



United Nations

FCCC/SBI/ICA/2016/TASR.1/MYS



Framework Convention on
Climate Change

Distr.: General
21 February 2017

English only

Technical analysis of the first biennial update report of Malaysia submitted on 3 March 2016

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), consistent with their capabilities and the level of support provided for reporting, were to 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, according to 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 the Party's first BUR. The process of ICA consists of two steps: the technical analysis of the submitted BUR, followed by a workshop for 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 Malaysia conducted by a team of technical experts in accordance with the modalities and procedures contained in the annex to decision 20/CP.19.

GE.17-02761(E)



* 1 7 0 2 7 6 1 *

Please recycle



Contents

	<i>Paragraphs</i>	<i>Page</i>
I. Introduction and process overview	1–7	3
A. Introduction	1–3	3
B. Process overview	4–7	3
II. Technical analysis of the information reported in the biennial update report	8–68	4
A. Scope of the technical analysis	8–9	4
B. Overview of the elements of information reported	10–18	4
C. Technical analysis of the information reported.....	19–67	11
D. Identification of capacity-building needs.....	68	19
III. Conclusions	69–70	19
Annex		
Documents and information used during the technical analysis		21

I. Introduction and process overview

A. Introduction

1. According to 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, were to 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, according to paragraph 58(a) of the same decision, the first round of international consultation and analysis (ICA) is to be conducted for non-Annex I Parties, commencing within six months of the submission of the Party's first BUR. The process of ICA consists of two steps: the technical analysis of the submitted BUR, resulting in a summary report for each BUR analysed, followed by a workshop for the facilitative sharing of views under the Subsidiary Body for Implementation.

2. In accordance with decision 14/CP.19, paragraph 7, developing country Parties seeking to obtain and receive payments for results-based actions from the implementation of the activities referred to in decision 1/CP.16, paragraph 70,¹ may submit relevant information and data through the BUR in the form of a technical annex as per decision 2/CP.17, annex III, paragraph 19. In accordance with decision 14/CP.19, paragraph 8, the submission of the technical annex referred to in paragraph 7 of the same decision is voluntary and in the context of results-based payments. In accordance with decision 14/CP.19, paragraphs 10–14, an analysis of this technical annex was carried out by two land use, land-use change and forestry (LULUCF) experts as part of the technical analysis of the BUR.

3. This summary report presents the results of the technical analysis of the first BUR of Malaysia 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. The technical report capturing the findings of the technical analysis of the technical annex referred to in paragraph 2 above is contained in document FCCC/SBI/ICA/2016/TATR.1/MAL.²

B. Process overview

4. Malaysia submitted its first BUR on 3 March 2016.

5. The technical analysis of the BUR took place from 13 to 17 June 2016 in Bonn, Germany, and was undertaken by the following TTE, drawn from the UNFCCC roster of experts on the basis of the criteria defined in decision 20/CP.19, annex, paragraphs 2–6: Ms. María Fernanda Alcobé (Argentina), Ms. Estefania Ardila Robles (member of the Consultative Group of Experts on National Communications from Parties not included in Annex I to the Convention (CGE) from Colombia), Mr. Felipe de León (Costa Rica), Mr. Carlos Fuller (former member of the CGE from Belize), Ms. Inge Jonckheere (Belgium),

¹ In decision 1/CP.16, paragraph 70, the Conference of the Parties encouraged developing country Parties to contribute to mitigation actions in the forest sector by undertaking the following activities: reducing emissions from deforestation; reducing emissions from forest degradation; conservation of forest carbon stocks; sustainable management of forests; and enhancement of forest carbon stocks.

² The technical report capturing the findings of the technical analysis of the technical annex is available at < http://unfccc.int/national_reports/non-annex_i_natcom/reporting_on_climate_change/items/8722.php>.

Mr. Jorge Eduardo Morfin Ríos (Mexico), Ms. Marieke Sandker (Netherlands) and Ms. Rosa María Rivas Palma (New Zealand). Ms. Ardila Robles and Ms. Rivas Palma were the co-leads. Ms. Sandker and Mr. Morfin Ríos were the LULUCF experts that undertook the technical analysis of the technical annex referred to in paragraph 2 above. Ms. Jenny Wong, Mr. Dirk Nemitz and Ms. Karen Ortega (secretariat) coordinated the technical analysis.

6. During the technical analysis, the TTE and Malaysia engaged in consultation via videoconferencing on the identification of capacity-building needs for the preparation of BURs and participation in the ICA process. Following the technical analysis of the BUR, the TTE prepared and shared a draft summary report with Malaysia on 24 August 2016 for its review and comment. Malaysia, in turn, provided its feedback on the draft summary report on 12 October 2016.

7. The TTE responded to and incorporated the Party's comments referred to in paragraph 6 above and finalized the summary report in consultation with Malaysia on 17 February 2017.

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

A. Scope of the technical analysis

8. 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 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 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).

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

B. Overview of the elements of information reported

10. The elements of information referred to in paragraph 8(a) above include: the national greenhouse gas (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 measurement, reporting and verification (MRV); and information on support received.

11. Further, 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 10 above have been included in the BUR of the Party concerned. The results of that analysis are presented in tables 1, 2 and 3 below.

1. National greenhouse gas inventory

12. 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 paragraphs 3–10 of the UNFCCC reporting guidelines on BURs. 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 “Guidelines for the preparation of national communications from Parties not included in Annex I to the Convention” 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.

13. Table 1 presents the results of the identification of the extent to which the elements of information on GHGs are included in the first BUR of Malaysia 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 Malaysia

<i>Decision</i>	<i>Provision of the reporting guidelines</i>	<i>Yes/ Partly/No/NA</i>	<i>Comments on the extent of the information provided</i>
Decision 2/CP.17, paragraph 41(g)	The first BUR shall cover, at a minimum, the inventory for the calendar year no more than four years prior to the date of the submission, or more recent years if information is available	No	The submitted inventory covers 2011, which is five years prior to the date of submission
Decision 2/CP.17, annex III, paragraph 5	The updates of the sections on the national inventories of anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol should contain updated data on activity levels based on the best information available using the Revised 1996 IPCC Guidelines, the IPCC good practice guidance and the IPCC good practice guidance for LULUCF; any change to the emission factor may be made in the subsequent full national communication	Yes	
Decision 2/CP.17, annex III, paragraph 9	The inventory section of the BUR should consist of a national inventory report as a summary or as an update of the information contained in decision 17/CP.8, annex, chapter III (National greenhouse gas inventories), including: (a) Table 1 (National greenhouse gas inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol and greenhouse gas	Yes	

<i>Decision</i>	<i>Provision of the reporting guidelines</i>	<i>Yes/ Partly/No/NA</i>	<i>Comments on the extent of the information provided</i>
	precursors)		
	(b) Table 2 (National greenhouse gas inventory of anthropogenic emissions of HFCs, PFCs and SF ₆)	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:		
	(a) Tables included in annex 3A.2 to chapter 3 of the IPCC good practice guidance for LULUCF	No	
	(b) The sectoral report tables annexed to the Revised 1996 IPCC Guidelines	No	A disaggregated reporting approach was not applied to emission estimates (as contained in the Revised 1996 IPCC Guidelines) but to information relevant to their calculation (e.g. activity data and emission factors)
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	
Decision 2/CP.17, annex III, paragraph 8	Non-Annex I Parties that have previously reported on their national GHG inventories contained in their national communications are encouraged to submit summary information tables of inventories for previous submission years (e.g. for 1994 and 2000)	Yes	
Decision 2/CP.17, annex III, paragraph 10	Additional or supporting information, including sector-specific information, may be supplied in a technical annex	Yes	
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	No	The existence of such arrangements is mentioned in the report. However, a description of these items is not provided in 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:		
	(a) CO ₂	Yes	
	(b) CH ₄	Yes	
	(c) N ₂ O	Yes	
Decision	Non-Annex I Parties are encouraged, as	Yes	

<i>Decision</i>	<i>Provision of the reporting guidelines</i>	<i>Yes/ Partly/No/NA</i>	<i>Comments on the extent of the information provided</i>
17/CP.8, annex, paragraph 15	appropriate, to provide information on anthropogenic emissions by sources of HFCs, PFCs and SF ₆		
Decision 17/CP.8, annex, paragraph 19	Non-Annex I Parties should, to the extent possible, and if disaggregated data are available, report emissions from international aviation and marine bunker fuels separately in their inventories:		
	(a) International aviation	Yes	
	(b) Marine bunker fuels	Yes	
Decision 17/CP.8, annex, paragraph 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 SO _x , included in the Revised 1996 IPCC Guidelines may be included at the discretion of the Parties	Yes	
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:		
	(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 emission factors	Yes	The information presented in tables A and B of technical annex 1 to the BUR includes the sources of emission factors, yet it is not explicit as to which subsectors they have

<i>Decision</i>	<i>Provision of the reporting guidelines</i>	<i>Yes/ Partly/No/NA</i>	<i>Comments on the extent of the information provided</i>
			been applied
	(c) Explanation of the sources of activity data	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	Malaysia does not have emissions and removals from country-specific sources or sinks that are not part of the Revised 1996 IPCC Guidelines
	(i) Source and/or sink categories		
	(ii) Methodologies		
	(iii) Emission factors		
	(iv) Activity data		
	(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 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	

Abbreviations: BUR = biennial update report, 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, NA = not applicable, NMVOC = non-methane volatile organic compound, Revised 1996 IPCC Guidelines = *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*.

2. Mitigation actions and their effects

14. 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.

15. Malaysia reported on mitigation actions for the energy, LULUCF and waste sectors in its first BUR. The information on mitigation actions reported is provided in tabular format.

16. Table 2 presents the results of the identification of the extent to which the elements of information on mitigation actions are included in the first BUR of Malaysia 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 Malaysia

<i>Decision</i>	<i>Provision of the reporting guidelines</i>	<i>Yes/ Partly/No</i>	<i>Comments on the extent of the information provided</i>
Decision 2/CP.17, annex III, paragraph 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	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	Yes	Partial information regarding specific steps that have been taken is provided, but there is no information regarding those steps which are envisaged
	(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:		
	(i) Progress of implementation of the underlying steps taken or envisaged	Yes	Information on steps taken is provided. However, the absence of information on steps envisaged precludes its use to gauge progress of implementation
(ii) Results achieved, such as estimated outcomes (metrics depending on type of action) and estimated emission reductions, to the extent possible	Yes		

<i>Decision</i>	<i>Provision of the reporting guidelines</i>	<i>Yes/ Partly/No</i>	<i>Comments on the extent of the information provided</i>
	(e) Information on international market mechanisms	Yes	
Decision 2/CP.17, annex III, paragraph 13	Parties should provide information on the description of domestic measurement, reporting and verification (MRV) arrangements	Partly	The Ministry of Natural Resources and Environment is listed as the coordinating agency of the technical working groups undertaking the MRV activities. There is no specific information on the institutional arrangements for each process

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

17. 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.

18. Table 3 presents the 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 Malaysia 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 Malaysia

<i>Decision</i>	<i>Provision of the reporting requirements</i>	<i>Yes/ Partly/No</i>	<i>Comments on the extent of the information provided</i>
Decision 2/CP.17, annex III, paragraph 14	Non-Annex I Parties should provide updated information on constraints and gaps, and related financial, technical and capacity-building needs:		
	(a) Constraints and gaps	Yes	
	(b) Related financial, technical and capacity-building needs	Partly	Complete technical, financial and capacity-building needs have been identified for the energy sector only. Information on other sectors such as LULUCF and transport includes a general description of technical and/or financial needs but not the actual financial support required
Decision 2/CP.17, annex III, paragraph 15	Non-Annex I Parties should provide updated information on financial resources, technology transfer, capacity-building and technical support received from the Global Environment Facility, Annex II Parties and	Yes	

<i>Decision</i>	<i>Provision of the reporting requirements</i>	<i>Yes/ Partly/No</i>	<i>Comments on the extent of the information provided</i>
	other developed country Parties, the Green Climate Fund and multilateral institutions for activities relating to climate change, including for the preparation of the current biennial update report		
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:		
	(a) Technology needs, which must be nationally determined	No	
	(b) Technology support received	No	

C. Technical analysis of the information reported

19. The technical analysis referred to in paragraph 8(b) above aims to increase the transparency of mitigation actions and their effects, without engaging in discussion on the appropriateness of those actions. Accordingly, the technical analysis focused on the transparency of the information reported in the BUR.

20. 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 Intergovernmental Panel on Climate Change (IPCC) and referred to in the UNFCCC reporting guidelines on BURs.

21. 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

22. 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 national communication, including, among other things, information on national circumstances and institutional arrangements relevant to the preparation of national communications on a continuous basis. For their national communications, non-Annex I Parties report on their national circumstances following the reporting guidance contained in decision 17/CP.8, annex, paragraphs 3–5.

23. In accordance with decision 17/CP.8, annex, paragraph 3, Malaysia, in its BUR, reported the following information on its national circumstances: geography, governance, climate, forest and land use, biodiversity, water resources, population and economy (including information on the Economic Transformation Program and contributors to the gross domestic product (GDP)). The BUR also includes information on vulnerability and adaptation, and what Malaysia has done in the area of flood mitigation, and water and coastal resource management.

24. As encouraged in decision 17/CP.8, annex, paragraph 4, Malaysia provided a summary of relevant information regarding its national circumstances in tabular format. The Party also included graphs to illustrate annual temperature and rainfall trends, the composition of the energy supply and energy consumption trends.

25. Primary energy supply and energy demand in Malaysia are expected to grow with population and economic growth. The promotion of renewable energy is a priority for the country, and in its BUR, Malaysia provides a description of the key issues and priorities in the energy sector with regard to energy security and efforts concerning the promotion of renewable energy alternatives. It also provides information on transport, agriculture and solid waste.

26. In 2009, Malaysia announced a voluntarily commitment to reduce the GHG emission intensity of its GDP by up to 40 per cent by 2020 as compared with the 2005 level, conditional upon receiving technology transfer and adequate financing.

27. Malaysia's National Policy on Climate Change was approved by Cabinet in 2009, providing a national framework to mobilize resources to address the challenges of climate change. Further, Malaysia's National Green Technology and Climate Change Council is responsible for formulating policy development and the identification of strategic issues.

28. In its BUR, Malaysia stated that the National Steering Committee on Climate Change, chaired by the Ministry of Natural Resources and Environment, guides and endorses operational matters on climate change. Malaysia reported that the coordination for the preparation of national communications and BURs is under the National Communication and Biennial Update Report National Steering Committee (NCBURNSC), with the work carried out by five technical working groups (TWGs). Partial information on: which organizations comprise the NCBURNSC and the TWGs; key aspects of the institutional arrangements; and the processes relevant to the preparation of the national communications and BURs on a continuous basis, is reported in the BUR. During the technical analysis, Malaysia provided clarification on: the organizations included in each TWG; the organizations involved in data gathering contributing to the GHG inventories and institutional arrangements between these organizations and the national agency preparing GHG inventories; and the data archiving systems and processes. The TTE notes that the transparency of the reported information could be enhanced by including a description of the roles and responsibilities of NCBURNSC and participant organizations, with regard to the preparation of the BUR and a description of the data exchange and quality assurance/quality control procedures.

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

29. As indicated in table 1 above, Malaysia reported information on its GHG inventory in its BUR, in accordance with paragraphs 3–10 of the UNFCCC reporting guidelines on BURs and paragraphs 8–24 of the “Guidelines for the preparation of national communications from Parties not included in Annex I to the Convention” contained in the annex to decision 17/CP.8.

30. Malaysia included in its BUR an update of its national GHG inventory which includes emissions by sources and removals by sinks for 2011. In addition, Malaysia reported three different time series across sectors: from 1990 to 2011 for the energy, agriculture and LULUCF sectors; 1991 to 2011 for the waste sector; and 2000 to 2011 for the industrial processes sector. During the technical analysis, Malaysia clarified, with regard to the difference in length of the inventory time series across sectors, that additional capacity is required to generate activity data and choose the most suitable methodology recommended by the IPCC to produce estimates of GHG emissions and removals for the specific sectors.

31. The inventory presented in Malaysia's BUR reflects updated activity data and, in some cases, emission factors, and was estimated using the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories* (hereinafter referred to as the Revised 1996 IPCC Guidelines), the *Good Practice Guidance and Uncertainty Management in National*

Greenhouse Gas Inventories and the Good Practice Guidance for Land Use, Land-Use Change and Forestry (hereinafter referred to as the IPCC good practice guidance for LULUCF). The methods used are consistent throughout the time series. Following interaction with the TTE, Malaysia confirmed its intention of using the *2006 IPCC Guidelines for National Greenhouse Gas Inventories* (hereinafter referred to as the 2006 IPCC Guidelines) for its third national communication and second BUR.

32. The BUR provides information regarding the level of reporting (tier 1, with one subsector as an exception), assumptions, aggregate activity data, sources and emission factors at the subsector level for 2011. Information on where country-specific and default values for emission factors were applied and how they were obtained was not included in the BUR.

33. During the technical analysis, Malaysia provided the necessary clarification on this information, thus facilitating the understanding of the calculations. The BUR does not include, however, sectoral report tables as annexed to the Revised 1996 IPCC Guidelines. The TTE notes that the inclusion of this information would increase the transparency of reporting.

34. The BUR provides transparent information on GHG emissions at the subsector level, where estimates and subsequent reporting have improved compared with Malaysia's previous GHG inventories as a result of the availability of more comprehensive activity data. The TTE commends the Party for this effort. In response to the clarification request by the TTE on whether inventory improvement plans have been considered in order to fill remaining data gaps, Malaysia confirmed that improvement plans have been defined for each sector within the framework of the sectoral reports developed by the TWG during the preparation of the GHG inventories. Estimates of GHG emissions aggregated at the subsector level were provided for the time series. Total net emissions reached 27,283.57 kilotonnes of carbon dioxide equivalent (kt CO₂ eq) by 2011, which represents a 116 per cent increase from 1990. However, between 1990 and 2004, Malaysia's emissions balance is negative when taking into account removals from the LULUCF sector. Emissions from the energy sector, the largest contributor and major driver of the trend, nearly quadrupled between 1990 and 2011. Detailed information regarding the increase in these emissions and whether it was due to changes in the underlying assumptions and data sources used has not been provided by the Party.

35. In its BUR, Malaysia included a table with information on anthropogenic emissions by sources of hydrofluorocarbons and perfluorocarbons. The appropriate notation key "NE" (not estimated) was reported under consumption of halocarbons and sulphur hexafluoride in the industrial processes sector. Similarly, estimates for GHG precursors (carbon monoxide (CO), nitrogen oxides (NO_x), non-methane volatile organic compounds (NMVOCs) and sulphur oxides (SO_x) were not included in the inventory with the exception of two subsectors of the LULUCF and agriculture sectors. However, for both cases, the reasons for not estimating and reporting the associated GHG emissions were not provided in the BUR. During the technical analysis, Malaysia clarified that the unavailability of the appropriate methodologies and emission factors in the Revised 1996 IPCC Guidelines has been a primary reason for not including this information in the BUR. The TTE notes that including the reasons for the unavailability of such estimates under a given category or subcategory would further increase the transparency of the BUR.

36. Malaysia provided in its BUR a general description of the uncertainty assessment, but it did not provide sectoral and category-specific uncertainty assessments or an identification of the main sources of uncertainty. During the technical analysis, Malaysia clarified that for the LULUCF sector, the main sources of uncertainties are from state land forest and forest converted to other land and for the agriculture sector, agricultural soils and

livestock manure management. The TTE notes that the transparency of the information reported could be enhanced by providing a category-specific uncertainty assessment.

37. For the energy sector, Malaysia estimated emissions of carbon dioxide (CO₂) from fuel combustion using both the reference and the sectoral approach. However, no description of such a procedure was included in the BUR. During the technical analysis, Malaysia provided additional information on the estimates of CO₂ emissions using the above-mentioned approaches and further clarified that these will be included in its third national communication and second BUR. Disaggregated estimates of CO₂ emissions from international aviation and marine bunker fuels were reported for 2011 as memo items, but other gases were not included. For the fugitive CO₂ emissions from fuels subsector, the notation keys “NE” and “NA” were used in different tables of the BUR. During the technical analysis, Malaysia clarified that “NE” is the appropriate notation key and that CO₂ emissions from oil and natural gas from 1990 to 2013 will be reported in the third national communication and the second BUR. Malaysia also informed the TTE that capacity-building is required to enable the country to develop country-specific emission factors.

38. Malaysia reported estimates of GHG emissions for the industrial processes sector using tier 1 methodologies from the Revised 1996 IPCC Guidelines, except for the subcategory cement production, for which a country-specific emission factor has been developed. The TTE commends Malaysia for this effort. Several subcategories such as pulp and paper, and food and drink production under the subsector other production, and others such as soda ash production and use, asphalt roofing, road paving and adipic acid production were not considered in the reporting tables contained in the BUR. During the technical analysis, Malaysia explained that these indirect emissions were not estimated owing to a lack of activity data and capabilities. Regarding the time series for the industrial processes sector, Malaysia also clarified that the lack of activity data has been a key obstacle to reconstructing GHG estimates back to 1990 as in other sectors of the inventory.

39. The BUR does not include tables from annex 3A.2 to chapter 3 of the IPCC good practice guidance for LULUCF or the sectoral report tables annexed to the Revised 1996 IPCC Guidelines as required by decision 2/CP.17. Malaysia explained in its response to the technical clarification requested by the TTE during the technical analysis that the LULUCF section of the BUR was adapted to include the IPCC good practice guidance for LULUCF and the BUR does not include the annex 3.A.2 tables because soil organic matter was not estimated; however, there were no changes in the carbon stocks in wetlands and grassland. Malaysia explained that it is planning to include the annex 3.A.2 tables as summary tables in its next BUR.

40. Within the agriculture and LULUCF sectors, the BUR provides information regarding tier levels, methods, data sources and assumptions used to generate the inventory estimates for each subsector in a technical annex. In the BUR, different parameters have been included within the activity data column in tables A and B of technical annex 1.

41. The BUR does not provide transparent information related to the consistent categories of land areas as described in the IPCC good practice guidance for LULUCF, which Malaysia applied. The TTE notes that the inclusion of the definition of the land classification system adopted by Malaysia, with its categories and subcategories and the compatibility with the six categories of the IPCC, would improve the transparency of the BUR in relation to the reporting of area changes over time and among different land uses.

42. For the waste sector, methane (CH₄) and nitrous oxide emission estimates were included for solid waste disposal on land and wastewater handling for the base year 2011, and aggregate activity data were provided in the report’s inventory annex. However, no further information was provided on the assumptions and data sources regarding waste

generation rate, fraction of waste disposed to solid waste disposal sites, biochemical oxygen demand removal efficiencies and in general other major variables required to estimate emissions for the waste sector. In addressing areas of technical clarification, Malaysia specified such assumptions and data sources. The TTE notes that including this information would enhance the transparency of future reports. Regarding non-estimated subcategories and gases, including the year 1990 of the time series, during the technical analysis Malaysia clarified that plans are in place to use the first-order decay method as listed in the 2006 IPCC Guidelines for the solid waste disposal subcategory, but implementation requires additional capacity-building. Malaysia also clarified that it will improve data on waste generation and composition based on recent studies by the Department of National Solid Waste Management, enabling a better estimation of the GHG emissions stemming from waste degradation at disposal sites.

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

43. As indicated in table 2 above, Malaysia reported in its BUR, in accordance with paragraphs 11–13 of the UNFCCC reporting guidelines on BURs, information on mitigation actions and their effects.

44. Malaysia reported mitigation actions for the energy, LULUCF and waste sectors, which account for over 88 per cent of total GHG emissions reported in the national inventory. A total of 12 mitigation actions are described: 9 in the energy sector addressing renewable energy generation and energy use in green buildings and in transport (tables 3.2–3.4); 1 in the LULUCF sector focused on sustainable forest management (table 3.5) and 2 in the waste sector directed at waste paper recycling and biogas recovery from palm oil mill effluent treatment (table 3.6). CO₂ is the sole GHG targeted in all but 3 actions; 1 of these actions targets CO₂ and CH₄ together through the application of green technology and the remaining 2 actions target CH₄ emissions from waste decomposition. Each of the mitigation actions included by Malaysia in its BUR has a general qualitative objective and specific quantitative reduction goal to be reached by 2020 with a total emission reduction potential of 32,178.99 kt CO₂ eq.

45. Malaysia has provided information on the broader context in which these mitigation actions are being carried out in section 3.2, “National policy and planning framework”, and in section 3.3, “Cross-sectoral initiatives”. Information is also provided on “Sector-specific initiatives” in section 3.4 with descriptions for six such initiatives: energy efficiency, renewable energy, transport, waste management, LULUCF and agriculture.

46. Consistent with decision 2/CP.17, annex III, paragraph 12(a–c), Malaysia has provided in its BUR the name, objectives, description, methodologies and assumptions, steps taken and results achieved of the mitigation actions. Additional information, including the key implementing agency or agencies, 2020 quantitative goals and progress indicators, is reported. The TTE notes that the inclusion of the specific progress indicators for each mitigation action improves the transparency of the information on the progress of implementation of mitigation actions and is especially commendable. Malaysia uses different reporting units for carbon in the information reported in the BUR.

47. Malaysia described 12 proposed mitigation actions in line with decision 2/CP.17, annex III, paragraph 12(a), with information on: the nature of the action; the coverage, categorized per sector with information on the gases; the emission reduction achieved in 2013; and the quantitative goal for potential emission reduction by 2020. Malaysia has clearly and succinctly reported the key methodological elements and the basic assumptions related to the calculation of GHG emission reductions from mitigation actions. The reporting is done using specific progress indicators for each mitigation action. All mitigation actions in the BUR are classified as nationally appropriate mitigation actions.

48. The TTE notes that the mitigation actions proposed are to be implemented both by government (e.g. Sustainable Energy Development Authority, Ministry of Finance) and by the private sector (e.g. paper products industry, palm oil industry) in Malaysia. The BUR describes the steps taken and/or envisaged, ranging from creating new structures and tools (e.g. vehicles) to gazetting of land as permanently reserved or protected areas, increasing public awareness and promoting energy efficiency and renewable energy.

49. The BUR reports on the progress made in the implementation of the mitigation actions and the underlying steps taken and the results achieved, such as estimated outcomes (including outcomes that are not GHG related). The frequency of reporting of the progress of the individual mitigation actions differs depending on the sector. For the energy sector, progress is reported on a monthly basis and for the LULUCF and waste management sectors progress is reported using annual data.

50. The information reported on the progress of the individual steps focuses on steps taken. Including information on steps envisaged would provide a frame of reference that would facilitate gauging the actual progress of implementation. The indicators proposed by Malaysia for its mitigation actions are well thought out; however, they are not used to indicate progress in the implementation of the mitigation actions. The TTE notes that reporting progress of implementation with the progress indicators that have been proposed by the Party would enhance transparency and would allow for more accurate progress tracking of the implementation actions.

51. Basic quantitative data on international market mechanisms are provided for the clean development mechanism, in which the Party is participating (143 projects and 5 programmes of activities with 10 component project activities registered) as of 2015 for a total of USD 1,529.694 million, with an expected yield of 23.95 million kt CO₂ eq. The data are ordered per type and indicate the annual emission reduction potential. The information reported in table 3.7 contains the amount of certified emission reductions issued for the first crediting period, for a total of 9,844,435 kt CO₂ eq as at April 2015 as well as the estimated investment. The data on the voluntary carbon market projects (11) in which Malaysia has participated are also provided, with a majority of the projects focusing on CH₄ emission avoidance, 1 on biomass energy, 1 on hydropower and 1 on reforestation, with an estimate of annual emission reductions of 387,421 t CO₂ eq.

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

52. As indicated in table 3 above, Malaysia reported in its BUR, in accordance with paragraphs 14–16 of the UNFCCC reporting guidelines on BURs, information on finance, technology and capacity-building needs and support received.

53. In the GHG inventory, Malaysia noted that some challenges remain related to activity data generation, lack of historical data in the waste, industrial processes and transport sectors, tracking deforestation and completeness in the reporting of all sectors. Malaysia has identified some steps and actions to overcome the challenges and stated that technical capacity development, financial assistance and international collaboration would be required.

54. For mitigation-related actions in the energy sector, Malaysia described the activities proposed according to the policy priorities in the sector and outlined the technology and financial needs required. During the technical analysis, Malaysia clarified that the implementation of renewable energy initiatives is guided by the National Renewable Energy Policy and Action Plan (2010), legislated by the Renewable Energy Act (2011) and implemented by the Sustainable Energy Development Authority (SEDA) Malaysia. SEDA has defined the mitigation-related actions included in BUR table 5.1, the status and related

financial needs. The total financial support needs are listed as a one-off sum of 580 million Malaysian ringgit (MYR) and about MYR 850 million annually for long-term projects. For the projects where long-term annual financial support needs are reported, there is no detailed information on the expected start of such support, as no support had been secured at the time of reporting.

55. For the mitigation actions in the waste sector, Malaysia reported that local, state and federal agency coordination is required for effective waste management. In addition, Malaysia stated that accurate quantification of GHG emissions is a challenge owing to a lack of proper assessment tools and techniques.

56. During the technical analysis, Malaysia clarified that for the LULUCF sector, tracking land-use change continues to be a challenge, as the compilation of complete national geospatial optical imagery coverage would take at least two to three years owing to cloud cover. The management of drained peatland is another challenge, and Malaysia stated that financial and technical capacities would be needed for the rehabilitation of these areas.

57. Energy consumption in the transport sector has grown significantly, and Malaysia considers that the development of efficient and integrated public transport is crucial to address this trend. This includes the development of a bus rapid transit network (in Greater Kuala Lumpur) and intercity rail connections; financial constraints are the main limitation with these initiatives. The Government of Malaysia is planning to progressively change biodiesel blends and is facing technology compatibility challenges to achieve this objective.

58. With regard to vulnerability and adaptation, Malaysia indicated that technical and financial support is necessary to adopt measures that are effective and sustainable. The gaps identified include extending the coverage of integrated flood management and flood forecasting and early warning systems to all river basins; research and development on water-saving techniques; and water quality improvement. Likewise, in terms of research and systematic observation, Malaysia noted that there is insufficient monitoring of climate change and that there is an urgent need to improve climate change modelling, vulnerability and impact assessment work.

59. While the challenges and constraints have been reported in the BUR, the Party has not included information on whether any of the listed activities have been actually planned or are under implementation, their current status and the level of financial, technical or capacity-building support needed, other than for the energy sector. Malaysia's needs assessment for the energy sector states that some of the activities are ongoing; however, there is no explanation in the BUR as to whether any support has been received to date. During the technical analysis, Malaysia clarified that no international financial support has been received for the financial needs for the energy sector listed in table 5.1 of the BUR.

60. In terms of the financial resources, technology transfer, capacity-building and technical support from the Global Environment Facility (GEF), Malaysia received USD 46,510,020 between 1994 and 2014 (BUR table 4.1). This support has been focused on enhancing Malaysia's institutional capacity to meet its reporting requirements and to undertake various mitigation activities. In addition, Malaysia stated that additional financial resources were received from the GEF, the United Nations Industrial Development Organization, the United Nations Development Programme (UNDP), the United Nations Environment Programme, the Asian Development Bank and several bilateral donors for adaptation and mitigation activities, GHG reporting and web portal development (BUR table 4.2). The TTE commends Malaysia for reporting information on the support received.

61. Malaysia reported in its BUR that not all international support provided could be tracked and identified because of the manner in which it has been channelled. Where information on support is provided, it is not broken down into technical or capacity-building, and no support has been described for technology transfer. The TTE notes that

reporting the information by donor and category (technical, capacity-building) would enhance the transparency of reporting of the support received.

62. Malaysia received USD 352,000 from GEF/UNDP Malaysia for the preparation of the BUR. During the technical analysis, Malaysia clarified that this is part of the USD 852,000 received for the Party's third national communication and BUR, as listed in table 4.2 of the BUR.

63. The Party did not provide information on the status and findings from a technology needs assessment (TNA). In addressing areas of technical clarification, Malaysia clarified that a preliminary TNA was conducted as part of "A roadmap of emissions intensity reduction in Malaysia" in 2014. The assessment identified sector-specific technologies that could result in emission reductions if implemented. The Party considered, however, that the assessment lacked sufficient detail for prioritization and inclusion in the initial BUR. Malaysia is seeking resources of adequate scale to conduct an integrated TNA.

5. Domestic measurement, reporting and verification

64. As indicated in table 2 above, Malaysia reported in its BUR, in accordance with paragraph 13 of the UNFCCC reporting guidelines on BURs, some information on the description of domestic MRV arrangements.

65. During the technical analysis, Malaysia clarified that the MRV actions are coordinated by the Ministry of Natural Resources and Environment, and that monitoring and measurement activities fall with the implementing agencies and verification activities with the TWG on mitigation and verification formed by multi-agency experts. Malaysia indicated that guidelines for the MRV of mitigation actions are being developed and tested. It also clarified information on the ministries that are part of the TWG on mitigation and verification.

66. The BUR does not contain detailed information on the key institutions involved in the MRV process and a definition of their roles and obligations in each stage. The TTE notes that including such information would enhance the transparency of the reporting of Malaysia's domestic MRV in the BUR.

6. Any other information

67. In section 5.4 of the BUR, Malaysia reported that two key adaptation initiatives will be undertaken: the development of a national adaptation plan; and the strengthening of disaster risk management. The Party reported that it has improved the resolution of its climate projections from 9 to 6 km. Between 2011 and 2015 it implemented 194 flood mitigation projects and developed 34 local-scale flood hazard maps. Inter-basin water transfer projects are being implemented to ensure an adequate and safe water supply. For agriculture, water-saving aerobic rice farming has been developed and will be gradually implemented nationwide. Breeding programmes for heat- and water-efficient varieties of oil palm and cocoa are being developed. The use of a low-intensity tapping system and of rain gutters in rubber plantations have been introduced but widespread deployment is challenging in this labour-intensive industry. In the area of public health, the control and prevention of dengue are being undertaken using early test kits, community behavioural intervention and exploratory research on alternative medicines. The TTE commends Malaysia for providing detailed information on adaptation initiatives undertaken beyond the reporting requirements under the BUR.

D. Identification of capacity-building needs

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

- (a) Improving the identification, quantification and reporting of financial and technology needs;
- (b) Strengthening the institutional framework and comprehensive implementation of the MRV system;
- (c) Enhancing technical capacities for the application of the 2006 IPCC Guidelines, including to estimate indirect GHG emissions (such as CO, NO_x, NMVOCs and SO_x), and developing country-specific emission factors as well as identification and use of assessment tools.

III. Conclusions

69. The TTE concludes that most of the elements of information listed in paragraph 3(a) of the ICA modalities and guidelines have been included in the first BUR of Malaysia:

(a) Malaysia has presented transparent information on its national circumstances, and provided most of the required information on the institutional arrangements relevant to the preparation of the BURs and national communications on an ongoing basis. Including further information in next BURs on organizations involved, their roles and the processes established to achieve this objective would increase the transparency of such arrangements;

(b) Malaysia transparently reported the elements required for the national GHG inventory, consistent with decision 2/CP.17. The Party included an inventory of emissions by sources and removals by sinks for 2011 for all the sectors and a methodologically consistent time series back to 1990 for the energy, agriculture and LULUCF sectors, to 1991 for the waste sector and to 2000 for the industrial processes sector. The Party transparently indicated that Revised 1996 IPCC Guidelines were applied. However, sectoral report tables, specific methods and underlying assumptions to estimate emissions and removals and sectoral/subsectoral information on uncertainty levels were not included in the report. Indirect GHGs such as CO and NO_x were estimated for the agriculture and LULUCF sectors; however, indirect GHGs, including CO, NO_x, NMVOCs and SO_x, were not estimated for the energy, industrial processes and waste sectors. The TTE notes that including the aforementioned information in the BUR would further increase the transparency of the GHG inventories. As clarified by Malaysia during the technical analysis, there are plans to implement the 2006 IPCC Guidelines in subsequent reports and the improvements identified in the sectoral reports that are prepared during the inventory process;

(c) Malaysia reported its mitigation actions in a generally transparent manner. Detailed information for mitigation actions was reported in four tables (3.2–3.5) for the energy, LULUCF and waste sectors. All actions reported include a qualitative objective, quantitative goals, steps taken, progress indicators, information on methodologies, gases covered and results achieved. A total of 12 mitigation actions were reported with a total emission reduction potential of 32,178.99 kt CO₂ eq; 9 of these actions address CO₂ emissions only, 2 address CH₄ emissions and 1 addresses both of these gases. The development of specific progress indicators for each mitigation action is particularly commendable and their widespread use for reporting would increase transparency significantly;

(d) Limited information is provided on domestic MRV arrangements; including more information in this regard would also significantly increase the transparency of the BUR;

(e) Malaysia has presented a comprehensive identification of constraints and gaps in the BUR; however, these have not been translated to related financial, technical or capacity-building support needs, other than for the energy sector. Further, the BUR did not contain information on technology needs. During the technical analysis, Malaysia indicated that the reporting of these needs constitutes a capacity-building need.

70. The TTE, in consultation with Malaysia, identified three³ areas 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. Malaysia considers all capacity-building needs listed in chapter II.D as the priority.

³ This refers to the number of capacity-building needs listed in chapter II.D.

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 Malaysia. Available at <<http://unfccc.int/8722.php>>.

Second national communication of Malaysia. Available at <http://unfccc.int/national_reports/non-annex_i_natcom/items/2979.php>.
