'with measures' (WEM) and 'with additional measures' (WAM). These scenarios reflect the consultation with key existing national plans, for example, the Second National Energy Efficiency Action Plan. In addition to outlining the scenarios, the BUR highlights 18 potential mitigation measures considered in preparing the BUR analysis, and includes more details on these and 29 other actions that are "considered, planned or in progress" in annex 1 to the BUR.

41. Of the 18 highlighted actions, Macedonia notes that 11 are highly probable for implementation, with implementation well under way for a few actions (e.g. a rule book on the energy performance of buildings). These are considered to be the WEM scenario in Macedonia's mitigation analysis and planning. The TTE took note that some existing measures are associated with Macedonia's accession to the EU (e.g. its increasing share of renewable energy sources). The BUR also summarizes an action plan for the WEM scenario in annex 3. Macedonia provides projected information on the anticipated effects through to 2030 for each action, in addition to the effects of each scenario. Macedonia has not identified or proposed any nationally appropriate mitigation actions (NAMAs).

42. The types of mitigation actions identified relate primarily to changing energy production, distribution and use, because these comprise the greatest share of the total emissions (e.g. increasing the share of energy, increasing the level of renewable energy in electricity and heat production, promoting end-use energy efficiency, and improving transport systems and the vehicle fleet). Actions in the agriculture and waste sectors are also identified in annex 1 to the BUR (e.g. improving waste and agricultural management).

43. The BUR provides a context for the overall time period for the analysis, suggesting that Macedonia is currently implementing and considering or intends to implement the various mitigation actions presented in the report over the next decade. The specific time period for implementation of each individual action varies; this is indicated in some instances, but it is not given for most proposed actions. Macedonia concludes that the WEM scenario can significantly contribute to CO_2 emission reductions through to 2020 (20 per cent of reduction compared to the 2020 WOM scenario emissions) and that the WAM scenario should be considered after 2020.

44. The TTE acknowledges that Macedonia's mitigation planning has undergone prioritization for the first time. The Party includes the lists used for prioritization, in addition to noting that the stakeholder consultation process, as well as the technical analysis, provided information on the evaluation and prioritization of mitigation actions. Finally, Macedonia voluntarily provides a preview outlining the Party's approach and analytical framework for determining its intended nationally determined contributions, more specifically, a potential GHG emission reduction target (annex 5 to the BUR).

45. Consistent with decision 2/CP.17, annex III, paragraph 12(a), Macedonia, in its BUR, provides descriptions for each mitigation action, planned, proposed or conceptual in

most cases, but the transparency of the goals, the gases covered and progress indicators could be enhanced. For example, the quantitative goals are stated for increasing the share of renewable energy in section 4.3.11 in terms of increased generation (e.g. in units of megawatts). However, for some actions, such as the public awareness campaign on energy efficiency to encourage use of more advanced appliances (action 4.3.2), Macedonia does not identify or describe progress indicators or goals related to this action quantitatively or qualitatively beyond projected reductions. Similarly, with regard to the transparency of the gases covered, Macedonia lists gases covered in a tabular presentation of mitigation actions in annex 1. However, the transparency of the scope of GHGs covered could be enhanced. For example, some transport-related mitigation actions identify projected reductions of CO_2 emissions, but do not clearly indicate a consideration of potential reductions from relevant non-CO_2 gases such as methane, nitrous oxide or F-gases.

46. Consistent with decision 2/CP.17, annex III, paragraph 12(b), the reported information identifies the methodologies and assumptions for all mitigation measures being analysed through the tables in annex 1. While identified, the methodologies and assumptions describe the steps envisaged, along with the enabling conditions to implement actions, rather than describing the methodologies chosen to estimate the reductions. For example, the methodology for reducing electricity distribution losses is described as "reconstruction and construction of new distribution networks" and the assumption is "investments in reducing electricity distribution losses will not be off-set by increased peaks in demand". In addition, the BUR indicates generally in sections 4.3 and 4.5 that the estimated reductions were modelled individually using a bottom-up modelling approach, but additional information on the approach was not provided. The BUR also suggests that the MARKAL model was used to model energy demand. The BUR lists the criteria used to evaluate and prioritize actions, but indicates that more details on methods to prioritize measures is available in a separate report (Climate Change Mitigation in Buildings, Transport and Energy Supply Sectors). The TTE considers that the transparency of the reported information could be enhanced by including descriptions of the methodologies applied for modelling or calculating projected reductions (as appropriate, per implementation status), including descriptions of key parameters and associated assumptions in the calculations or modelling framework, such as sources of historic data, and where appropriate values of global warming potentials are applied.

47. Consistent with decision 2/CP.17, annex III, paragraph 12(c), the Party adequately describes objectives for most actions and scenarios (WOM, WEM and WAM scenarios) in section 4.3 and also in annex 1 to the BUR. While, in most instances, they can be inferred, clearer, consistent designation and description of the objectives associated with proposed and planned actions could further enhance the transparency of the BUR.

48. Consistent with decision 2/CP.17, annex III, paragraph 12(d), the Party does mostly report the progress of implementation and the results achieved. The Party clearly provides interim results achieved for most actions where implementation has been initiated consistently with the identified indicators for the actions (e.g. for gigawatt-hour savings from energy efficiency actions). Where actions are not implemented, the Party provides projected emission reductions (in kilotonnes per year) from the technical mitigation analysis. The TTE acknowledges that the Party has also identified other non-GHG benefits (e.g. in section 4.3.7), although further details on the types and extents of these benefits are not outlined.

49. Overall, the implementation status of actions can be inferred through descriptions in section 4.3 and annex 1 to the BUR, but information on the progress of implementation, such as time frames, is not consistently or clearly provided for each action. The TTE notes that general time frames for WEM scenario actions are included in annex 3 to the BUR. Similarly, although the Party does identify steps taken or envisaged to implement

mitigation actions, as noted in table 2 above, information is not consistently or clearly provided across all actions. This may be due to the status of the activity, but where missing, it is not clear whether any further steps are envisaged, or if planning remains to identify steps, etc. For example, this information is missing for action 4.3.12 (reducing distribution losses), which is an action included in the WEM scenario where steps have been taken. From the description in annex 1 to the BUR (see mitigation action 9), it is not clear if this action has been implemented or if further steps are envisaged and also if any interim results have been achieved.

50. While most information is provided, the transparency could be enhanced through clearer, consistent, presentation of information on these aspects related to implementation of mitigation actions. The transparency of results for existing actions could also be enhanced by further translating existing results to emissions (e.g. presenting gigawatt-hour savings as CO_2 equivalent reductions). The TTE acknowledges that some actions presented are conceptual (e.g. formatted as "XX") and are based on limited information, rather than detailed analysis, but are included for transparency and completeness. Finally, including information on the availability of funding for actions could further enhance the transparency of steps taken or envisaged. The TTE notes that qualitative information on the required budget for actions in the WEM scenario is provided in annex 3 to the BUR.

51. The information reported by the Party does not include a clear description of the nature and use of international market mechanisms referred in decision 2/CP.17, annex III, paragraph 12(e). However, the TTE takes note of some references in the BUR, such as a mention of a national clean development mechanism (CDM) strategy formulated in 2007 and in annex 1, reference to a registered CDM project (Bogdanci wind farm). Upon consultation with the Party, the TTE was informed that Macedonia is following the UNFCCC negotiations on development of new market mechanisms as well as non-market approaches, and will consider linkages as appropriate when these are defined and established.

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

52. Macedonia reports that it received significant capacity-building or 'capacity reinforcement' to assist with the preparation of its first BUR between September 2013 and December 2014. In its BUR, the Party provides an overview of assistance received from organizations, donors and regional exchange to support addressing climate change, including specific training by topic (e.g. the GHG inventory, mitigation, MRV, etc.).

53. Macedonia notes that further support is needed to continue to develop and consolidate existing technical and institutional capacities and to integrate addressing climate change into national policies, plans and programmes to effectively meet the UNFCCC reporting guidelines on BURs. In particular, with regard to constraints and gaps, and related financial, technical and capacity-building needs, Macedonia highlights three specific capacity gaps: institutionalization of the national GHG inventory process, via permanent administrative and financial support; capacity reinforcement to access financing with consideration of gender mainstreaming; and training to ensure that the MRV processes are gender sensitive. With regard to finance received, the Party indicates that the main donors are: the EU (34.4 per cent), the United Nations (11.1 per cent) and the Global Environment Facility (GEF) (9 per cent).

54. The technical analysis conducted by the TTE indicates that insufficient information was reported on constraints and gaps, and related financial, technical and capacity-building needs. Information on the gaps and needs is not distinguished by type, for example, as financial, technical or capacity-building needs. Similarly, information on financial support needs is shown in a general way and classified generally only as small, medium and large

budgets in the action plan for climate change mitigation. Needs for the capacity gaps raised in section 5.2 of the BUR are not estimated or provided. The TTE notes that the transparency of reporting would benefit from a more disaggregated analysis of needs, particularly with regard to financial and technology needs.

55. The Party did not provide information on the status and findings from technology needs assessment (TNA) or technology support received. In addressing areas of technical clarification from the TTE, Macedonia indicated that a national designated entity for technology transfer has not been appointed. The Party perceives a TNA as a key activity for successful climate change mitigation, taking into account that the previous TNA of Macedonia is outdated and unusable. Therefore, a project proposal for TNA is being developed, to be funded by the GEF.

56. The TTE notes that within its BUR, Macedonia has analysed support and finance received to date, that it notes various gaps and challenges, and that it also presents conclusions and recommendations to improve the effectiveness and tracking of this support. The TTE acknowledges and welcomes the Party's recommended actions for improvement of regular collection and analysis of this information, which will be introduced during the preparation of future BURs and national communications.

5. Domestic measurement, reporting and verification

57. As indicated in paragraph 26 above, Macedonia is in the process of developing and designing a domestic MRV system for mitigation actions. Consistent with the voluntary general guidelines for domestic MRV of domestically supported NAMAs in decision 2/CP.17, annex III, paragraph 13, and decision 21/CP.19, Macedonia outlines steps or a 'proposed pathway' for establishing an 'enhanced' MRV system, including establishing institutional arrangements, defining mitigation accounting standards, monitoring and data-collection responsibilities, defining reporting obligations and defining verification approaches/roles.

58. The BUR summarizes each component of the pathway and indicates the associated processes/roles for institutions. The BUR notes that effective implementation of the system depends on two preconditions. These conditions include formalizing institutional arrangements/roles and establishing an electronic platform (with domestic and international finance/support) to facilitate the monitoring and reporting of information to the UNFCCC and EU.

59. Macedonia's BUR transparently describes and illustrates the steps to define and formalize institutional arrangements for domestic MRV. The Party identifies the key institutions involved: the Ministry of Environment and Physical Planning (MOEPP), the Ministry of Energy and the Ministry of Economy, in addition to other ministries.

60. In addressing areas of technical clarification, the Party noted that the mitigation policy is coordinated by several ministries at once; however, the Ministry of Economy implements most of the mitigation policies and projects (given that most relate to the energy sector). Currently, Macedonia is focused on taking steps to amend existing laws so that a legal framework exists that supports the proposed MRV system. The amendments would integrate the roles and responsibilities of institutions implementing actions so that they have monitoring and reporting policies and share resulting data and information with MOEPP for reporting to the EU and the UNFCCC.

61. Further, the Party is clear and transparent about the related challenges and needs. Macedonia specifically notes that sustainability of the system will require regular financing in addition to ongoing training of staff to support the MRV processes.

62. As noted in paragraph 41 above, Macedonia has not yet proposed or explicitly identified domestically supported NAMAs, so details on how they will be measured, including the collection and management of information, are not elaborated on in the BUR. However, Macedonia does transparently indicate plans to develop and adopt accounting standards for both low and high impact actions and does identify an initial basis (e.g. the World Resource Institute's Policy and Action Standard and Mitigation Goal Standard) for these standards.

63. Similarly, Macedonia does transparently outline plans for standardizing monitoring and reporting processes and data-collection responsibilities via templates and ultimately an online and systematized platform. Further, Macedonia presents a potential MRV quality-indicator template for assessing and tracking the progress of actions at a macro level.

64. Macedonia does adequately and transparently identify the institutions (e.g. MOEPP) responsible for implementing verification and communicating of standards/procedures to domestic verifiers, and also for providing findings to information providers in the process of monitoring and reporting. Further, the Party is transparent about plans to develop a verification approach/process involving third-party experts for significant actions and use of domestic staff from the MOEPP Climate Change Department for lower impact actions. While specific verification procedures were not outlined for the significant and lower impact actions, the Party does indicate the application of existing international guidance from the World Resource Institute as a basis for quality assurance/quality control of lower impact actions.

6. Any other information

65. Macedonia, in its BUR, includes a description of key gender issues related to climate change, in particular, how women can benefit from the mitigation actions proposed by the Party. In addition, the results of a survey conducted to observe public perceptions on climate change awareness-raising activities, and challenges and/or incentives for climate-conscious behaviour, are presented in the report.

66. The TTE commends the Party for including in its BUR other information that is considered relevant to the achievement of the objective of the Convention. The TTE notes that gender considerations and public perceptions are cross-cutting elements that, when taken into account in designing climate change policies, may well enhance their outcomes.

D. Identification of capacity-building needs

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

(a) Establishing procedures and specific arrangements to guarantee the permanent involvement of relevant institutions in the systematic collection, compilation and validation of data and information on constraints and gaps, and support needed and received in each of the action areas identified in the BUR;

(b) Ensuring the sustainable preparation of BURs to establish the design, methods and operation of a registry to systematically collect and compile information on support needed and received in the area of climate change;

(c) Establishing technical assistance for developing the required activities (e.g. the use of national land-use data obtained from remote-sensing technology/available satellite imagery) to estimate LULUCF emissions, including training on

application/customization of the 2006 IPCC inventory software or other relevant software for estimating emissions from land-use change or other relevant software tools;

(d) Providing support to train data providers on the purpose of the national GHG inventories and use of GHG inventory information;

(e) Providing assistance in the development of country-specific emission factors, enhanced characterization or estimating emissions from enteric fermentation;

(f) Providing technical assistance on developing approaches/strategies to sustain technical capacity and quality control of the national GHG inventory process for future reporting;

(g) Developing the following key areas that are relevant to the implementation of an MRV system of domestic mitigation actions in which capacity-building is required: accounting and reporting standards/methodologies to assess and report the GHG effects of policies and actions in an accurate, consistent, transparent, complete and relevant way, in particular, for energy efficiency measures; tracking of activity data and assigning effects of individual policies and measures on activity data in cases when more than one policy has an effect on particular activity data; establishment of a methodology for policy tracking that can adjust current policies and influence the design of future measures by providing an accurate picture of performance and trends; and establishment of an appropriate system for verification of the quality of the data, the data-collection processes, assumptions made, and the resulting values and results;

(h) Developing an electronic, online monitoring system/instrument to facilitate information flow and support the MRV of mitigation actions and to develop a user manual;

(i) Providing relevant capacity-building on MRV processes (e.g. procedures, standards and use of online reporting platforms) to support sustainability of the MRV system;

(j) Providing training on how to identify and access the growing networks of private and public climate change financing;

(k) Providing assistance in conducting a national TNA.

III. Conclusions

68. The TTE concludes that:

(a) All of the elements of information listed in paragraph 3(a) of the ICA guidelines are included in the first BUR of Macedonia;

(b) Macedonia transparently reported on its national circumstances and institutional arrangements relevant to the preparation of BURs. Macedonia has taken significant steps to create strong institutional arrangements that allow for the sustainable preparation of BURs. These include: organizational improvements within MOEPP, and knowledge-sharing procedures, tools and legal provisions to facilitate sectoral information transfer. The TTE commends Macedonia for the progress made and notes that the plans to improve the overall MRV of GHG emissions and reductions, as outlined in the first BUR, would contribute to achieving sustainable reporting under the UNFCCC;

(c) Macedonia's inventory constitutes an extension and improvement of the previous inventories and covers GHG emissions and removals for the period 1990–2012 using the 2006 IPCC Guidelines, by recalculating the full time series for the years reported in previous national communications. Further, Macedonia has transparently reported on plans and considerations to continuously improve the transparency, consistency,

comparability, completeness and accuracy in its national GHG inventories, and is planning steps and institutional arrangements in order to support continuous improvement. The planned arrangements address collection, processing, assessment, verification, quality assurance and management of uncertainty, as well as storage, use, distribution and presentation of data and information derived from entities holding data for anthropogenic emissions by sources and removals by sinks of GHGs. While Macedonia has transparently reported emission trends, sources of data and planned improvements, the transparency of methods and associated use of emission factors applied could be enhanced;

(d) Macedonia has also transparently reported on the technical and institutional processes to plan and assess actions to mitigate climate change, in addition to the types of mitigation actions being implemented and considered. Macedonia is in the initial stages of integrating climate change and mitigation into its national planning. While the transparency of some information could be enhanced, Macedonia's BUR demonstrates that the Party has undertaken, and continues to undertake, an extensive, informed analysis to identify suitable mitigation actions. The efforts to date, which also recognize and identify improvements, have established a sound foundation and framework for further analysis, prioritization, implementation and assessment of mitigation actions in the future;

(e) Although Macedonia did report information on needs and gaps, particularly those related to capacity-building and finance (the latter in an aggregated manner), a more detailed report that includes disaggregation by donor and type of support required may enhance the transparency of reporting. Macedonia stated that further improvements in this area will be considered in the process of preparing BURs, and that there are capacity-building needs to fulfil this purpose.

69. The TTE, in consultation with Macedonia, identified 10 capacity-building needs related to the facilitation of reporting in accordance with annex III to decision 2/CP.17 and to the participation in ICA in accordance with annex IV to decision 2/CP.17, taking into account Article 4, paragraph 3, of the Convention. Key capacity-building needs prioritized by Macedonia are summarized in section II.D above.

Annex

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>.

"Modalities and guidelines for international consultation and analysis". Annex IV to decision 2/CP.17. Available at <http://unfccc.int/resource/docs/2011/cop17/eng/09a01.pdf>.

"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>.

"Guidelines for the preparation of national communications from Parties not included in Annex I to the Convention". Annex to decision 17/CP.8. Available at <http://unfccc.int/resource/docs/cop8/07a02.pdf#page=2>.

First biennial update report of the former Yugoslav Republic of Macedonia. Available at <http://unfccc.int/8722.php>.

Third national communication of the former Yugoslav Republic of Macedonia. Available at <http://unfccc.int/national_reports/non-annex_i_natcom/items/2979.php>.