United Nations FCCC/SBI/ICA/2017/TASR.2/CHL

Framework Convention on Climate Change

Distr.: General
4 December 2017

English only

Technical analysis of the second biennial update report of Chile submitted on 12 November 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. Further, paragraph 41(f) of that decision states that non-Annex I Parties shall submit a BUR every two years, either as a summary of parts of their national communication in the year in which the national communication is submitted or as a stand-alone update report. As mandated, the least developed country Parties and small island developing States may submit BURs at their discretion. This summary report presents the results of the technical analysis of the second BUR of Chile conducted by a team of technical experts in accordance with the modalities and procedures contained in the annex to decision 20/CP.19.

GE.17-21435(E)

1721435

Contents

I. Introduction and process overview

A. Introduction

1. The process of international consultation and analysis (ICA) consists of two steps: the technical analysis of the submitted biennial update report (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. 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 BUR by December 2014. Paragraph 41(f) of that decision states that non-Annex I Parties shall submit a BUR every two years, either as a summary of parts of their national communication in the year in which the national communication is submitted or as a stand-alone update report.

3. Further, according to paragraph 58(a) of the same decision, the first round of ICA is to be conducted for non-Annex I Parties commencing within six months of the submission of the Parties' first BURs. The frequency of developing country Parties' participation in subsequent rounds of ICA, depending on their respective capabilities and national circumstances, and the special flexibility for small island developing States and the least developed country Parties, will be determined by the frequency of the submission of BURs.

4. Chile submitted its first BUR on 10 December 2014, which was analysed by a team of technical experts (TTE) in the first round of technical analysis of BURs from non-Annex I Parties, conducted from 18 to 22 May 2015. After the publication of its summary report, Chile participated in the first workshop for the facilitative sharing of views, convened in Bonn, Germany, on 20 May 2016.

5. This summary report presents the results of the technical analysis of the second BUR of Chile undertaken by a TTE in accordance with the provisions on the composition, modalities and procedures of the TTE under ICA contained in the annex to decision 20/CP.19.

B. Process overview

6. Chile submitted its second BUR on 12 November 2016, which is within two years since the submission of the first BUR.

7. The technical analysis of the BUR took place from 22 to 26 May 2017 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. María José López (Belgium), Ms. Lilian Portillo (former member of the Consultative Group of Experts on National Communications from Parties not included in Annex I to the Convention (CGE) from Paraguay), Mr. Andrew Rakestraw (former member of the CGE from the United States of America) and Mr. Orlando Rey Santos (Cuba). Ms. Alcobé and Ms. López were the co-leads. The technical analysis was coordinated by Ms. Bhava Dhungana and Ms. Karen Ortega (secretariat).

8. During the technical analysis, in addition to the written exchange, through the secretariat, to provide technical clarifications on the information reported in the BUR, the TTE and Chile engaged in consultation[1] on the identification of capacity-building needs for the preparation of BURs and participation in the ICA process. Following the technical analysis of Chile's second BUR, the TTE prepared and shared a draft summary report with Chile on 25 September 2017 for its review and comment. Chile, in turn, provided its feedback on the draft summary report on 3 October 2017.

[1] This consultation was conducted through videoconferencing

9. The TTE responded to and incorporated the Party's comments referred to in paragraph 8 above and finalized the summary report in consultation with Chile on 30 November 2017.

II. Technical analysis of the biennial update report

A. Scope of the technical analysis

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

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

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

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

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

B. Extent of information reported

12. The elements of information referred to in paragraph 10(a) above include: the national 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 needed and received.

13. According to decision 20/CP.19, annex, paragraph 15(a), in undertaking the technical analysis of the submitted BUR, the TTE is to identify the extent to which the elements of information listed in paragraph 12 above have been included in the BUR of the Party concerned. The TTE considers that the reported information is mostly consistent with the UNFCCC reporting guidelines on BURs contained in decision 2/CP.17, annex III. Specific details on the reporting on each of the required elements are provided in annex I.

14. The TTE notes improvements in the reporting in BUR2 compared to BUR1. Information on GHG inventories, mitigation actions and their effects, and needs and support reported in the second BUR demonstrates that the Party has taken into consideration the areas for enhanced transparency noted by the TTE in the summary report on the technical analysis of its first BUR. These improvements include: the provision of estimates for emissions of sulphur hexafluoride (SF_6), information on the emission factor (EF) and activity data (AD) associated with forest fires; the provision of uncertainty assessment level using approach 1 on error propagation for the whole inventory; updated information on the four nationally appropriate mitigation actions (NAMAs) which were in progress during the preparation of the first BUR and the inclusion of new mitigation actions with their mitigation potential. Regarding needs and support, Chile has assessed the needs, gaps and barriers, integrating for the first time the needs identified by the private sector and

technology transfer needs, and has provided the responses implemented for the needs identified in the first BUR and during the ICA process. Information is clearly reflected in tabular format, covering different areas, and expanded in annex V of the BUR. The TTE commends Chile for the improvements in reporting in the second BUR compared to the first BUR. The general degree on clarity and extent of the information provided indicate progress and overall improvement since the first BUR. Regarding the areas for enhanced transparency noted by the TTE in the summary report on the technical analysis of the first BUR that were not addressed in the second BUR, Chile explained during the technical analysis that it plans to continue working on the EFs for the agriculture, forestry and other land use (AFOLU) sector; the identification and reporting of impacts and goals of the mitigation measures assessed qualitatively in the second BUR; and a more detailed assessment of technology transfer needs, which is important as a first step to comply with the nationally determined contribution (NDC) commitment of implementing a national technology transfer strategy by 2018.

C. Technical analysis of the information reported

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

16. For information reported on national GHG inventories, the technical analysis also focused on the consistency of the methods used for preparing those inventories with the appropriate methods developed by the Intergovernmental Panel on Climate Change (IPCC) and referred to in the UNFCCC reporting guidelines on BURs.

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

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

18. As per the scope defined in paragraph 2 of the UNFCCC reporting guidelines on BURs, the BUR should provide an update to the information contained in the most recently submitted national communications, including, among other things, information on national circumstances and institutional arrangements relevant to the preparation of national communications on a continuous basis. In 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.

19. In accordance with decision 17/CP.8, annex, paragraph 3, Chile reported in its second BUR the following information on national circumstances: territory and administrative divisions; geography and morphology; climate; land use; population; social development; education; science, technology and innovation; and an economic profile. The TTE noted that, among other indicators, the information provided on key development variables, including fast economic growth led by commodities export, fiscal policies, the main sources of power generation (hydraulic and thermal), the development of the agri-food industry as one of the foundations of the economic development and the stabilization of the population growth, helps to explain the Party's GHG inventory, mitigation actions, and finance, technology and capacity-building needs.

20. Chile reported on the existing institutional framework, which is intended to promote the coordination between multiple decision-making levels, partners, players and sectors in environment matters focused on climate change. The BUR included information on various pieces of legislation that are the basis for the institutional structure. The role of the various ministries, such as Ministry of Foreign Affairs, Ministry of Energy and Ministry of Agriculture, concerning climate change issues was also presented, including their role in leading the efforts in compliance with international commitments and development of national policy. The Climate Change Department (DCC) in the Ministry of Environment oversees the reporting aspects to the UNFCCC, which includes inventory and measurement of GHG, mitigation and low-carbon development strategy, vulnerability and adaptation,

education and awareness, negotiations and international involvement, and institutional arrangements. The BUR also includes information on DCC's role and involvement in other aspects of climate change.

21. The BUR also provides details on the institutional arrangements for the national GHG inventory system (see paragraph 37 below) and mitigation actions (see paragraph 45 below).

22. In addition, as encouraged in decision 17/CP.8, annex, paragraph 4, Chile provided a summary of relevant information regarding its national circumstances in tabular format, including socioeconomic and other key indicators and their sources. This information transparently describes the Party's national circumstances.

23. Chile reported in its BUR the existing institutional arrangements relevant to the preparation of its national communications and BURs on a continuous basis and identifies the coordinating institution and the other agencies involved in the process. The DCC was appointed for the necessary coordination of its second BUR. Information on the institutional framework including the different roles and responsibilities and the explanation of trends of key indicators transparently describe the national circumstances and the institutional arrangements for the preparation of reports on a continuous basis.

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

24. As indicated in table 1 in annex I, Chile reported information on its GHG inventory in its BUR, completely in accordance with paragraphs 3–10 of the UNFCCC reporting guidelines on BURs and paragraphs 8–24 of the "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.

25. Chile submitted its second BUR in 2016, and the GHG inventory reported is for the year 2013, which is consistent with the requirements for the reporting time frame.

26. Chile submitted a national inventory report (NIR) covering the period from 1990 to 2013, both in advance of the technical analysis week and in response to a request for technical clarifications from the TTE. The BUR includes references to the NIR 1990–2013 for further detailed information, and the TTE used this document to obtain responses to technical questions regarding the Chilean inventory.

27. GHG emissions and removals for the 2013 inventory were estimated using mainly a tier 1 methodology from the *2006 IPCC Guidelines for National Greenhouse Gas Inventories* (hereinafter referred to as the 2006 IPCC Guidelines).

28. With regard to the methodologies used, information was reported transparently in the NIR 1990–2013 (and summarized in the BUR), including the specific methodology and the tier levels and sources of AD used for each category and subcategory.

29. The total GHG emissions for 2013 reported in the BUR amounted to 70,054.4 kilotonnes of carbon dioxide equivalent (kt CO_2 eq) including forestry and other land use (FOLU) and 109,908.8 kt CO_2 eq excluding FOLU. The total GHG emissions for 2013 excluding FOLU have increased by 113.4 and 19.3 per cent since 1990 and 2010, respectively. The GHG emissions reported for 2013 include 46,268.6 kt CO_2, 562.9 kt methane (CH_4) and 35.4 kt nitrous oxide (N_2O), and emissions of fluorinated gases were reported as 681.4 kt hydrofluorocarbons, 5.4 kt perfluorocarbons and 308.7 kt SF_6.

30. Other emissions reported include 165,619.4 kt nitrogen oxide (NO_x), 1,359.2 kt carbon monoxide (CO) and 13,032.1 kt non-methane volatile organic compounds (NMVOCs). Finally, sulphur dioxide (SO_2) emissions amounted to 449.1 kt. Chile applied notation keys where numerical data were not provided, in particular "NE" (not estimated) for precursors gases NO_x, CO and NMVOCs from the industrial processes and product use (IPPU) and waste sectors. During the technical analysis, Chile clarified that precursors are not estimated for all sectors because they do not fall under the inventory team's responsibilities and another team within the Ministry of Environment prepares the estimations using a different methodology not applicable for GHG inventories.

31. Chile did not report information addressing the tables included in annex 3A.2 to the *IPCC Good Practice Guidance for Land Use, Land-Use Change and Forestry* (hereinafter referred to as the IPCC good practice guidance for LULUCF) or the sectoral reporting tables annexed to the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories* (hereinafter referred to as the Revised 1996 IPCC Guidelines) because the Party used the 2006 IPCC Guidelines for preparing its GHG inventory. However, comparable information was provided in both the second BUR and the NIR 1990–2013.

32. The share of emissions that different sectors contributed to the total GHG emissions excluding FOLU in 2013 is as follows: energy, 77.4 per cent; IPPU, 6 per cent; agriculture, 12.5 per cent; and waste, 4.1 per cent.

33. GHG emissions in 2013 from the energy sector amounted to 85,075.4 kt CO_2 eq. The key categories were fuel combustion activities and fugitive emissions from fuels.

34. Industrial process emissions amounted to 6,619.4 kt CO_2 eq. The key categories were: mineral (cement and lime), metal production (iron and steel), chemical (nitric acid and methanol) and product uses as substitutes for ozone-depleting substances (refrigeration and air conditioning).

35. For the AFOLU sector, Chile reported GHG emissions and removals for 1990–2013, with net removals for 2013 of 26,119.2 kt CO_2 eq. For the agriculture subsector, Chile reported GHG emissions of 13,735.2 kt CO_2 eq. with N_2O from managed soils (synthetic nitrogen fertilizers), CH_4 from enteric fermentation (dairy cows, other cattle and sheep) and manure management (swine) being identified as key categories and the most relevant emission sources in the subsector. Chile used EFs from the 2006 IPCC Guidelines and some country-specific EFs (e.g. for the estimation of CH_4 emissions for cattle under the subcategory enteric fermentation). The burning of savannahs was not considered, given that it does not occur in the country.

36. The net removals from the FOLU subsector fluctuated between a minimum of 23,415.0 kt CO_2 eq in 1998 and a maximum of 46,878.8 kt CO_2 eq in 2001. Net removals reported for 2013 amounted to 39,854.4 kt CO_2 eq. Among land categories, forest land represented 99.9 per cent of the GHG removals and 95.3 per cent of the GHG emissions and removals in absolute terms. Chile reported above-ground and below-ground biomass for all subcategories and reported dead wood for forest land distributed between the O'Higgins Region and the Magallanes Region (74.0 per cent of the national total forest land). The Party reported in its NIR 1990–2013 that the methodologies AD and EF were used. The TTE also noted the inclusion of a new country-specific EF. The TTE commends Chile for the improvement plan developed and reported for each category.

37. For the waste sector, Chile reported emissions of 4,478.8 kt CO_2 eq, with CH_4 from solid waste disposal sites and from domestic wastewater handling being key categories.

38. Chile included in its second BUR, NIR 1990–2013 and third national communication an update of its first BUR, which addressed anthropogenic GHG emissions and removals for 2000 and 2006. The update was carried out for these years, and the inventory presented all years in the period 1990–2013 using the methodologies established in the 2006 IPCC Guidelines, thus generating a consistent 24-year time series. The previous national inventory was prepared using the Revised 1996 IPCC Guidelines, the IPCC *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories* and the IPCC good practice guidance for LULUCF. The TTE commends Chile for the use of the more recent 2006 IPCC Guidelines.

39. Chile described in its BUR the institutional framework for the preparation of its GHG inventory. The GHG Inventories Area of the DCC has been designing, implementing and coordinating the National Greenhouse Gas Inventory System of Chile since 2012. This also includes the institutional, legal and procedural steps for the biennial update of Chile's GHG inventory to ensure the sustainability of the preparation of GHG inventories in the country and the consistency of reporting. During the technical analysis, Chile elaborated on this information by explaining the role of different departments in the Ministry of Environment and the way in which the different chapters of the BUR are addressed by the

teams responsible, while recognizing that a more standard, legally supported structure would be desirable.

40. Chile reported a key category analysis that involved applying approaches 1 and 2 to the assessment of both the level of and the trend in emissions, which is provided in chapter II, table 5, of the BUR. CO_2 is the main gas in Chile's GHG inventory.

41. The energy sector is the largest contributing sector in terms of emissions and FOLU is the largest contributing sector in terms of removals. Chile reported information on CO_2 fuel combustion using both the sectoral and the reference approaches and explaining differences in the NIR 1990–2013. These differences are below 3 per cent and are due to assumptions in the final use and fuel transformation processes.

42. Information was reported as memo items on international aviation, marine bunker fuels and biomass burned for energy purposes.

43. Chile reported information on its use of global warming potential values consistent with those provided by the IPCC in its Second Assessment Report based on the effects of GHGs.

44. Chile reported information on the uncertainty assessment level of its national GHG inventory. The uncertainty analysis was based on the approach 1 (error propagation) for the period 1990–2013 and covered all source categories and all direct GHGs. The results obtained, as reported in the BUR, show that the level of the combined uncertainty for emissions is –43.8 per cent and +46.7 per cent for 2013. The TTE commends Chile for the detailed information provided in the BUR on the selected uncertainty values by source category and sector.

45. In paragraphs 32, 33, 34, 41 and 45 of the summary report on the technical analysis of the first BUR, the TTE had noted where transparency of reporting on equations, sectoral tables, SF_6 emissions, EFs in the agriculture sector and AD for forest fires in national and planted forests could be further enhanced. The TTE noted that Chile took into consideration these areas of improvement in chapter II of its second BUR and in the NIR 1990-2013, and commends the Party for enhancing the transparency of the information reported.

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

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

47. The information reported provides a clear and comprehensive overview of Chile's mitigation actions and their effects, including its national context. Chile frames its national mitigation planning and actions in the context of the national emission reduction target of a 20 per cent reduction from a business-as-usual scenario by 2020 and the new National Action Plan for Climate Change 2017–2022 (PANCC II). Chile's NDC was submitted in September 2015 to the UNFCCC secretariat, presenting its contribution to reduce its CO_2 emissions per gross domestic product unit by 30 per cent below its 2007 levels by 2030. The LULUCF sector was separated from its NDC because of the high annual variability of emissions and removals from the sector and because this is less dependent on the trajectory of economic growth. The BUR reports estimated emission reductions of 63.3 Mt CO_2 eq for the NAMAs registered in the NAMA Registry.

48. Chile reported in its BUR a summary of its mitigation actions in tabular format, consistent with decision 2/CP.17, annex III, paragraph 11. Chapter III, tables 3–10, of Chile's BUR include the names of mitigation actions and groups of actions, as well as progress indicators for most mitigation actions. These mitigation actions relate to:

(a) Energy, responding to the institutional, policy and regulatory measure to move towards a more efficient use of energy. A summary of the measures that have been established for the energy sector that might have an impact on the GHG mitigation are presented in a tabular format. In addition, the 17 measures of Chile's energy agenda, which

have been evaluated for their potential impact on emission reductions, are made available and presented in the BUR;

(b) Transport, with action on public and private transportation to reduce GHG emissions, among other things, taking into account that emissions from this sector account for a significant share of the total GHG emissions for the country;

(c) Forestry, with actions related to the implementation of the National Strategy for Climate Change and Vegetation Resources (ENCCRV). The aim of the ENCCRV is to facilitate the establishment of a legal, technical, operational and financial platform to regulate and promote the conservation, recovery and rational use of vegetation resources, with an aim to contribute to the mitigation of and adaptation to climate change;

(d) Waste, with actions related to improving the integral management of waste, reducing final disposal in illegal facilities and improving sanitary requirements, treating sewage and liquating industrial waste and the respective sludge generated and incinerating hospital waste and N_2O emissions from human excreta;

(e) Urban development, which includes actions on sustainable construction and urbanism. Chile has established the National Policy of Urban Development. This policy includes various guidelines and objectives to mitigate GHG emissions.

49. Annex III of the BUR contains specific additional details on 21 mitigation actions related to sectoral coverage, as elaborated in paragraph 46 above, which includes estimation of the GHG emission reductions, methodologies and assumptions. The TTE commends Chile for its improvement on the reporting of information since its first BUR. The additional information presented in the second BUR allows for a clearer understanding of Chile's mitigation actions.

50. Chile reported on six sectoral NAMAs in energy, transport and infrastructure, LULUCF, cross-cutting, waste and agriculture/forestry with different levels of maturity and available information. Of these, five are currently registered in the NAMA Registry of the UNFCCC. Chile also presents (in table 11) a summary of the Chilean NAMAs registered in the NAMA Registry, including an update of the NAMA on carbon capture in soils. In annex IV of the BUR, Chile provides updated information from its first BUR on the implementation of mitigation actions for four of the NAMAs in the NAMA Registry. Chile provides GHG emission reduction estimates for some NAMAs and identifies a need to continue to improve its ability to assess the impacts of all measures and to calculate their impact as a contribution to the country's reduction targets. The TTE acknowledges the improvement on the information provided since the first BUR.

51. Chile has designed the HuellaChile (carbon footprint) programme as a link between the public and the private sectors to promote the implementation of mitigation actions in the private sector and collect information on the private sector efforts to mitigate GHG emissions (a carbon footprint tool is accessible to registered organizations). Although participation is not mandatory, more than 60 organizations had registered by mid-2016.

52. Chile provided clear information on its involvement in international market mechanisms as a Party to the Kyoto Protocol. The information presented in the BUR highlights Chile's participation in the clean development mechanism (CDM). Chile has registered 102 projects since 2003. Among them, 77 registered and validated CDM projects correspond to new forms of energy that have contributed 4,024 MW of installed capacity to the country. Regarding certified emission reductions (CERs) issued, 41 registered projects have already generated 23.5 million CERs, representing 1.4 per cent of the CERs issued in the world and 10.7 per cent of the CERs in Latin America, which positions Chile as sixth in the list of countries with the most CERs issued in the world and third among countries in Latin America.

53. The Chilean government enacted in 2014 a Tax Reform Act that included, for the first time in the country, the introduction of three green taxes. The first applies to the urban performance and NO_x emissions of light vehicles, and the second applies to fixed sources and taxes SO_2, NO_x and PM emissions into the atmosphere. It is expected that these taxes will have important, but indirect, co-benefits in reducing GHG emissions. The third is a

direct tax on CO_2 emissions at USD 5 per tonne. The possible introduction of a system of emissions trading is being evaluated too.

54. Chile reported information consistent with the voluntary general guidelines for domestic MRV of domestically supported NAMAs contained in decision 21/CP.19. Chile has in place a domestic MRV process related to mitigation actions and their effects, including "Guidelines for a Generic MRV Framework for NAMAs", which explains how the impacts of emissions will be measured, reported and verified. Although developed for NAMAs, these guidelines can be used for any type of action related to the mitigation of GHG emissions. During 2016, the Ministry of Environment's Climate Change Department, through the Low Emission Capacity-Building project, developed a study to define basic accounting rules for mitigation actions in Chile and to preliminarily design the contents of a possible centralized MRV platform. The TTE commends Chile for its efforts.

55. In paragraph 53 of the summary report on the technical analysis of the first BUR, the TTE noted where transparency of reporting on the planned and proposed mitigation actions could be enhanced. The TTE noted that Chile took into consideration the recommendations for the second BUR and commends the Party for enhancing the transparency of the information reported.

4. Cross-cutting domestic measurement, reporting and verification

56. As indicated in table 2 in annex I, Chile reported in its BUR, in accordance with paragraph 13 of the UNFCCC reporting guidelines on BURs, a description of its domestic MRV arrangements. As Chile's MRV system is based on mitigation, specific information is submitted in the BUR under the mitigation section. During the exchange with the TTE, Chile explained that it foresees an expansion of the scope of the MRV system to include support.

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

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

58. Chile, in the national circumstances section of its BUR, identified that the development of the country's institutional structure and capacity-building on climate change issues has shown substantial progress in recent years, but it is still possible to identify needs, gaps and barriers, with the main needs that cut across all areas being the need to generate appropriate institutions to facilitate the development of actions on climate change in the country and the need for a funding strategy which is consistent with the requirements that are generated during the process.

59. During the reporting period (1 June 2014 to 30 July 2016), the donor countries and institutions approved a total of USD 22,150,625 for Chile to carry out national climate agenda activities. The projects carried out and under way to strengthen climate change actions and policies with international financial support include Mitigation Options for Addressing Climate Change, Low Emission Capacity-Building – Chile, the Partnership for Market Readiness, and activities funded by the Carbon Partnership Fund.

60. Regarding financial resources channelled to private-sector projects, the financial flows for the projects amount to USD 217,700,000. This category includes financial flows (loans) from development bank institutions and institutions and funds focused on investment in energy projects. The support received in the area of capacity-building and technical assistance has come from national and international sources through projects, workshops, studies and specific programmes, which have had a positive impact on increasing the technical capacity in the country. Chile has also received support for the development of national communications training activities, mainly directed to government officials in Chile. With regard to technology transfer, the support has focused on energy efficiency, electricity and heat generation, and promotion of solar energy.

61. Chile has received significant financial support and diverse types of support from developed countries and partners, and in recent years it has earmarked domestic funds to co-finance actions to address climate change locally. The total amount of co-financing channelled through the International Cooperation Agency of Chile for the 2014-2016 period reached USD 20,370,000. On the other hand, in the context of developing a strategy for climate financing (NDC commitment), the Chilean Government is implementing a methodology for defining and assessing public resources earmarked for climate change actions. The TTE commends Chile for the information provided.

62. The TTE noted that Chile did not include information on the status of financial resources received, particularly if these resources are granted, committed, already disbursed or in progress. In this regard, Chile explained that public agencies reported to the Ministry of the Environment those initiatives being implemented in the period 2014–2016 that were supported by external financial resources (grants). Agencies reported the amount of funding linked to each initiative. However, some agencies faced difficulties to differentiate the amount of resources disbursed in the period versus the total amount of resources committed to the project. Thus, the information provided in the report does not reflect the exact amount of resources disbursed in the 2014–2016 period, because it includes information on committed but also disbursed resources. Nevertheless, this is the best information on received resources that it was possible to collect. This and other methodological difficulties have been noted and will be considered in future reporting in order to improve the clarity and accuracy of the information provided. The TTE noted that the inclusion of this information in the next BUR would further enhance the transparency of the reporting.

63. Information on technology needs, which are nationally determined, is provided in the BUR, although further analysis of additional needs, gaps and barriers is planned. As explained by Chile during the technical analysis, the NDC includes the commitment of continuing with a technological transfer strategy by 2018. The new PANCC II (to be launched in the second half of 2017) contains some activities aiming to comply with this goal. The TTE acknowledges the Party for gathering information on the needs, gaps and barriers and for its plans to continue with further analysis regarding technology needs assessment to help to implement the strategy.

D. Identification of capacity-building needs

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

(a) Development of an improved methodology for collecting and consolidating information on financial resources received, in order to be able to differentiate the amount of resources disbursed in the period versus the total amount of resources committed to the project, among other required methodologies;

(b) Enhance the estimation of GHG emissions from the waste sector;

(c) Increase and promote scientific research on the development of country-specific emission factors, especially for the energy sector.

(d) Strengthen the institutional arrangements (roles and responsibilities) of the different units involved in the preparation of the GHG inventory;

(e) Enhance the institutional arrangement to have a better interaction with all the institutions that have information on the methodologies and assumptions that are used to track progress of mitigation actions and their effects for the BUR report;

(f) Strengthen the capacity to quantify the actual and expected GHG impact of mitigation actions and their effects;

(g) Generate capacities on mitigation actions involving other ministries and institutions for the BUR elaboration;

(h) Enhance the systematization of sectoral, public and private information gathering through the development of an active permanent system envisaged in the report.

65. The TTE noted that, in addition to those identified during the technical analysis, Chile reported in section IV of the BUR detailed and straightforward tables that cover topics such as reporting, mitigation actions, national GHG inventory, adaptation, and international negotiations. These tables list the gaps, barriers, needs and priorities for each topic.

III. Conclusions

66. The TTE conducted a technical analysis of the information reported in the second BUR of Chile in accordance with the UNFCCC reporting guidelines on BURs. The TTE concludes that the reported information is mostly consistent with the UNFCCC reporting guidelines contained in decision 2/CP.17, annex III on BURs and provides an overview of: national circumstances and institutional arrangements relevant to the preparation of national communications on a continuous basis; the national inventory of anthropogenic emissions by sources and removal by sinks of all GHGs not controlled by the Montreal Protocol, including an NIR 1990–2013; mitigation actions and their effects, including associated methodologies and assumptions; constraints and gaps, and related financial, technical and capacity-building needs, including a description of support needed and received; the level of support received to enable the preparation and submission of BURs; domestic MRV; and any other information relevant to the achievement of the objective of the Convention. The TTE concluded that the information analysed is completely transparent.

67. Chile reported information on the institutional arrangements relevant to the preparation of BURs. The report outlines the role of the DCC under the Ministry of Environment and the coordination involved with other key ministries, such as the Ministry of Foreign Affairs, Ministry of Energy and Ministry of Agriculture. Chile has also explained how the institutional framework for the national GHG inventory is prepared (see paragraph 39 above). The TTE commends Chile for the progress made and noted that the plans to improve the overall MRV system of GHG emissions and reductions, as outlined in its BUR, would contribute to achieving sustainable reporting to the secretariat.

68. In its second BUR, submitted in 2016, Chile reported information on its national GHG inventory for the years 1990–2013. This included GHG emissions and removals of CO_2, CH_4 and N_2O for all relevant sources and sinks, as well as fluorinated gases and the precursor gases for the energy and AFOLU sectors. During the technical analysis, Chile clarified to the TTE that the precursors gases in the IPPU and waste sectors were not provided because they were not estimated by the inventory sectoral experts, and the responsibilities assigned to the team in charge of the elaboration GHG inventory did not include precursors gases; for this reason, priority was given to the GHG estimations. The inventory was developed on the basis of the 2006 IPCC Guidelines, and the TTE commends Chile for its efforts to use the latest available guidelines for preparing its GHG inventory. The total GHG emissions for 2013 were reported, including and excluding forestry and land use, amounting to 70,054.4 and 109,908.8 kt CO_2 eq, respectively. Chile reported a key category analysis performed for both the level of emissions and the trend in emissions as well as the error propagation approach to estimate uncertainties.

69. Chile reported information on mitigation actions and their effects, in the context of the national emission reduction target of a 20 per cent reduction from a business-as-usual scenario by 2020 and in the new PANCC II. Chile presents updated information on four NAMAs, including an estimated emission reduction of 63.3 Mt CO_2 eq for the period of implementation of the NAMAs and detailed information on coverage (sector and gases), progress indicators, methodologies and assumptions for 21 mitigation actions; the mitigation actions reported are in the energy, public and private transportation, forestry, waste, housing and urban development sectors. Chile reported additional actions and data and provided more detailed and transparent information in the second BUR compared with the first BUR, particularly on assumptions, methodologies and quantitative estimates of GHG impacts of certain mitigation actions. The TTE commends the party for its efforts to continuously improve information collection and reporting on mitigation actions.

70. Chile reported information on key constraints, gaps and related needs. The BUR clearly identifies several needs related to the development of the national GHG inventory, mitigation and support. Chile has indicated one of the main needs is to create appropriate institutions to facilitate the development of actions on climate change in the country and a funding strategy to complement these actions. Information on support received and needed was also reported, which included both international and domestic funds. Technology needs that are nationally determined have been gathered and further analysis is planned. During the technical analysis, Chile provided additional information on key challenges and needs. Chile also reported the challenge of establishing a standardized and sustainable system for monitoring the financial support received.

71. The TTE, in consultation with Chile, identified 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.

Annex I

Extent of the information reported by Chile in its second biennial update report

Table 1
Identification of the extent to which the elements of information on greenhouse gases are included in the second biennial update report of Chile

Decision	*Provision of the reporting guidelines*	*Yes/ Partly/No/NA*	*Comments on the extent of the information provided*
Decision 2/CP.17, paragraph 41(g)	The first BUR shall cover, at a minimum, the inventory for the calendar year no more than four years prior to the date of the submission, or more recent years if information is available, and subsequent BURs shall cover a calendar year that does not precede the submission date by more than four years	Yes	Chile submitted its second BUR in November 2016; the GHG inventories reported are for 2011, 2012, 2013 and 2014
Decision 2/CP.17, annex III, paragraph 4	Non-Annex I Parties should use the methodologies established by the latest UNFCCC guidelines for the preparation of national communications from non-Annex I Parties approved by the COP or those determined by any future decision of the COP on this matter	Yes	Chile used the 2006 IPCC Guidelines
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 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:		

Decision	*Provision of the reporting guidelines*	*Yes/ Partly/No/NA*	*Comments on the extent of the information provided*
	(a) Tables included in annex 3A.2 to the IPCC good practice guidance for LULUCF	Yes	These tables were not reported because Chile applied 2006 IPCC Guidelines, but similar information was provided in both the second BUR and the NIR
	(b) The sectoral report tables annexed to the Revised 1996 IPCC Guidelines	Yes	These tables were not reported because Chile applied 2006 IPCC Guidelines, but similar information was provided in both the second BUR and the NIR
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	This information is consistently reported for the years 1990–2013
Decision 2/CP.17, annex III, paragraph 9	The inventory section of the BUR should consist of a national inventory report as a summary or as an update of the information contained in decision 17/CP.8, annex, chapter III (National greenhouse gas inventories), including:		
	(a) Table 1 (National greenhouse gas inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol and greenhouse gas precursors)	Yes	
	(b) Table 2 (National greenhouse gas inventory of anthropogenic emissions of HFCs, PFCs and SF_6)	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	Yes	
Decision 17/CP.8, annex, paragraph 14	Each non-Annex I Party shall, as appropriate and to the extent possible, provide in its national inventory, on a gas-by-gas basis and in units of mass, estimates		

Decision	*Provision of the reporting guidelines*	*Yes/ Partly/No/NA*	*Comments on the extent of the information provided*
	of anthropogenic emissions of:		
	(a) CO_2	Yes	
	(b) CH_4	Yes	
	(c) N_2O	Yes	
Decision 17/CP.8, annex, paragraph 15	Non-Annex I Parties are encouraged, as appropriate, to provide information on anthropogenic emissions by sources of:	Yes	
	(a) HFCs	Yes	
	(b) PFCs	Yes	
	(c) SF_6	Yes	
Decision 17/CP.8, annex, paragraph 16	Non-Annex I Parties are encouraged, as appropriate, to report on anthropogenic emission by sources of other GHGs, such as:		
	(a) CO	Partly	The Party reported on other gases including CO, but only for the energy sector and biomass burning in the AFOLU sector. These emissions are not estimated for the IPPU and waste sectors
	(b) NO_x	Partly	The Party reported on other gases including NO_x, but only for the energy sector and biomass burning in the AFOLU sector. These emissions are not estimated for the IPPU and waste sectors
	(c) NMVOCs	Partly	The Party reported on other gases, including NMVOCs, but only for the energy sector and biomass burning in the AFOLU sector. These emissions are not estimated for the IPPU and waste sectors
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	Partly	The Party reported on other gases including SO_x, but only for the energy sector. These emissions are not estimated for the IPPU and waste sectors
Decision 17/CP.8, annex, paragraph 18	Non-Annex I Parties are encouraged, to the extent possible, and if disaggregated data are available, to estimate and report CO_2 fuel combustion emissions using both the sectoral and the reference approach, and to explain any large differences between the two approaches	Yes	

Decision	*Provision of the reporting guidelines*	*Yes/ Partly/No/NA*	*Comments on the extent of the information provided*
Decision 17/CP.8, annex, paragraph 19	Non-Annex I Parties should, to the extent possible, and if disaggregated data are available, report emissions from international aviation and marine bunker fuels separately in their inventories		
	(a) International aviation	Yes	
	(b) Marine bunker fuels	Yes	
Decision 17/CP.8, annex, paragraph 20	Non-Annex I Parties wishing to report on aggregated GHG emissions and removals expressed in CO_2 eq should use the GWP provided by the IPCC in its Second Assessment Report based on the effects of GHGs over a 100-year time-horizon	Yes	
Decision 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	Chile used the 2006 IPCC Guidelines
	(b) Explanation of the sources of emission factors	Yes	Chile used the 2006 IPCC Guidelines
	(c) Explanation of the sources of activity data	Yes	Chile used the 2006 IPCC Guidelines
	(d) If non-Annex I Parties estimate anthropogenic emissions and removals from country-specific sources and/or sinks that are not part of the Revised 1996 IPCC Guidelines, they should explicitly describe:	NA	
	(i) Source and/or sink categories		
	(ii) Methodologies		
	(iii) Emission factors		
	(iv) Activity data		
	(e) Parties are encouraged to identify areas where data may be further improved	Yes	

Decision	*Provision of the reporting guidelines*	*Yes/ Partly/No/NA*	*Comments on the extent of the information provided*
	in future communications through capacity-building		
Decision 17/CP.8, annex, paragraph 22	Each non-Annex I Party is encouraged to use tables 1 and 2 of the guidelines annexed to decision 17/CP.8 in reporting its national GHG inventory, taking into account the provisions established in paragraphs 14–17. In preparing those tables, Parties should strive to present information which is as complete as possible. Where numerical data are not provided, Parties should use the notation keys as indicated	Yes	Notation keys were used
Decision 17/CP.8, annex, paragraph 24	Non-Annex I Parties are encouraged to provide information on the level of uncertainty associated with inventory data and their underlying assumptions, and to describe the methodologies used, if any, for estimating these uncertainties:		
	(a) Level of uncertainty associated with inventory data	Yes	
	(b) Underlying assumptions	Yes	
	(c) Methodologies used, if any, for estimating these uncertainties	Yes	

Note: The parts of the "UNFCCC biennial update reporting guidelines for Parties not included in Annex I to the Convention" 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. Further, as per paragraph 3 of those guidelines, Parties not included in Annex I to the Convention (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.

Abbreviations: AFOLU = agriculture, forestry and other land uses, BUR = biennial update report, COP = Conference of the Parties, GHG = greenhouse gas, GWP = global warming potential, 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*, IPPU = industrial processes and product use, NA = not applicable, NIR = national inventory report, 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*.

Table 2

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

Decision	*Provision of the reporting guidelines*	*Yes/ Partly/No*	*Comments on the extent of the information provided*
Decision 2/CP.17, annex III, paragraph 11	Non-Annex I Parties should provide information, in a tabular format, on actions to mitigate climate change, by addressing anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol	Yes	
Decision 2/CP.17, annex III,	For each mitigation action or group of mitigation actions, including, as appropriate, those listed in document FCCC/AWGLCA/2011/INF.1, developing		

Decision	*Provision of the reporting guidelines*	*Yes/ Partly/No*	*Comments on the extent of the information provided*
paragraph 12	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	
	(d) Information on the:		
	(i) Progress of implementation of the mitigation actions	Yes	
	(ii) Progress of implementation of the underlying steps taken or envisaged	Partly	The progress of implementation of the steps taken to date is provided. However, the steps envisaged are not clearly provided for all mitigation actions
	(iii) Results achieved, such as estimated outcomes (metrics depending on type of action) and estimated emission reductions, to the extent possible	Yes	
	(e) Information on international market mechanisms	Yes	
Decision 2/CP.17, annex III, paragraph 13	Parties should provide information on the description of domestic measurement, reporting and verification arrangements	Yes	

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

Table 3

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

Decision	*Provision of the reporting requirements*	*Yes/ Partly/No*	*Comments on the extent of the information provided*
Decision 2/CP.17, annex III, paragraph 14	Non-Annex I Parties should provide updated information on:		
	(a) Constraints and gaps	Yes	
	(b) Related financial, technical and capacity-building needs	Yes	
Decision 2/CP.17, annex III, paragraph	Non-Annex I Parties should provide:		

Decision	*Provision of the reporting requirements*	*Yes/ Partly/No*	*Comments on the extent of the information provided*
15			
	(a) Information on financial resources received	Partly	The information provided in the report does not reflect the exact amount of resources disbursed in the 2014–2016 period, because it includes information on both committed and disbursed resources. This and other methodological difficulties have been noted and will be considered in future reporting in order to improve the clarity and accuracy of the information provided
	(b) Information on technology transfer	Yes	
	(c) Information on capacity-building received	Yes	
	(d) Information on technical support received from the Global Environment Facility, Parties included in Annex II to the Convention and other developed country Parties, the Green Climate Fund and multilateral institutions for activities relating to climate change, including for the preparation of the current biennial update report	Yes	
Decision 2/CP.17, annex III, paragraph 16	With regard to the development and transfer of technology, non-Annex I Parties should provide information on:		
	(a) Technology needs, which are nationally determined	Partly	Although there are big efforts by the Party to identify and assess technology needs, Chile is in the way to do a deeper analysis by undertaking a more comprehensive technology needs assessment (to include prioritized technologies, characteristics on mitigation potential, investment costs and benefits, among other elements)
	(b) Technology support received	Yes	

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

Abbreviation: non-Annex I Parties = Parties not included in Annex I to the Convention.

Annex II

Documents and information used during the technical analysis

Reference documents

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

"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 Chile. Available at http://unfccc.int/8722.php.

First, second and third national communication of Chile. Available at http://unfccc.int/national_reports/non-annex_i_natcom/items/2979.php.

Intended nationally determined contribution of Chile towards the climate agreement of Paris 2015. Available at http://www4.unfccc.int/ndcregistry/Pages/Party.aspx?party=CHL.

National inventory report of Chile. Available at http://unfccc.int/national_reports/non-annex_i_natcom/reporting_on_climate_change/items/8722.php.