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Technical analysis of the third biennial update report of Chile submitted on 3 December 2018

Summary report by the team of technical experts

Summary

According to decision 2/CP.17, paragraph 41(a), Parties not included in Annex I to the Convention, consistently with their capabilities and the level of support provided for reporting, were to submit their first biennial update report by December 2014. Further, paragraph 41(f) of that decision states that Parties not included in Annex I to the Convention shall submit a biennial update report 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 biennial update report at their discretion. This summary report presents the results of the technical analysis of the third biennial update report 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.

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Contents

Abbreviations and acronyms

AD	activity data
AFOLU	agriculture, forestry and other land use
AR	Assessment Report of the Intergovernmental Panel on Climate Change
BUR	biennial update report
CDM	clean development mechanism
CH_4	methane
CO_2	carbon dioxide
CO_2 eq	carbon dioxide equivalent
EF	emission factor
F-gas	fluorinated gas
GDP	gross domestic product
GHG	greenhouse gas
GWP	global warming potential
HFC	hydrofluorocarbon
ICA	international consultation and analysis
IE	included elsewhere
IPCC	Intergovernmental Panel on Climate Change
IPCC good practice guidance	*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 other product use
LULUCF	land use, land-use change and forestry
MRV	measurement, reporting and verification
NA	not applicable
NAMA	nationally appropriate mitigation action
NAPCC	National Action Plan on Climate Change
NC	national communication
NCV	net calorific value
NDC	national determined contribution
NE	not estimated
NIR	national inventory report
NO	not occurring
non-Annex I Party	Party not included in Annex I to the Convention
NSCCVR	National Strategy on Climate Change and Vegetational Resources
N_2O	nitrous oxide
PFC	perfluorocarbon
QA/QC	quality assurance/quality control
REDD+	reducing emissions from deforestation; reducing emissions from forest degradation; conservation of forest carbon stocks; sustainable management of forests; and enhancement of forest carbon stocks (decision 1/CP.16, para. 70)
Revised 1996 IPCC Guidelines	*Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*
SF_6	sulfur hexafluoride
SNICHILE	Chile's national greenhouse gas inventory system
TTE	team of technical experts
UNFCCC guidelines for the preparation of NCs from non-Annex I Parties	"Guidelines for the preparation of national communications from Parties not included in Annex I to the Convention"
UNFCCC reporting guidelines on BURs	"UNFCCC biennial update reporting guidelines for Parties not included in Annex I to the Convention"
2006 IPCC Guidelines	*2006 IPCC Guidelines for National Greenhouse Gas Inventories*

I. Introduction and process overview

A. Introduction

1. The process of ICA consists of two steps: a technical analysis of the submitted BUR and a facilitative sharing of views under the Subsidiary Body for Implementation, resulting in a summary report and record, respectively.

2. According to decision 2/CP.17, paragraph 41(a), non-Annex I Parties, consistently with their capabilities and the level of support provided for reporting, were to submit their first BUR by December 2014. In addition, paragraph 41(f) of that decision states that non-Annex I Parties shall submit a BUR every two years, either as a summary of parts of their NC in the year in which the NC is submitted or as a stand-alone update report.

3. Further, according to paragraph 58(a) of the same decision, the first round of ICA is to commence for non-Annex I Parties within six months of the submission of the Parties' first BUR. 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. Decision 14/CP.19, paragraph 7, outlines that developing country Parties seeking to obtain and receive payments for results-based actions can 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. Decision 14/CP.19, paragraph 8, outlines that the submission of the technical annex is voluntary and in the context of results-based payments. As mandated by decision 14/CP.19, paragraphs 10–14, the technical annex submitted by Chile has been subject to technical analysis by two LULUCF experts as part of the technical analysis of the Party's BUR.

5. Chile submitted its second BUR on 21 April 2017, which was analysed by a TTE in the eighth round of technical analysis of BURs from non-Annex I Parties, conducted from 22 to 26 May 2017. After the publication of its summary report, Chile participated in the fifth workshop for the facilitative sharing of views, convened in Bonn on 4 May 2018.

6. This summary report presents the results of the technical analysis of the third 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. The technical report capturing the results of the technical analysis of the technical annex voluntarily submitted by Chile in the context of results-based payments in accordance with decision 14/CP.19, paragraphs 7 and 8, referred to in paragraph 4 above, is contained in document FCCC/SBI/ICA/2019/TATR.1/CHL.

B. Process overview

7. In accordance with the mandate referred to in paragraph 2 above, Chile submitted its third BUR on 3 December 2018 as a stand-alone update report. The submission was made within two years after the submission of the previous BUR.

8. The technical analysis of the BUR took place from 27 to 31 May 2019 in Bonn and was undertaken by the following TTE, drawn from the UNFCCC roster of experts on the basis of the criteria defined in decision 20/CP.19, annex, paragraphs 2–6: Laura Aranguren (Colombia), Liviu Gheorghe (Romania), Thelma Krug (Brazil), Maria Jose Lopez (Belgium), Juan Luis Martin Ortega (El Salvador), Mauro Meirelles de Oliveira Santos (Brazil), Koen E.L. Smekens (Belgium) and Alexander Valencia (Colombia). Ms. Lopez and Mr. Martin Ortega were the co-leads. The technical analysis was coordinated by Karen Ortega Marin and Javier Hanna Figueroa (secretariat).

9. During the technical analysis, in addition to the written exchange, through the secretariat, to provide technical clarifications on the information reported in the BUR, the

TTE and 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 third BUR, the TTE prepared and shared a draft summary report with Chile on 7 August 2019 for its review and comment. Chile, in turn, provided its feedback on the draft summary report on 28 August 2019.

10. The TTE responded to and incorporated Chile's comments referred to in paragraph 9 above and finalized the summary report in consultation with the Party on 5 September 2019.

II. Technical analysis of the biennial update report

A. Scope of the technical analysis

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

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

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

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

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

B. Extent of the information reported

13. The elements of information referred to in paragraph 11(a) above include the national GHG inventory report; information on mitigation actions, including a description of such actions, an analysis of their impacts and the associated methodologies and assumptions, and the progress made in their implementation; information on domestic MRV; and information on support needed and received.

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

15. The current TTE noted improvements in the reporting in the Party's third BUR compared with that in the second BUR. Information on GHG inventories, mitigation actions and their effects, and needs and support reported in the third BUR demonstrates that the Party has taken into consideration the areas for enhancing transparency noted by the previous TTE in the summary report on the technical analysis of the Party's second BUR.

[1] The consultation was conducted via videoconferencing.

C. Technical analysis of the information reported

16. The technical analysis referred to in paragraph 11(b) above aims to increase the transparency of mitigation actions and their effects, without engaging in a discussion on the appropriateness of those actions. Accordingly, the focus of the technical analysis was on the transparency of the information reported in the BUR.

17. For information reported on national GHG inventories, the technical analysis also focused on the consistency of the methods used for preparing those inventories with the appropriate methods developed by the IPCC and referred to in the UNFCCC reporting guidelines on BURs. Chile submitted an NIR along with its third BUR. As requested by the Party, a more in-depth technical analysis was conducted for the GHG information reported in both the BUR and the NIR.

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

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

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

20. In its third BUR, Chile provided an update on its national circumstances, including information on features of its geography, climate and economy that might affect its ability to deal with mitigating and adapting to climate change, as well as information regarding national circumstances and constraints on the specific needs and concerns arising from the adverse effects of climate change, as referred to in Article 4, paragraph 8, and, as appropriate, in Article 4, paragraphs 9 and 10, of the Convention.

21. In addition, Chile provided a summary of relevant information regarding its national circumstances in tabular format.

22. Chile transparently described in its BUR the existing institutional arrangements relevant to the preparation of its NCs and BURs on a continuous basis. The Party identified the coordinating institution and other agencies involved in the process. The description covers key aspects of the institutional arrangements, such as the legal status and roles and responsibilities of the overall coordinating entity, the involvement and roles of other institutions and experts, mechanisms for information and data exchange, provisions for public consultation and stakeholder engagement, and future improvement plans.

23. The national Climate Change Office, which directly reports to Chile's Undersecretary for the Environment, was created in 2010. The Climate Change Office is responsible for, among other functions, generating and collecting technical and scientific information to support the design of policies as well as formulating plans and programmes in the field of climate change; and following up with and advising the Environment Ministry on the implementation of public policy and instruments related to climate change in the country. The Office also coordinates the BUR preparation and has developed a process for gathering information together with public institutions with environmental competence.

24. Chile reported information on its domestic MRV system and the initiatives for its development. The system has been designed at the national level and will cover eight main areas: carbon taxes; mitigation actions in the energy sector; development of local energy strategies with action plans in municipalities (energy districts); savings certificates for energy projects; renewable energy for self-supply projects; refurbishment of existing housing projects; measurement and monitoring of NSCCVR; and the MRV systems within the framework of the Pacific Alliance. The system has been established and will be further developed on the basis of existing MRV systems, processes and infrastructure in the country, rendering it cost-effective. Information on the institutions engaged in the MRV process was

reported in the BUR. Additionally, Chile outlined the steps of a proposed establishment of an enhanced MRV system, including strengthening institutional arrangements, defining mitigation accounting standards and creating a centralized registration platform of mitigation actions.

25. During the technical analysis, Chile clarified that all information related to climate change generated by public and private institutions and other stakeholders will be gathered on the MRV platform, which will be used by such institutions and civil society. The MRV system is expected to be advanced in this area through the Capacity-building Initiative for Transparency project in Chile. In the second quarter of 2019 Chile plans to develop a project to harmonize the various MRV systems and their links with the national GHG inventory system in the country.

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

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

27. Chile submitted its third BUR in 2018, and the GHG inventory reported is for 1990–2016. The TTE noted that Chile has made significant efforts to improve the inventory since its previous BUR and commends Chile for reporting the GHG inventory for 2016, which is a more recent year than the requirement for the reporting time frame of no more than four years prior to the date of submission.

28. In conjunction with its third BUR, Chile submitted a comprehensive NIR, which covered methods, AD and EFs used for all categories in the inventory (see para. 33 below). The NIR was submitted as a technical annex to the BUR, which referenced the relevant sections of the NIR, as appropriate. The NIR was made publicly available on the UNFCCC website.[2]

29. GHG emissions and removals reported in the BUR covered the 1990–2016 inventories and were estimated using mainly tier 1 methodologies from the 2006 IPCC Guidelines. The Party also provided summary tables with information on the reporting of national GHG inventories comparable to that required by the UNFCCC guidelines for the preparation of NCs from non-Annex I Parties. The TTE commends Chile for using the most up-to-date IPCC guidelines for reporting emissions and removals for all sectors.

30. With regard to the methodologies used, information was reported transparently in the NIR (and summarized in the BUR), including, for each category and subcategory, the equations and tier levels applied: while tier 1 methods were mainly used, tier 2 methods were used where country-specific methods and EFs could be applied (e.g. for non-CO_2 GHG emissions from transport, CH_4 emissions from enteric fermentation for cattle, and some LULUCF subcategories, such as CO_2 emissions from living biomass for forest land). General information on methodologies and tiers applied in each category was reported in NIR table 6 and also in each relevant category section of the BUR. The sources of AD and EFs used were transparently identified and reported in the NIR. Broadly, information was derived from censuses, cadastres, the private sector and statistical reports, but each category includes additional information on the respective data sources. Summary information on all these topics was provided in the BUR. The TTE commends the Party for providing information on methods, AD and EFs in the NIR in a transparent manner, which facilitated the technical analysis.

31. The BUR includes information on key category analysis (in chapter II, section 1.5, table 2), which was performed for both level and trend assessments using approach 1 (absolute values) and approach 2 (including uncertainty) according to the 2006 IPCC Guidelines. Chile clarified in the BUR that the key category estimates are subject to a detailed documentation process and an exhaustive QC process. However, the TTE noted that the BUR does not include the ranked results of the key category analysis; table 2 of the BUR lists the categories with the method applied (i.e. use of tier 1 or 2 for level or trend, identified for 1990 or 2016).

[2] https://unfccc.int/BURs.

The TTE noted that the Party reporting more detailed information on the results of the key category analysis (such as the ranking of the categories) could facilitate a better understanding of the information provided.

32. In comparison with the emissions and removals reported by Chile in its second BUR, GHG emissions for 2013 as reported in its third BUR show a difference of 53.7 per cent. This is due to the recalculations carried out, mainly in the LULUCF sector, particularly for the forest land category, for which new carbon sinks were included and improved AD and EFs were available, which had a noticeable impact on the general trend in emissions and removals (see p.84 of the BUR). The TTE commends Chile for providing clear and transparent information relating to recalculations, which was provided for each subcategory as well as in a specific section of the BUR. In addition, using GWP values from the AR4 instead of the previously used GWP values from the AR2 caused an increase in the estimated total national emissions and removals of 5.4 per cent including LULUCF and an increase of 2.2 per cent excluding LULUCF for 2016 (see para. 39 below).

33. The NIR, which is well structured, transparent, complete and uniform across all sectors and categories, also includes for each category information on the QA/QC procedures carried out, an explanation of whether recalculations were performed and why, as well as information on the effect of recalculations and, where appropriate, an improvement plan. The TTE commends Chile for its well-structured and comprehensive NIR and for reporting on QA/QC procedures and recalculations of emissions and removal estimates for each category. In addition, during the analysis Chile provided to the TTE a set of worksheets for the 1990–2016 GHG inventory, which contributed to the transparency and clarity of the reporting and facilitated the technical analysis.

34. Information on the Party's total GHG emissions by gas for 2016 is outlined in table 1 in Gg CO_2 eq. It shows an increase in emissions of 114.7 per cent since 1990 (from 52,015.93 to 111,677.50 Gg CO_2 eq) excluding LULUCF, and of 2,262.4 per cent (from 1,954.97 to 46,185.18 Gg CO_2 eq) including LULUCF. Information on PFCs was reported as "NA", "NE" and "NO" for 1990–2016, and information on HFCs was not provided for 1990–1998 because HFC use in Chile only started in 1999.

Table 1
Greenhouse gas emissions by gas of Chile for 2016

Gas	*GHG emissions (Gg CO_2 eq) including LULUCF*	*% change 1990–2016*	*GHG emissions (Gg CO_2 eq) excluding LULUCF*	*% change 1990–2016*
CO_2	22 186.39	–232.2	87 889.34	162.4
CH_4	14 064.26	8.0	13 937.69	8.1
N_2O	6 792.75	20.1	6 708.75	20.4
HFCs	2 869.46	NA	2 869.46	NA
PFCs	NE, NA, NO	NA	NE, NA, NO	NA
SF_6	272.29	344.2	272.29	344.2
Other	–	–	–	–
Total	**46 185.18**	**2 262.4**	**111 677.50**	**114.7**

35. Other emissions reported for 2016 include 300.79 Gg nitrogen oxides, 963.40 Gg carbon monoxide and 363.98 Gg non-methane volatile organic compounds. Chile also reported sulfur dioxide emissions, amounting to 357.35 Gg, and, for the first time, emissions of black carbon, amounting to 19.48 Gg for 2016. The main sources of black carbon emissions are biomass combustion in the energy sector, which shows a steady increasing trend, and incidental emissions from the LULUCF sector in years when major forest fires occurred. The TTE commends Chile for reporting on emissions of black carbon on a voluntary basis.

36. Chile applied notation keys in the tables in both the NIR and the BUR where numerical data were not provided and provided information in annex II to the BUR (completeness supplement) on the categories reported as "NE", which was mainly due to a

lack of AD, and those reported as "IE", which was due to a lack of disaggregated data. The use of notation keys was consistent with the UNFCCC guidelines for the preparation of NCs from non-Annex I Parties. Table A.2 in annex II to the BUR provides a list of the categories reported as "IE" and the corresponding category in which the emissions were included. Chile indicated that those categories and subcategories will be prioritized depending on a cost–benefit analysis in future GHG inventories in order to improve completeness. The TTE commends Chile for clearly reporting on the use of notation keys, especially on the use of "NE" and "IE", which enabled the TTE to better understand the information reported.

37. Chile reported in its BUR (table 3, p.60, and annex 3) comparable information addressing the tables included in annex 3A.2 to the IPCC good practice guidance for LULUCF and the sectoral reporting tables annexed to the Revised 1996 IPCC Guidelines.

38. The emissions from different sectors and their share in the total GHG emissions excluding LULUCF for 2016 as reported by the Party are reflected in table 2.

Table 2
Shares of greenhouse gas emissions by sector of Chile in 2016

Sector	*GHG emissions (Gg CO_2 eq)*	*Share[a] (%)*	*Change (%) 1990–2016*
Energy	87 135.57	78.0	158.7
IPPU	6 939.27	6.2	110.6
Agriculture	11 801.60	10.6	–2.2
LULUCF	–65 492.33	NA	30.8
Waste	5 801.07	5.2	95.4

[a] Share of national total emissions without LULUCF.

39. Chile reported information on its use of GWP values consistent with those provided in the AR4 based on the effects over a 100-year time-horizon of GHGs. The Party provided the GWP values used to calculate the CO_2 eq of its GHG inventory in table 1 on page 54 of the BUR. The Party also provided data on all emissions in units of mass, which facilitated the estimation of the total emissions in CO_2 eq using GWP values from the AR2. Chile further provided, in one of the underlying calculation sheets of the NIR, a comparison of its GHG emissions calculated using the GWP values from the AR4 with emissions using values from the AR2. For 2016, total GHG emissions including LULUCF amount to 46,185.2 Gg CO_2 eq using AR4 GWP values and 43,799.2 Gg CO_2 eq using AR2 GWP values. GHG emissions excluding LULUCF amount to 111,677.5 Gg CO_2 eq using AR4 GWP values and 109,308.4 Gg CO_2 eq using AR2 GWP values (see para. 32 above). The TTE noted that the Party providing this information in the BUR could facilitate a better understanding of the information.

40. The energy sector, which is the main emitting sector in Chile's GHG inventory, was responsible for 87,135.57 Gg CO_2 eq, or 78.0 per cent of the national total GHG emissions excluding LULUCF, in 2016. Chile reported emissions from stationary (energy industries, manufacturing industries and construction, and other sectors) and mobile (transport) combustion, as well as fugitive emissions from coal mining, and oil and natural gas systems. From 1990 to 2016, GHG emissions from this sector increased by 158.7 per cent. The main driver of this increase was the increased use of coal for power generation and liquid fuels in road transportation, in particular for heavy-duty vehicles and buses. The main source of AD for the energy sector is the national energy balance, supplemented by additional information (e.g. annual road vehicle stocks from the National Institute of Statistics). For almost all categories in the energy sector, Chile applied a tier 1 methodology with IPCC default EFs. A tier 2 method was applied for non-CO_2 emissions from road transportation only, using EFs per vehicle type. During the technical analysis, Chile clarified that determining country-specific EFs for fuels, on the basis of carbon content, as well as determining their NCV, may require additional capacity-building, and should be considered a high-priority activity for increasing the accuracy and quality of the estimates in its future GHG inventories.

41. When updated AD were available for a category, Chile performed a recalculation for the whole time series, including the use of GWP values from the AR4, and compared the

resulting estimates to those in the inventory of the previous BUR. During the technical analysis, the TTE identified some inconsistencies in the AD time series (e.g. for combustion emissions from iron and steel, other industries and mining), some differences between AD from the national energy balance and those used to estimate emissions (e.g. for stock of vehicles by fuel and by type of exhaust system), non-transparent AD (e.g. the AD on biomass consumed and blending of road transportation fuels) and some inconsistencies in emission trends between sectors (e.g. CO_2 emissions from combustion under iron and steel in the energy sector show a considerable decrease between 1990 and 2016, while the process emissions under the same category in the IPPU sector show a much more modest decrease). During the technical analysis, the Party clarified that it is aware of the AD inconsistencies, identified possible improvements to its inventory and explained that it faces human capacity constraints because the same team is responsible for simultaneously producing the annual GHG inventory and ensuring the implementation of improvements. The TTE noted that including an explanation of the inconsistencies found could facilitate a better understanding of the information reported, and prioritizing their correction is good practice and would also improve the accuracy of the estimates. After the technical analysis, Chile stated that in its next BUR it will implement the improvements to its GHG inventory, based on the findings of the TTE, and the improvements identified in a parallel inventory review process performed by external experts.

42. For the IPPU sector, Chile reported emissions for many categories, covering mineral industry (production of cement, lime and glass), chemical industry (production of nitric acid, methanol and ethylene), metal industry (production of iron and steel, and ferroalloys), non-energy products from fuels and solvent use (use of lubricants and waxes), product uses as substitutes for ozone-depleting substances (refrigeration and air conditioning, foam blowing agents, fire protection, aerosols and solvents) and other product manufacture and use (electrical equipment). Emissions from this sector amounted to 6,939.27 Gg CO_2 eq in 2016 and increased by 110.6 per cent from 1990 to 2016. In 2016, the major emissions source in the IPPU sector was the use of F-gases (41.4 per cent), followed by mineral industry (23.1 per cent). The main emissions sources in the IPPU sector have changed over the years: up until 2006 metal industry and chemical industry were the main emitters, but from 2006 the use of F-gases and mineral industry became the main contributors. Owing to international market competition for iron and steel, and a decrease in methanol production from natural gas, emissions from metal industry and chemical industry have decreased since 2006. F-gas emissions, which have shown a steadily increasing trend since 1999, are dominated by emissions from refrigeration and air conditioning (95.9 per cent in 2016).

43. Chile applied a tier 1 approach, using IPCC default EFs, for estimating emissions for most categories in the IPPU sector. A tier 2 approach was applied to estimate CO_2 emissions from iron and steel production. The TTE noted that for most categories in the IPPU sector the Party relies on AD directly obtained from industrial companies and the necessary QA/QC and data exchange procedures were not always transparently reported. The TTE noted that, where AD are obtained from private organizations, the Party reporting more transparently in the BUR the procedures and arrangements undertaken to collect and archive data and data exchange procedures could facilitate a better understanding of the information reported.

44. The TTE noted some comparability and transparency issues in relation to the iron and steel category because the 2006 IPCC Guidelines were not strictly followed: the guidelines state that Parties should report emissions from coke production in the energy sector and all other emissions in the category in the IPPU sector using carbon content balances, but Chile reported all emissions in the IPPU sector. The TTE noted that the Party providing in the BUR a complete carbon balance for the iron and steel industry, and identifying which carbon flows by fuel occur in and to and from which other category or sector, could facilitate a better understanding of the emission estimates reported. Providing and elaborating the estimates on the basis of such a balance would also improve the quality and accuracy of the emission estimates for iron and steel industry.

45. Chile reported that there is no domestic production of F-gases in the country; all F-gases are imported. The main source of AD on the consumption of F-gases is annual data from the customs services. Chile reported PFC emissions in table 5 (p.64) of its BUR as “NO”

and "NE", while in table 3 (p.60) it reported "NA", "NE" and "NO" owing to the lack of reliable AD received from the customs services.

46. Chile reported emission estimates for the AFOLU sector in separate chapters of the NIR (chapter 5 for agriculture and chapter 6 for LULUCF) and covered all the AFOLU categories from the 2006 IPCC Guidelines. The TTE noted that presenting the reporting separately for agriculture and LULUCF facilitated analysis of the total net GHG emissions of the country including and excluding LULUCF and understanding of the information reported.

47. GHG emissions from the agriculture sector decreased by 2.2 per cent from 1990 to 2016 and by 8.1 per cent from 1990 to 2013 in Chile. The decrease is mainly due to the decrease in the population of cattle and sheep since the 2000s, despite the sustained increase in the populations of pigs and poultry and an increase in the use of nitrogen fertilizers. Enteric fermentation and agricultural soils contributed 39.7 and 38.0 per cent, respectively, of the total sectoral emissions in 2016. Chile used tier 2 methods for estimating CH_4 emissions from cattle under enteric fermentation and from cattle and pigs under manure management, whereas tier 1 methods were used for estimating CH_4 and N_2O emissions for all the remaining subcategories. The TTE commends Chile for its efforts to use higher-tier methodologies and country-specific EFs, particularly for key categories, and for its plans to continuously improve the estimates by using tier 2 methods and country-specific EFs.

48. The cattle subcategory contributed 85.9 per cent of the CH_4 emissions from enteric fermentation, for which Chile applied a tier 2 estimation methodology with country-specific EFs. The number of animals has been updated since the previous BUR using data from the Office of Studies and Agricultural Policies under the Ministry of Agriculture instead of using data from FAOSTAT[3] and expert judgment as for previous inventories, thus increasing the accuracy of the AD. The revised data led to a reduction in the estimated cattle population of 12.1 and 7.3 per cent for 1990 and 2013, respectively, but to an increase in the estimated GHG emissions of 17.5 and 26.5 per cent for 1990 and 2013, respectively, owing to the higher EFs used compared with those used previously.

49. N_2O emissions from agricultural soils were responsible for 38.0 per cent of the GHG emissions from the agriculture sector in 2016. Direct and indirect N_2O emissions were responsible for 82.9 and 17.1 per cent, respectively, of the total N_2O emissions from agricultural soils. The main sources of direct N_2O emissions are urine and dung inputs to grazed soils (42.7 per cent) and inorganic fertilizers (30.3 per cent). For the first source, Chile applied a tier 1 method and default EFs from the 2006 IPCC Guidelines, whereas for the second a tier 2 method and country-specific EFs were applied for certain regions of the country (Región del Biobío, La Araucanía, Los Lagos and Los Ríos). Recalculations were performed for direct N_2O emissions from agricultural soils mainly because of the availability of new estimates of animal nitrogen excretion and improved data on agricultural residues and nitrogen fertilizers. In comparison with the estimates reported in the previous inventory for 1990 and 2013, 26.6 and 34.2 per cent decreases in emissions was estimated. In addition, Chile provided in the NIR an improvement plan, which includes the ongoing development of country-specific EFs for relevant sources of animal nitrogen. The TTE commends Chile for the improvements introduced in the latest BUR and for the efforts to apply higher tiers and country-specific EFs for estimating N_2O emissions from agricultural soils.

50. For the LULUCF sector, Chile reported GHG emissions and removals for 1990–2016. LULUCF has consistently been a sink, with removals increasing by 30.8 per cent from 1990 to 2016 (from –50,061.0 Gg CO_2 eq in 1990 to –65,492.3 Gg CO_2 eq in 2016), owing mainly to the increases in biomass in native forest and the area of forest plantations. Emissions from the LULUCF sector decreased by 2.2 per cent from 1990 to 2016 (from 12,071.4 Gg CO_2 eq in 1990 to 11,801.6 Gg CO_2 eq in 2016). Overall, net removals from the LULUCF sector have fluctuated between a minimum of –36,471.4 Gg CO_2 eq in 1998 (due mainly to emissions from forest fires) and a maximum of –72,933.4 Gg CO_2 eq in 2003. In 2016, LULUCF offset 58.6 per cent of the emissions from other sectors; net GHG removals from forest land were –69,646.6 Gg CO_2 eq; and the LULUCF sector was a net sink of –65,492.3 Gg CO_2 eq. Net GHG removals from forest land increased by 20.0 per cent from 1990 to

[3] http://www.fao.org/faostat/en/#home.

2016, owing mainly to the increase in the area of forest plantations (from 1,540,968 ha in 1990 to 3,240,593 ha in 2016) and the increase in native forest biomass in secondary forests, national parks, reserves and forests under management, the latter leading to an increase in removals from –1,229.0 Gg CO_2 eq in 1990 to –12,468.5 Gg CO_2 eq in 2016 due to legislation on native forest. Forest land remaining forest land contributed 62.2 per cent and land converted to forest land the remaining 37.8 per cent of the net removals in 2016. The reporting on LULUCF includes emissions and removals for the broad land remaining categories and the land in transition categories.

51. Chile provided in the BUR information on the methods used for land representation, which are based mainly on cadastre information provided by the National Forestry Corporation, which, by law, has to be updated at least every 10 years. In addition, satellite imagery and ground truthing information are used to classify land use and different vegetation formations. This methodology produces a land-use and land-cover map that reflects the land use and land cover determined by human action or natural events at the time of the image acquisition. The TTE noted that Chile did not provide in the BUR information on which approach from the 2006 IPCC Guidelines it used for land representation, or additional details on the type of satellite data used. During the technical analysis, Chile explained that it applied approach 3 (spatially explicit land use and land-use changes). The TTE noted that the Party providing the land-use category transition matrices since 1990 or for the period for which data are available could facilitate a better understanding of the information reported. The matrices are very helpful for identifying land uses and changes in land use, enabling a better understanding of the sector and its dynamics and the relationship with the net sectoral GHG removals.

52. In 2016, other land, forest land and grassland covered 38.9, 26.5 and 23.2 per cent of the national territory, respectively. The remaining 11.4 per cent was identified as wetlands and settlements. Despite the area of other land being the largest in the national territory, emissions from other land totalled only 0.7 per cent of the total emissions and removals from the LULUCF sector in 2016. Chile provided in its NIR and BUR the definition of each land-use category, indicating that the category other land includes bare soil, ice and areas where vegetation does not reach the minimum canopy cover of 25 per cent and that are not classified as grassland or cropland. During the technical analysis, Chile clarified that the value of 25 per cent was mistakenly included in the definition of other land in the NIR and BUR, and that the area considered to be without vegetation and included under this land-use category is that which does not reach 10 per cent canopy cover. Chile also clarified that, of the total area classified in the country as other land, 19 and 4 Mha correspond to deserts and glaciers, respectively. The TTE noted that disaggregating the area under other land into its components could facilitate understanding the information provided (see para. 53 below). Chile further clarified that efforts are ongoing to disaggregate the relevant information. In addition, Chile stated that the transparency of the information reported under land representation will be improved to ensure the clear allocation of land under other land that cannot be reported under any other land-use category.

53. For the LULUCF sector, Chile provided in the BUR the level of disaggregation (subcategories) used for the reporting; however it did not provide detailed information on the forest distribution in the country. The TTE noted that providing more detailed information on the forest distribution in the country, including by climate zone, given that the cadastre data allow for the separation of forest data into 12 forest types (NIR, p.388), and for the other land category, by disaggregating the information as far as feasible (e.g. into desert, ice, snow) in the NIR and BUR, in particular for unmanaged land and vegetation that does not reach the canopy cover threshold of 10 per cent, could facilitate a better understanding of the information reported.

54. Chile provided definitions for all land-use categories, but the TTE noted that the treatment of “matorrales” in the definition of forest land and grassland was not sufficiently detailed. During the technical analysis, Chile recognized that the definitions were not sufficiently detailed to show the difference between forest land and grassland for the specific case of “matorrales” and indicated that it will include more detailed and explicit definitions in the NIR of its next BUR.

55. GHG emission estimates for the waste sector were obtained using tier 1 methods and default EFs from the 2006 IPCC Guidelines. CH_4 emissions from solid waste disposal and from wastewater treatment and discharge are key categories, jointly accounting for 93.7 per cent of the sectoral GHG emissions in 2016. Since 1990, GHG emissions from the waste sector have increased by 95.4 per cent and they amounted to 5,801.07 Gg CO_2 eq in 2016. The main driver of the increase in emissions is the increase in the population and thus in waste generation, which was partially offset by the implementation of CH_4 recovery from waste disposal sites and of low-emitting wastewater treatment installations. The TTE noted that the AD used to estimate emissions from the waste sector originate from different sources (Environmental Assessment Service, Superintendence of Sanitary Services and Superintendence for Environment). This may have made implementation of the institutional, operational and QA/QC procedures for the sector challenging, leading to inconsistencies in the assumptions of shares of municipal solid waste sent to the different solid waste disposal sites, inconsistencies in the time series of wastewater production by industry, and the large unexplained inter-annual changes in the estimated CH_4 emissions from domestic wastewater treatment. After the technical analysis, Chile clarified that it will conduct related improvements based on the findings of the TTE for its next BUR.

56. In its national GHG inventory, Chile provided an update of the information in its second NC and second BUR concerning anthropogenic emissions and removals up to 2013. The update was carried out for 1990–2016 using methodologies contained in the 2006 IPCC Guidelines, thus generating a consistent 27-year time series. The previous national inventory was also prepared using the 2006 IPCC Guidelines.

57. In its BUR, Chile reported on the national institutional framework for the preparation of its GHG inventory. The Ministry of Environment is the governmental body responsible for climate change policies, through its Climate Change Office (established in April 2018 by Resolution No. 278) and is also responsible for Chile's GHG inventory through SNICHILE. SNICHILE covers the institutional, legal and procedural arrangements established for the biennial update of Chile's GHG inventories, which aim to ensure that the preparation of the national GHG inventories is sustainable and maintain the consistency and quality of the GHG data and results reported. The BUR and the GHG inventory were prepared with the support of the United Nations Development Programme. Chile's GHG inventory is the result of a collective and continuous effort by the Ministries of Agriculture, Energy and Environment, which have worked in coordination within the framework of SNICHILE and strengthen the preparation of the national inventory by engaging expert knowledge on different sectors from the participating ministries.

58. The BUR includes information on QA/QC procedures for all sectors. Chile mentioned in the BUR that, since 2015, SNICHILE has implemented its QA/QC system in accordance with the IPCC good practice guidance for the inventory preparation. Chile explained in the BUR that the national GHG inventory went through a brief QA process for the energy, agriculture and LULUCF sectors performed by an external expert who focused on reviewing the information reported (e.g. AD, EF and GHG trends). A more comprehensive review was carried out within the framework of the work of the Latin American Network on GHG Inventories, which took place in parallel with the technical analysis. The TTE commends Chile for providing information in accordance with the IPCC good practice guidance and for the initiatives implemented to continuously improve its GHG inventory and provide more transparent, consistent, accurate, comparable and complete reports, which is one of the lines of action of SNICHILE.

59. Chile reported information on CO_2 fuel combustion using both the sectoral and the reference approach. Chile included a comparative analysis of the results of the two approaches, with the average absolute difference being 1.7 per cent. The largest discrepancy occurred in 2013 (–6.8 per cent) and was caused by the redefinition of some fuel consumption as non-energy in the petroleum refining subcategory. The explanations provided in the BUR on the few large differences between the two approaches were brief. The TTE noted that the Party providing more detailed information in the BUR on any significant differences across the time series between the reference and the sectoral approach could facilitate a better understanding of the information reported.

60. Information was reported on GHG emissions from fossil fuel consumption in international aviation and navigation bunkers as memo items and such emissions were excluded from the national emission balance. In 2016, GHG emissions from international aviation bunkers accounted for 1,492.28 Gg CO_2 eq, an increase of 342.2 per cent since 1990 and 7.7 per cent since 2013, caused by the increased number of international flights and the increase in the number of people who can afford to fly abroad. In 2016, GHG emissions from international navigation bunkers accounted for 777.07 Gg CO_2 eq, an increase of 143.3 per cent since 1990 and a decrease of 13.4 per cent compared with 2013. The decrease is due to international market competition regarding bunker fuel selling prices, which has led to a decrease in fuel sales in Chile but an increase in sales in neighbouring countries.

61. Chile included CO_2 emissions from biomass combustion as a memo item in its GHG inventory, which amounted to 35,042.30 Gg CO_2 in 2016, an increase of 192.0 per cent since 1990.

62. Chile reported information on the uncertainty assessment (level) of its national GHG inventory. The uncertainty analysis was based on approach 1 (error propagation) of the 2006 IPCC Guidelines, whereby uncertainty for the individual categories and the national total, and the trends between the assessed year and the base year, is estimated, covering all categories and all direct GHGs. The results obtained, as reported in the BUR, indicate that the total combined uncertainty of the inventory expressed as a range is from –78.7 to +79.2 per cent (including LULUCF). The NIR contains detailed information on AD and EF uncertainty, as well as the results of the trend uncertainty assessment.

63. The TTE noted that the transparency of the information reported on GHG inventories could be enhanced by addressing the areas noted in paragraphs 31, 39, 41, 43, 44, 46, 51–54 and 59 above.

64. In paragraph 30 of the summary report on the technical analysis of Chile's second BUR, the previous TTE noted that the completeness of the reporting on precursors could be enhanced. The current TTE noted that Chile took into consideration this area for improvement by reporting more complete information on precursors in its third BUR and commends the Party for enhancing the transparency of the information reported.

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

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

66. The information reported provides a comprehensive overview of the Party's mitigation actions and their effects. In its BUR, which includes information on national context and changes thereto, Chile frames its national mitigation planning and actions in the context of its voluntary goal to reduce emissions by 20 per cent by 2020 below the 'business as usual' scenario projected from the 2007 level of emissions. Its NDC includes an unconditional commitment to reduce GHG emissions without LULUCF per GDP unit by 30 per cent below the 2007 level by 2030 and for the reforestation of 100,000 ha forest, as well as an additional commitment to reduce GHG emissions without LULUCF per GDP unit by up to 45 per cent, conditional on the availability of international funding. In line with these commitments, Chile states in its BUR that the recently adopted NAPCC 2017–2022 is an instrument that articulates the national policy on climate change and sets out the actions to be carried out by the various public institutions with expertise in relation to climate change during the five years of the plan. In addition to the description of NAPCC 2017–2022, Chile also provided in its BUR detailed information on sectoral policies and mitigation actions for the energy, transportation, agriculture, forestry and other land use, mining and waste sectors, as well as for building, urbanization and public infrastructure. Most of the mitigation actions reported are in the energy and transportation sectors. Furthermore, information was provided regarding mitigation actions carried out at the subnational level, mitigation initiatives performed in the private sector and NAMAs.

67. The Party reported information on its mitigation actions in tabular format in accordance with decision 2/CP.17, annex III, paragraph 11. Specifically, Chile included

summary tables in the relevant sections of chapter III of the BUR, complemented by more detailed information in annex 5 for sectoral mitigation actions, and annex 6 for NAMAs.

68. Consistently with decision 2/CP.17, annex III, paragraph 12(a), Chile clearly reported in annex 5 to the BUR on mitigation actions, including name, description, sectoral coverage, status of implementation (implemented and active, completed or planned) and quantitative goals, where possible, as well as additional information on the type of action (voluntary action, policy, project, regulatory measure, economic instrument, technological measure, fiscal measure or information measure) and year of implementation. This information was provided for all mitigation actions reported in tabular format. Information on progress indicators was provided together with descriptions of the progress of implementation of all mitigation actions. However, information on the coverage of gases was only provided for mitigation actions where an achieved or expected emission reduction was reported. Therefore, the TTE notes that providing this information could facilitate a better understanding of the information reported.

69. In its BUR, Chile reported detailed information on objectives and goals in tabular format for all its mitigation actions. Nevertheless, information on methodologies and assumptions, steps taken and envisaged to achieve the objectives of actions, progress of implementation and results achieved or expected was not provided for all of the mitigation actions reported. During the technical analysis, Chile clarified that this information was only provided for the mitigation actions for which there was enough quantitative information to develop emission reduction estimates. Chile also clarified that the limited human resources and heavy workload of the institutions responsible for the implementation of the mitigation actions hampered the process of obtaining this information. Furthermore, Chile informed the TTE that the accounting rules and centralized MRV platform to be developed (see para. 25 above) will enable the Party to improve the information available on mitigation actions. Chile also explained that, in future, special emphasis will be placed on designing indicators and monitoring the progress of the more relevant mitigation actions, by sector. The TTE noted that the inclusion of information on gases, methodologies, assumptions and emission reductions achieved or expected in future BURs could facilitate a better understanding of the information reported.

70. Mitigation actions in the energy sector of Chile are presented within the framework of two governance instruments: the National Energy Policy for 2050, which proposes a vision for the energy sector in 2050 and aims at ensuring the reliability, sustainability, inclusiveness and competitiveness of the sector; and the 2018–2022 Energy Pathway, which is focused on the sustainable development of the energy sector. Both instruments define goals in the short, medium and long term towards meeting the national objectives set out in the Party's NDC and NAPCC 2017–2022. The information reported for the energy sector covers 31 mitigation actions, mainly in the areas of renewable energy and energy efficiency. It includes a description of the objectives and progress of implementation of all mitigation actions in the energy sector and information on the results achieved or expected, methodologies and assumptions for five mitigation actions. The highest emission reduction is expected to result from the Greenhouse Gas Mitigation Plan for the Energy Sector, which was implemented in 2017 and is expected to lead to emission reductions of up to 24,140 kt CO_2 eq by 2030 compared with the 'business as usual' scenario.

71. Regarding the buildings, urbanization and public infrastructure sectors, Chile explained that its mitigation efforts are included in the 2017–2022 Plan for Adaptation and Mitigation of Infrastructure Services to Climate Change, the National Strategy for Sustainable Building, the Sustainable Building Standards for Houses and the Manual of Sustainable Urban Elements. The information reported covers 13 mitigation actions in two subsectors: public works, and housing and urban planning. For both subsectors, the mitigation actions focus mainly on improving energy efficiency.

72. The mining subsector is a strategic sector for Chile because the country is the world's largest copper producer, and copper mining represented 9 per cent of GDP in 2017. Mitigation efforts in the mining sector are included in the Greenhouse Gas Mitigation Plan for the Energy Sector and the energy efficiency measures that are the responsibility of the Chilean Agency for Energy Efficiency.

73. The TTE noted that information on the steps envisaged to achieve the objectives of actions was provided for only some actions in the energy sector. During the technical analysis, Chile explained that the required information was not provided exhaustively for all mitigation actions in the energy sector individually because many of them are encompassed in the Greenhouse Gas Mitigation Plan for the Energy Sector, for which Chile provided an external link[4] to more detailed information on the scope, methodology, assumptions and expected results. The TTE noted that providing more detailed information on the scope of all actions, clearly specifying which mitigation actions are integrated within others, as well as information on progress or steps envisaged to achieve the objectives, could facilitate a better understanding of the information reported.

74. Mitigation actions in the transport sector are also framed by the National Energy Policy for 2050, which, specifically, sets out goal to adopt the highest international standards on energy efficiency for different modes of transportation by 2050. Chile described the National Strategy for Electromobility, adopted in 2017, which sets out the main goals of boosting the number of electric vehicles in the national fleet and contributing to the objective of increasing by at least 10 times the number of electric vehicles being used in the country by 2020 (based on the number in 2017). The information reported covers 16 mitigation actions, focused mainly on public transportation, fiscal measures, labelling and certification. The information provided includes a description of the objectives of all the mitigation actions in the sector. Information on the progress of the actions and steps envisaged to achieve the goals was provided for all except two actions in the transport sector. During the technical analysis, Chile clarified that it has faced challenges in monitoring the actions in the transport sector. Specifically, it has not been able to translate the impact of the mitigation actions to the estimation of emissions for the national GHG inventory. The TTE noted that the inclusion of information on progress and steps envisaged for all mitigation actions in the sector could facilitate a better understanding of the information reported.

75. The mitigation actions in the AFOLU sector are set out in NSCCVR[5] and the 2015–2035 Forest Policy, whose aims are to increase ecosystem resilience while protecting and restoring forests through a set of actions that will contribute to reducing emissions and increasing removals. In addition, Chile highlighted in its BUR that the Adaptation Plan 2018–2022 for Biodiversity and Agriculture could contribute to mitigation because of its GHG emission reduction co-benefits. The information reported in tabular format on mitigation actions for the AFOLU sector is limited to NSCCVR, including a description of its objectives and goals, progress of implementation and steps taken to fulfil the strategy. During the technical analysis, Chile informed the TTE that NSCCVR encompasses 26 measures, and provided the TTE with additional information on the progress of each of them. The TTE noted that the transparency of the information reported in the BUR could be improved by the Party detailing, for each of the 26 measures under NSCCVR, name and description, coverage, status of implementation, quantitative goals, progress indicators, gases covered, emission reductions achieved or expected, methodologies, assumptions and steps envisaged to achieve their goals.

76. The information on mitigation actions for the waste sector refers to four actions focused on waste management and recycling. The information reported includes a description of objectives and goals, progress of implementation and steps taken to achieve the objectives for all mitigation actions in the sector. Information on steps envisaged to achieve the objectives of the actions was reported for all but one of the mitigation actions.

77. In addition to national sectoral mitigation actions, Chile included in its BUR information on actions developed at the subnational level, private sector actions and NAMAs. Chile described the overall efforts being made at the subnational level regarding climate change, specifically through the regional committees on climate change and the regional ministerial secretaries. Information in tabular format was provided on several regional mitigation initiatives. Regarding the private sector, Chile described how it fostered public–private agreements for mitigation by creating the Agency for Sustainability and Climate

[4] http://www.energia.gob.cl/sites/default/files/plan_de_mitigacion_energia.pdf.

[5] See https://www.enccrv-chile.cl/index.php/descargas/documentos-2017/90-documento-de-la-estrategia/file.

Change and the Huella Chile programme. Clean production agreements, which are agreements between the business sector and the government administration, are one of the main instruments of the Agency for Sustainability and Climate Change, aimed at cleaner production through goals and specific actions; while the Huella Chile programme has the objective of fostering the reporting and management of GHG emissions at the organizational level. In addition, Chile reported in tabular format an update of the information reported in the second BUR on private sector mitigation actions. The information was derived from public documents and interviews with representatives of associations and other private organizations.

78. The tabular information provided on subnational and private sector mitigation actions includes name, description and, in the case of private sector actions, sectoral coverage, as well as an update on the information provided in the second BUR. The TTE commends Chile for its efforts to gather and report information on subnational and private sector mitigation actions. The TTE noted that the information provided does not include all the elements referred to in decision 2/CP.17, annex III, paragraph 12. During the technical analysis, Chile clarified that the lack of specific knowledge among some sectors and institutions on what information needs to be collected is hampering the Party's efforts to obtain complete information on all mitigation actions. In addition, regarding the private sector, Chile mentioned that it is addressing its capacity-building needs through various initiatives, such as Huella Chile. The TTE noted that the Party providing complete information on all the elements referred to in decision 2/CP.17, annex II, paragraph 12, for the subnational and private sector mitigation actions reported could facilitate a better understanding of the information reported.

79. Chile provided a summary of its NAMAs in the BUR (chapter III, section 5). This was complemented by very detailed information in tabular format in annex 6 to the BUR, including, for the four NAMAs for which changes have been made since the second BUR, name, stage and progress of implementation, description, detailed information on scope (sector, category, gases covered, type of action, jurisdiction, etc.), objectives, steps taken and envisaged, quantitative goals, methodologies and assumptions, results achieved and other relevant information such as costs and co-benefits.

80. Chile presented complete statistics relating to its participation in international carbon markets, mainly in the CDM as a Party to the Kyoto Protocol and voluntary carbon markets. Chile provided information on 153 CDM projects approved by its designated national authority and 102 registered CDM projects, information on the total number of projects and sectors covered, and the quantity of certified emission reductions that have been issued for Chilean CDM projects. The Party also provided information in the BUR about other market-based initiatives that are being developed or planned. Since 2014, Chile has been involved in the Partnership for Market Readiness programme of the World Bank, which has enabled the country to strengthen its current carbon tax scheme, implement an integrated platform for MRV of mitigation actions in the energy sector and continue to assess schemes for carbon pricing instruments. Chile reported that the first national green tax regime was adopted in 2017 and described progress in defining the social price of carbon in the context of the evaluation of public investment projects.

81. Chile reported information on its domestic MRV arrangements in accordance with decision 2/CP.17, annex III, paragraph 13. The information reported indicates that Chile is in the process of developing different MRV initiatives relating to mitigation actions. Furthermore, Chile outlined the steps on its proposed pathway to establishing an enhanced MRV system, including strengthening institutional arrangements, defining mitigation accounting standards and creating a centralized platform for registering mitigation actions. During the technical analysis, Chile clarified that the types of MRV system that will be included in the centralized registration platform are the MRV of GHG emissions and different MRV systems for sectoral mitigation actions. Furthermore, Chile clarified that the centralized MRV platform will gather all information related to climate change generated by public and private institutions and other relevant stakeholders; the information will be used for different purposes by such institutions and civil society. Chile expects to make progress in this regard through its project with the Capacity-building Initiative for Transparency. Also, Chile plans

to develop a project for harmonizing the various MRV systems and their links with the national GHG inventory system in the near future.

82. The TTE noted that the transparency of the information reported on mitigation actions and their effects could be further enhanced by addressing the areas noted in paragraphs 68, 69, 73–75 and 78 above.

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

83. 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.

84. Chile reported information on constraints and gaps, and related financial, technical and capacity-building needs, in accordance with decision 2/CP.17, annex III, paragraph 14. In its BUR, Chile identified significant gaps in income equality and in health and education quality and coverage as constraints. The Party reported that its financial, technical and capacity-building needs are primarily in the areas of providing national reports on a regular basis, strengthening the information management system for mitigation actions, strengthening the coordination mechanisms between the different sectoral entities involved in implementing adaptation measures, strengthening technical capacity for the development of country-specific EFs for the GHG inventory and enhancing the capacity of the national negotiating team for participating international meetings. The information on technical needs was not reported in the BUR separately from capacity-building needs. During the technical analysis, Chile clarified that, because its definitions of technical and capacity-building needs had changed over time, it was difficult to identify such needs separately. The TTE noted that the Party reporting capacity-building needs separately from technical needs in the BUR could facilitate a better understanding of the information reported.

85. Chile reported information on financial resources, technology transfer, capacity-building and technical support received in accordance with decision 2/CP.17, annex III, paragraph 15. In its BUR, Chile reported that it received USD 852,000 from the Global Environment Facility, which included allocation for both its third BUR and its fourth NC, but had not received any further financial resources for its reporting. Chile indicated that it received USD 40.2 million from donor countries and institutions to perform activities on the national climate agenda. Chile reported that it has been involved in various international technical cooperation programmes in collaboration with the secretariat and other agencies; however, no specific information on those programmes was reported in the BUR. The TTE noted that the inclusion of more detailed information on the activities carried out could be useful for understanding the circumstances of Chile with regard to support needed and received.

86. Chile reported information regarding the development and transfer of technology, information on technology needs and technology support received, in accordance with decision 2/CP.17, annex III, paragraph 16. During the technical analysis, Chile clarified that a nationally determined technology needs assessment was the basis for the technology needs reported in the BUR. The TTE noted that the Party reporting on the technology needs assessment in its BUR could facilitate a better understanding of the information reported.

5. Any other information

87. Chile reported some information on adaptation actions that may lead to GHG emission reductions, without providing estimations of such reductions. Chile reported that in 2018 it started to develop adaptation plans for water resources and tourism, thus complementing the adaptation plans for the other nine areas it had defined as priorities.

D. Identification of capacity-building needs

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

(a) Strengthening the national capacity to estimate emissions for categories that are currently reported as "NE" in the national GHG inventory in accordance with national priorities;

(b) Strengthening the national capacity to collect data for the GHG inventory by means of different activities, such as workshops, to share experience and enhance awareness about the importance and relevance of good-quality data, including by involving international experts in different areas;

(c) Enhancing and formalizing working relationships with private companies to ensure continuous and automated data collection for the GHG inventory;

(d) Enhancing technology transfer, acquisition of equipment and training of personnel responsible to gather GHG inventory data (in particular for the agriculture sector);

(e) Increasing cooperation and exchange of experience with other countries and agencies regarding data collection and improving existing data, particularly for the agriculture sector (soil carbon and application of synthetic fertilizers);

(f) Involving international expertise in the following areas: determining country-specific EFs and NCVs of fuels consumed in the country, identifying the composition of solid waste and collecting data for estimating F-gas emissions;

(g) Enhancing the national capacity to monitor mitigation actions and link their estimated or observed impacts to estimating emissions for the national GHG inventory;

(h) Developing methodological guidelines on information to be reported in the BUR;

(i) Building capacity in the relevant ministries and institutions to provide the required information for BUR preparation and compilation;

(j) Training subnational institutions in collecting required data, monitoring mitigation actions and estimating impact in terms of GHG emission reduction;

(k) Training of national experts on the data requirements, characteristics and potential of a centralized MRV system;

(l) Updating the national technology needs assessment with the aim of meeting the requirements of the centralized MRV system (i.e. a technological platform that could collate all existing information on climate change) and the information management system to ensure the preparation of NCs and BURs on a continuous basis.

89. The TTE noted that, in addition to those identified during the technical analysis, Chile reported the following capacity-building needs in tables 1–8 of its BUR:

(a) Strengthening technical capacity for the development of country-specific EFs for the national GHG inventory;

(b) Strengthening capacity for providing national reports on a regular basis;

(c) Improving the information management system for mitigation actions;

(d) Strengthening the coordination mechanisms between the different sectoral entities involved in implementing adaptation measures;

(e) Enhancing the capacity of the national negotiating team that participates in international meetings.

90. In paragraph 64 of the summary report on the technical analysis of Chile's second BUR, the previous TTE, in consultation with Chile, identified capacity-building needs. In its third BUR, Chile reflected that some of those capacity-building needs remain, but some have been addressed. Work is ongoing to address all the previously identified capacity-building needs.

III. Conclusions

91. The TTE conducted a technical analysis of the information reported in the third BUR of Chile, submitted in 2018, in accordance with the UNFCCC reporting guidelines on BURs. The TTE concludes that the reported information is mostly consistent with the UNFCCC reporting guidelines on BURs and provides an overview of national circumstances and institutional arrangements relevant to the preparation of NCs on a continuous basis; the national inventory of anthropogenic emissions by sources and removal by sinks of all GHGs not controlled by the Montreal Protocol, including an NIR; mitigation actions and their effects, including associated methodologies and assumptions; constraints and gaps and related financial, technical and capacity-building needs, including a description of support needed and received; the level of support received to enable the preparation and submission of BURs; domestic MRV; and any other information relevant to the achievement of the objectives of the Convention. During the technical analysis, additional information was provided by Chile on specific capacity-building needs relating to the GHG inventory and the domestic MRV system. The TTE concluded that the information analysed is mostly transparent.

92. Chile reported information on the institutional arrangements relevant to the preparation of its BURs. The Party has taken significant steps to create institutional arrangements that allow for the sustainable preparation of its BURs, including organizational improvements and knowledge-sharing procedures to facilitate sectoral information transfer. The TTE commends Chile on its progress and noted that the planned improvement of the overall MRV system for GHG emissions, as outlined in the BUR, would contribute to achieving sustainable reporting.

93. In its third BUR, Chile reported information on its national GHG inventory for 1990–2016. This included GHG emissions and removals of CO_2, CH_4 and N_2O for all relevant sources and sinks as well as the precursor gases. Estimates of F-gases were provided, except for PFCs, which were reported as "NO" and "NE" owing to difficulties in obtaining reliable data, as clarified by the Party in its NIR. The inventory was developed on the basis of the 2006 IPCC Guidelines, mostly applying default EF values for individual categories. The total GHG emissions for 2016 were reported as 111,677.50 Gg CO_2 eq (excluding LULUCF) and 46,185.18 Gg CO_2 eq (including LULUCF). Key categories were identified, with CO_2 and the energy sector identified as the main gas and sector, respectively.

94. Chile reported information on mitigation actions and their effects. The information reported provided a comprehensive overview of the Party's mitigation actions and their effects, framed in the context of its voluntary goal to reduce emissions by 2020 by 20 per cent below the 'business as usual' scenario projected from the 2007 level of emissions and its NDC. Its NDC includes commitments to reduce GHG emissions per GDP unit by 30 per cent below the 2007 level by 2030 and for the reforestation of 100,000 ha forest. Chile also described the recently adopted NAPCC 2017–2022, an instrument that articulates the national policy on climate change and sets out the actions to be carried out by the various public institutions with expertise in climate change in the five years of the plan. In addition, Chile provided detailed information on sectoral policies and mitigation actions for the energy, transportation, agriculture, forestry and other land use, mining and waste sectors, as well as for building, urbanization and public infrastructure. Furthermore, information was provided on the actions established at the subnational level, private sector mitigation initiatives and NAMAs. Information on international market-based mechanisms and domestic MRV was also provided.

95. Chile reported information on key constraints, gaps and related needs. The BUR includes tables that present the identified needs related to the development of the national GHG inventory. During the technical analysis, Chile provided additional information on key challenges and needs, such as training on the data requirements, characteristics and potential of the centralized MRV system, and strengthening the national capacity to improve GHG inventory preparation and compilation. Information on support received and needed was reported, specifically on reporting, mitigation, adaptation, the national GHG inventory and international negotiation. Chile also reported the challenge of establishing a standardized and sustainable system for GHG inventory data.

96. The TTE, in consultation with Chile, identified 12 capacity-building needs listed in chapter II.D above and needs for capacity-building that aim to facilitate reporting in accordance with the UNFCCC reporting guidelines on BURs and participation in ICA in accordance with the ICA modalities and guidelines, taking into account Article 4, paragraph 3, of the Convention. Chile identified the following as high-priority capacity-building needs:

(a) Enhancing and formalizing working relationships with private companies to ensure continuous and automated data collection for the GHG inventory;

(b) Involving international expertise in the following areas: determining country-specific EFs and NCVs of fuels consumed in the country, identifying the composition of solid waste and collecting data for estimating F-gas emissions;

(c) Monitoring mitigation actions and linking their estimated or observed impact to estimating emissions for the national GHG inventory;

(d) Building the capacity of all relevant ministries and institutions to provide the information needed for the BUR;

(e) Training of national experts on the data requirements, characteristics and potential of the centralized MRV system.

97. Chile also identified the following as medium-priority capacity-building needs:

(a) Strengthening the national capacity to estimate emissions for the categories currently reported as "NE" in the GHG inventory;

(b) Strengthening the national capacity to collect data through activities such as workshops, sharing experience and enhancing awareness about the importance and relevance of good-quality data by, for example, involving international experts in their respective areas;

(c) Cooperating and exchanging experience with other countries and agencies regarding collecting data and improving existing data, particularly for the agriculture sector (soil carbon and application of synthetic fertilizers);

(d) Training subnational institutions in collecting required data, monitoring mitigation actions and estimating impact in terms of GHG emission reduction;

(e) Enhancing technology transfer, acquiring equipment and training personnel in its use (particularly in the agriculture sector) to improve GHG inventory data.

Annex I

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

Table 1
Identification of the extent to which the elements of information on greenhouse gases are included in the third 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 third BUR on 3 December 2018. The BUR contains a GHG inventory for 1990–2016.
Decision 2/CP.17, annex III, paragraph 4	Non-Annex I Parties should use the methodologies established in the latest UNFCCC guidelines for the preparation of NCs from non-Annex I Parties approved by the Conference of the Parties or those determined by any future decision of the Conference of the Parties on this matter.	Yes	Chile used the 2006 IPCC Guidelines.
Decision 2/CP.17, annex III, paragraph 5	The updates of the section on national inventories of anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol should contain updated data on activity levels based on the best information available using the Revised 1996 IPCC Guidelines, the IPCC good practice guidance and the IPCC good practice guidance for LULUCF; any change to the EF may be made in the subsequent full NC.	Yes	Chile submitted an NIR as a technical annex to its third BUR, with updated AD and EFs for all sectors.
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) The tables included in annex 3A.2 to the IPCC good practice guidance for LULUCF;	Yes	Chile applied the 2006 IPCC Guidelines, and comparable tables were provided in both the BUR and the NIR.
	(b) The sectoral report tables annexed to the Revised 1996 IPCC Guidelines.	Yes	Chile applied the 2006 IPCC Guidelines, and comparable tables were provided in both the 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 its previous NCs.	Yes	Chile provided an update of the previously reported inventory for the complete time series (1990–2013), including recalculations by category, and added data for 2014–2016.
Decision 2/CP.17, annex III, paragraph 8	Non-Annex I Parties that have previously reported on their national GHG inventories contained in their NCs are encouraged to submit summary information tables of inventories for previous submission years (e.g. for 1994 and 2000).	Yes	Chile reported information for 1990–2016.

Decision	*Provision of the reporting guidelines*	*Yes/partly/ no/NA*	*Comments on the extent of the information provided*
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:	Yes	The inventory chapter of the BUR (chapter II) contains summary information from the NIR, which was submitted as a technical annex to the third BUR.
	(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	Chile reported a single overview table on GHG emissions and removals for 2016 in its BUR (table 3, p.60). Annex 3 to the BUR presented separate tables covering CO_2, CH_4, N_2O and emissions of precursor gases for several years.
	(b) Table 2 (National greenhouse gas inventory of anthropogenic emissions of HFCs, PFCs and SF_6).	Yes	Chile reported a single overview table on GHG emissions and removals for 2016 in its third BUR (chapter II, table 3, p.60). Annex 3 to the BUR presented separate tables of F-gas estimates for several years.
Decision 2/CP.17, annex III, paragraph 10	Additional or supporting information, including sector-specific information, may be supplied in a technical annex.	Yes	The Party submitted an NIR as an annex to its third BUR and a REDD+ technical annex.
Decision 17/CP.8, annex, paragraph 12	Non-Annex I Parties are also encouraged, to the extent possible, to undertake any key source analysis as indicated in the IPCC good practice guidance to assist in developing inventories that better reflect their national circumstances.	Yes	In its BUR (table 8) Chile reported a synthesis of the key category analysis (level and trend) using both approaches 1 and 2 from the 2006 IPCC Guidelines.
Decision 17/CP.8, annex, paragraph 13	Non-Annex I Parties are encouraged to describe procedures and arrangements undertaken to collect and archive data for the preparation of national GHG inventories, as well as efforts to make this a continuous process, including information on the role of the institutions involved.	Yes	Information on the procedures and arrangements for collecting and archiving data is provided in the NIR as well as in the BUR (chapter I).
Decision 17/CP.8, annex, paragraph 14	Each non-Annex I Party shall, as appropriate and to the extent possible, provide in its national inventory, on a gas-by-gas basis and in units of mass, estimates of anthropogenic emissions of:		
	(a) CO_2;	Yes	Information was provided in table 3 in chapter II of the BUR.
	(b) CH_4;	Yes	Data were provided in kt CH_4 in the BUR (chapter II, table 3, and annex 3).
	(c) N_2O.	Yes	Data were provided in kt N_2O in the BUR (chapter II, table 3, and annex 3).
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	Information was provided in table 3 in chapter II of the BUR in CO_2 eq and in annex 3 in units of mass.
	(b) PFCs;	Partly	Information was provided in table 3 in chapter II of the BUR in CO_2 eq and in annex 3 using

Decision	*Provision of the reporting guidelines*	*Yes/partly/ no/NA*	*Comments on the extent of the information provided*
			the notation keys "NA", "NE" and "NO".
	(c) SF_6.	Yes	Information was provided in table 3 in chapter II of the BUR in CO_2 eq and in annex 3 in units of mass.
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) Carbon monoxide;	Yes	
	(b) Nitrogen oxides;	Yes	
	(c) Non-methane volatile organic compounds.	Yes	
Decision 17/CP.8, annex, paragraph 17	Other gases not controlled by the Montreal Protocol, such as sulfur oxides, and included in the Revised 1996 IPCC Guidelines may be included at the discretion of Parties.	Yes	Chile reported on other gases, such as sulfur dioxide and black carbon, in units of mass in table 3 in chapter II of the BUR.
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	The BUR contains estimates of CO_2 from fuel combustion using both the sectoral and the reference approach and a comparison between the approaches. Differences are briefly explained.
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 values provided in the AR2 based on the effects of GHGs over a 100-year time-horizon.	NA	Chile used the GWP values provided in the AR4.
Decision 17/CP.8, annex, paragraph 21	Non-Annex I Parties are encouraged to provide information on methodologies used in the estimation of anthropogenic emissions by sources and removals by sinks of GHGs not controlled by the Montreal Protocol, including a brief explanation of the sources of EFs and AD. If non-Annex I Parties estimate anthropogenic emissions and removals from country-specific sources and/or sinks that are not part of the Revised 1996 IPCC Guidelines, they should explicitly describe the source and/or sink categories, methodologies, EFs and AD used in their estimation of emissions, as appropriate. Parties are encouraged to identify areas where data may be further improved in future communications through capacity-building:		
	(a) Information on methodologies used in the estimation of anthropogenic emissions by sources and removals by sinks of GHGs not controlled by the Montreal Protocol;	Yes	Chile used the 2006 IPCC Guidelines. The BUR contains a summary of the methodologies used for estimating emissions.
	(b) Explanation of the sources of EFs;	Yes	Chile used the 2006 IPCC Guidelines. The BUR contains a summary of the EFs applied. The NIR specifies in detail which

Decision	*Provision of the reporting guidelines*	*Yes/partly/ no/NA*	*Comments on the extent of the information provided*
			EFs were used for which categories.
	(c) Explanation of the sources of AD;	Yes	Chile used the 2006 IPCC Guidelines. The BUR does not provide comprehensive information on sources of AD; full information on AD and sources of AD is provided in the NIR.
	(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:	Yes	
	(i) Source and/or sink categories;		For the first time Chile reported on country-specific sources of black carbon emissions as precursor gases.
	(ii) Methodologies;		
	(iii) EFs;		
	(iv) AD;		
	(e) Parties are encouraged to identify areas where data may be further improved in future communications through capacity-building.	Yes	
Decision 17/CP.8, annex, paragraph 22	Each non-Annex I Party is encouraged to use tables 1 and 2 of the guidelines annexed to decision 17/CP.8 in reporting its national GHG inventory, taking into account the provisions established in paragraphs 14–17. In preparing those tables, Parties should strive to present information that is as complete as possible. Where numerical data are not provided, Parties should use the notation keys as indicated.	Yes	Chile reported comparable information in table 3 in chapter II of the BUR on a gas-by-gas basis for CO_2, CH_4 and N_2O and in CO_2 eq for F-gases; and also reported in annex 3 to the BUR on a gas-by-gas basis and in units of mass.
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	The BUR contains a summary of information on the uncertainty of the estimates. The NIR contains information by category and on the overall uncertainty of the inventory.
	(b) Underlying assumptions;	Yes	Chile provided the assumptions associated with the uncertainty of the inventory data (AD and EFs) in the uncertainty calculation tables, by category.

Decision	*Provision of the reporting guidelines*	*Yes/partly/ no/NA*	*Comments on the extent of the information provided*
	(c) Methodologies used, if any, for estimating these uncertainties.	Yes	The BUR includes a section on uncertainty assessment, which indicates that uncertainties of EFs, AD and other estimation parameters were analysed using the error propagation method provided in the 2006 IPCC Guidelines.

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

Table 2
Identification of the extent to which the elements of information on mitigation actions are included in the third 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 tabular format, on actions to mitigate climate change by addressing anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol.	Yes	
Decision 2/CP.17, annex III, paragraph 12	For each mitigation action or group of mitigation actions, including, as appropriate, those listed in document FCCC/AWGLCA/2011/INF.1, developing country Parties shall provide the following information, to the extent possible:		
	(a) Name and description of the mitigation action, including information on the nature of the action, coverage (i.e. sectors and gases), quantitative goals and progress indicators;	Partly	Information on gases covered was not reported for most mitigation actions.
	(b) Information on:		
	(i) Methodologies;	Partly	Information on methodologies used was not reported for most mitigation actions.
	(ii) Assumptions;	Partly	Information on assumptions was not reported for most mitigation actions.
	(c) Information on:		
	(i) Objectives of the action;	Yes	
	(ii) Steps taken or envisaged to achieve that action;	Partly	Information on steps taken or envisaged was not reported for some mitigation actions.
	(d) Information on:		

Decision	*Provision of the reporting guidelines*	*Yes/partly/no*	*Comments on the extent of the information provided*
	(i) Progress of implementation of the mitigation actions;	Partly	Information on progress of implementation was not reported for some mitigation actions.
	(ii) Progress of implementation of the underlying steps taken or envisaged;	Partly	Information on progress of implementation of the underlying steps taken or envisaged was not reported for some mitigation actions.
	(iii) Results achieved, such as estimated outcomes (metrics depending on type of action) and estimated emission reductions, to the extent possible;	Partly	Information on estimated outcomes and emission reductions was not reported for most mitigation actions.
	(e) Information on international market mechanisms.	Yes	
Decision 2/CP.17, annex III, paragraph 13	Parties should provide information on domestic MRV arrangements.	Yes	

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

Table 3

Identification of the extent to which the elements of information on finance, technology and capacity-building needs and support received are included in the third 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.	Partly	Technical and capacity-building needs were not reported separately.
Decision 2/CP.17, annex III, paragraph 15	Non-Annex I Parties should provide:		
	(a) Information on financial resources received, technology transfer and capacity-building received;	Yes	
	(b) Information on technical support received from the Global Environment Facility, Parties included in Annex II to the Convention and other developed country Parties, the Green Climate Fund and multilateral institutions for activities relating to climate change, including for the preparation of the current BUR.	Yes	
Decision 2/CP.17, annex III, paragraph 16	With regard to the development and transfer of technology, non-Annex I Parties should provide information on:		
	(a) Nationally determined technology needs;	Partly	
	(b) Technology support received.	Yes	

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

Annex II

Documents and information used during the technical analysis

A. Reference documents

IPCC. 1997. *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*. JL Houghton, LG Meira Filho, B Lim, et al. (eds.). Paris: IPCC/Organisation for Economic Co-operation and Development/International Energy Agency. Available at https://www.ipcc-nggip.iges.or.jp/public/gl/invs1.html.

IPCC. 2000. *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*. J Penman, D Kruger, I Galbally, et al. (eds.). Hayama, Japan: IPCC/Organisation for Economic Co-operation and Development/International Energy Agency/Institute for Global Environmental Strategies.
Available at http://www.ipcc-nggip.iges.or.jp/public/gp/english/.

IPCC. 2003. *Good Practice Guidance for Land Use, Land-Use Change and Forestry*. J Penman, M Gytarsky, T Hiraishi, et al. (eds.). Hayama, Japan: Institute for Global Environmental Strategies.
Available at http://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf.html.

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NC3 of Chile.
Available at http://unfccc.int/national_reports/non-annex_i_natcom/items/2979.php.

Second BUR of Chile. Available at http://unfccc.int/8722.php.

Summary report on the technical analysis of the second BUR of Chile. Available at https://unfccc.int/ICA-cycle2.

B. Additional information provided by the Party

The following documents[1] were provided by the Party in response to requests for technical clarification during the technical analysis:

Consulta sobre estado de avance de las 26 medidas de la Estrategia Nacional de Cambio Climático y Recursos Vegetacionales. Personal communication.

Estrategia Nacional de Cambio Climático y Recursos Vegetacionales.

Plan de mitigación de gases de efecto invernadero para el sector energía. Diciembre de 2017, Ministerio de Energía de Chile.

Worksheets of the 1990–2016 greenhouse inventory of Chile.

[1] Reproduced as received from the Party.