



Report on the technical expert review of the first biennial transparency report of Chile*

Addendum

Summary

This addendum to the report on the technical expert review of the first biennial transparency report of Chile, conducted by a technical expert review team in accordance with the modalities, procedures and guidelines for the transparency framework for action and support referred to in Article 13 of the Paris Agreement, contains the results of the review of the consistency of the information submitted by the Party with those modalities, procedures and guidelines, and presents capacity-building needs identified by the Party and by the technical expert review team in consultation with the Party during the review. The review took place from 13 to 17 October 2025 in Santiago.

* In the symbol for this document, 2024 refers to the year in which the original biennial transparency report was submitted, not to the year of publication.



Abbreviations and acronyms

| | |
|---|--|
| 2006 IPCC Guidelines | <i>2006 IPCC Guidelines for National Greenhouse Gas Inventories</i> |
| 2019 Refinement to the 2006 IPCC Guidelines | <i>2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories</i> |
| AD | activity data |
| BTR | biennial transparency report |
| CaO | calcium oxide |
| CH ₄ | methane |
| CKD | cement kiln dust |
| CO ₂ | carbon dioxide |
| CRT | common reporting table |
| CTF | common tabular format |
| DOC | degradable organic carbon |
| DOC _f | fraction of degradable organic carbon that decomposes |
| EF | emission factor |
| Frac _{LEACH-(H)} | fraction of nitrogen input to managed soils that is lost through leaching and run-off |
| GHG | greenhouse gas |
| HFC | hydrofluorocarbon |
| IEF | implied emission factor |
| IPCC | Intergovernmental Panel on Climate Change |
| IPPU | industrial processes and product use |
| ITMO | internationally transferred mitigation outcome |
| k | methane generation rate |
| LULUCF | land use, land-use change and forestry |
| MCF | methane correction factor |
| MMS | manure management system(s) |
| MPGs | modalities, procedures and guidelines for the transparency framework for action and support referred to in Article 13 of the Paris Agreement |
| N | nitrogen |
| N ₂ O | nitrous oxide |
| NA | not applicable |
| NDC | nationally determined contribution |
| NE | not estimated |
| NID | national inventory document |
| NIR | national inventory report |
| NO | not occurring |
| OX | oxidation factor |
| QA/QC | quality assurance/quality control |
| TERT | technical expert review team |
| Wetlands Supplement | <i>2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands</i> |
| WM | ‘with measures’ |
| WOM | ‘without measures’ |

I. Areas of improvement¹ identified during the technical expert review of the Party's first biennial transparency report

1. Tables 1–14 present the results of the review of the consistency with the MPGs² of the information submitted by Chile in its BTR1. All recommendations and encouragements contained in the tables are for the next BTR or NIR, unless otherwise specified.

A. General reporting provisions

Table 1

Areas of improvement relating to general reporting provisions

| <i>ID#</i> | <i>Reporting requirement</i> | <i>Description of area of improvement with recommendation or encouragement</i> |
|------------|------------------------------|--|
| NA | NA | No areas of improvement identified |

B. Greenhouse gas emissions and removals

Table 2

Areas of improvement relating to general findings on greenhouse gas emissions and removals

| <i>ID#</i> | <i>Reporting requirement</i> | <i>Description of area of improvement with recommendation or encouragement</i> |
|------------|--|--|
| 2.G.1 | Specified in paragraph 19(d) of the MPGs Institutional arrangements | <p>Chile reported in its NID (chaps. 1.2–1.3) on its GHG inventory preparation process, including that sectoral technical teams have to approve the final submitted version of the NID. However, the overall process for officially considering and approving the inventory was not clear to the TERT.</p> <p>During the review, Chile explained that a regulation on the GHG inventory was adopted in December 2024, which, inter alia, clarifies the process for the official consideration and approval of the GHG inventory, including the steps taken to notify the Council of Ministers for Sustainability and Climate Change of an inventory for consideration and approval, the national Inter-ministerial Technical Team on Climate Change and the Scientific Advisory Committee on Climate Change and the publication of an abstract of the inventory in the Official Journal of the Republic of Chile.</p> <p>The TERT recommends that Chile include in its NID the details presented during the review on the process for the official consideration and approval of the GHG inventory.</p> |
| 2.G.2 | Specified in paragraphs 29 and 44 of the MPGs Uncertainty analysis | <p>In the NID (chaps. 1.6 and 11.1 and annex 11.1.1), Chile reported on the uncertainty analysis for the GHG inventory. However, only information for the latest reporting year (2022) and the trend uncertainty estimate for 1990–2022 was included, with no uncertainty estimates provided for the starting year (1990). However, paragraph 44 of the MPGs requires that the results of the uncertainty analysis, as well as trends, be reported at least for the starting year and latest reporting year of the inventory.</p> <p>During the review, Chile acknowledged that the results of the uncertainty analysis for the starting year of the GHG inventory were not included in the NID, but stated that they would be included in the next submission. The TERT and Chile also discussed the importance of reflecting changes over time in the uncertainty analysis and updating the reporting of the uncertainty analysis when methods are improved from one submission to the next (see also finding ID# 7.W.1 in table 7).</p> <p>The TERT recommends that Chile report the results of the uncertainty analysis for the starting year of the GHG inventory. The TERT encourages Chile to work on improving the information reported on the uncertainty estimates to better reflect changes over submissions.</p> |

¹ As referred to in paras. 7, 8, 146(d) and 162(d) of the MPGs, contained in the annex to decision 18/CMA.1.

² Decision 18/CMA.1, annex.

| <i>ID#</i> | <i>Reporting requirement</i> | <i>Description of area of improvement with recommendation or encouragement</i> |
|------------|--|---|
| 2.G.3 | Specified in paragraph 31 of the MPGs Notation keys | <p>The TERT noted that the use of notation keys in the CRTs was not correct in some cases. For example, “NO” was reported where “NA” or “NE” would have been more appropriate for some categories, including coal mining, abandoned coal mines, post-meter emissions and peatland remaining peatland.</p> <p>During the review, Chile explained that, since completing the CRTs is very demanding in terms of resources required, it attempted to apply an automatic process to fill empty cells with “NO”.</p> <p>The TERT recommends that Chile review the use of notation keys according to the definitions provided in paragraph 31 of the MPGs and use the appropriate keys, including in the case of the examples identified by the TERT during the review.</p> |
| 2.G.4 | Specified in paragraphs 34–35 and 46 of the MPGs QA/QC and verification | <p>Chapter 1.2 of the NID (p.5) provides a very brief description of Chile’s QA/QC procedures applied, stating that a QA/QC system has been in place since 2015. While there is information in the sectoral parts of the NID on QA/QC procedures, there are no details on the overall QA/QC plan, nor on any general QA activities.</p> <p>During the review, Chile explained that the overall plan containing general QC procedures is being developed. Chile also explained that some QA activities had taken place in the form of bilateral cooperation with other organizations.</p> <p>The TERT recommends that Chile provide complete information on its overall QA/QC plan in the NID, outlining the elements included in the plan and how it is implemented in practice. Furthermore, the TERT encourages Chile to describe implemented QA activities and any plans for implementing QA procedures in the future by having a basic expert peer review of its inventory conducted.</p> |
| 2.G.5 | Specified in paragraph 42 of the MPGs Key category analysis | <p>Chile did not report, either in NID section 1.5 or in the annexes, the individual and cumulative percentage contributions from key categories to totals, which is a mandatory requirement under the MPGs. The TERT noted that this requirement can be fulfilled by reporting in an annex to the NID the information on key categories as set out in tables 4.2–4.3 of the 2006 IPCC Guidelines (vol. 1, chap. 4), including and excluding LULUCF. The TERT noted that that these tables are also included in the suggested outline for the NID in annex V to decision 5/CMA.3.</p> <p>During the review, Chile presented information on the individual and cumulative percentage contributions of emissions and removals from key categories to totals.</p> <p>The TERT recommends that Chile report the individual and cumulative percentage contributions from key categories to totals in the NID.</p> |
| 2.G.6 | Specified in paragraph 52 of the MPGs Other | <p>Chile reported indirect N₂O emissions from sources other than those in the agriculture and LULUCF sectors as “NE” in CRT 6. The TERT noted that, since Chile reported nitrogen oxide emissions from sectors other than agriculture and LULUCF, it would also be possible to estimate indirect N₂O emissions using the guidance provided in the 2006 IPCC Guidelines (vol. 1, chap. 7).</p> <p>During the review, Chile stated that it will revisit its reporting approach for future submissions.</p> <p>The TERT encourages Chile to report indirect N₂O emissions from sources other than those in the agriculture and LULUCF sectors in CRT 6.</p> |

Table 3

Areas of improvement of the reporting on greenhouse gas emissions and removals – energy sector

| <i>ID#</i> | <i>Reporting requirement</i> | <i>Description of area of improvement with recommendation or encouragement</i> |
|------------|--|--|
| 3.E.1 | Specified in paragraphs 21 and 23 of the MPGs 1.A Fuel combustion – sectoral approach – gaseous fuels, liquid fuels and solid fuels – CO ₂ | <p>The Party moved from a tier 1 to a tier 2 approach for estimating emissions for multiple fuel combustion categories, which represents a significant improvement compared with the previous inventory submitted under the Convention. The Party developed and applied country-specific CO₂ EFs for several significant liquid fuels consumed in Chile, namely motor gasoline, diesel, aviation kerosene, fuel oil 6 and petroleum coke. The TERT noted that country-specific CO₂ EFs were also developed for coal consumption under category 1.A.1 energy industries. Further, the national improvement plan in NID chapter 3 explains that updates to CO₂ EFs for additional key fuels are being prioritized by the Party.</p> |

| ID# | Reporting requirement | Description of area of improvement with recommendation or encouragement |
|-------|---|--|
| 3.E.2 | Specified in paragraph 3 of the MPGs 1.A.1 Energy industries – CO ₂ | <p>However, the TERT noted that a higher-tier methodology was not used for estimating emissions for all key categories related to gaseous and solid fuel combustion and that the explanation in NID chapter 3 only partially satisfies the requirement in paragraph 23 of the MPGs, which states that, if unable to adopt a higher-tier methodology, Parties shall clearly document why their methodological choice was not in line with the corresponding decision tree of the 2006 IPCC Guidelines.</p> <p>The TERT recommends that the Party use an appropriate methodology from the 2006 IPCC Guidelines for estimating emissions from stationary combustion of gaseous fuels under categories 1.A.1 and 1.A.2 and of solid fuels under category 1.A.2. Where the Party is unable to apply the appropriate methodology following the decision tree from the 2006 IPCC Guidelines (vol. 2, chap. 2.3, figure 2.1), the TERT recommends that the Party document in its NID the reasons for using a tier 1 approach instead.</p> <p>Prior to the review, the TERT requested the Party to provide a brief explanation of how CO₂ emissions from flaring in the oil and gas sector are accounted for in the national energy balance. The TERT further sought to confirm whether the consumption of gaseous fuels reported under petroleum refining and natural gas production and processing in the national energy balance included volumes of flared gases. In response, Chile explained that the only company that reports flaring information is Empresa Nacional de Petróleo, the state-owned national oil company responsible for operating crude oil refineries in Chile. The Party highlighted that the company also extracts and distributes natural gas in certain regions of Chile and therefore reports data on flaring activities.</p> <p>The TERT noted that, without a procedure for reconciling gaseous fuel consumption data from the national energy balance with the estimated CO₂ emissions from flaring from petroleum refining or natural gas production and processing, it is possible that some double counting of emissions reported under stationary combustion under category 1.A.1 energy industries and subcategory 1.B.2.c venting and flaring (fugitive emissions) may have occurred. The TERT also noted that the Party applied a tier 1 method for estimating flaring emissions from the oil and gas sector and that the volumes reported by the national oil company were not used to calculate CO₂ emissions directly.</p> <p>The TERT encourages the Party to develop a procedure to ensure that estimates of emissions from combustion for gaseous fuels under category 1.A.1 do not double count CO₂ emissions reported under subcategory 1.B.2.c, and to describe the approach taken and its rationale for choosing the approach and include any supporting key references for the data and any assumptions used in setting the reconciliation procedures its NID.</p> |
| 3.E.3 | Specified in paragraph 26 of the MPGs 1.A.4.b Residential biomass – CO ₂ , CH ₄ and N ₂ O | <p>NID section 3.1.5.1 describes an improved approach, based on data provided by the Forestry Institute, to compiling AD in Chile's national energy balance for 2022 onward, resulting in improved estimates of residential biomass consumption. The TERT noted that this updated approach to compiling the AD in the 2022 edition of the national energy balance onward may have resulted in methodological inconsistencies across the time series.</p> <p>During the review, the Party indicated that work is under way to retroactively apply these improved estimates to previous editions of the national energy balance with a view to ensuring consistency and enhancing the overall quality of estimates across the time series. The Party further clarified that adjustments were made to residential biomass emissions for the years prior to 2022 in an effort to maintain a consistent time series. However, the TERT noted that any such adjustments are not documented clearly in the NID.</p> <p>The TERT encourages the Party to document transparently in its next NID any measures taken to ensure time-series consistency for estimates of emissions from residential consumption of biomass for combustion, including a brief explanation of how historical estimates and/or AD were adjusted to align with the approach used for the 2022 national energy balance. The TERT also encourages the Party to update the historical residential biomass consumption for combustion values reported in its national energy balance and to report the revised AD and GHG emissions in CRT 1.A(a)s4.</p> |

| <i>ID#</i> | <i>Reporting requirement</i> | <i>Description of area of improvement with recommendation or encouragement</i> |
|------------|---|---|
| 3.E.4 | Specified in paragraphs 31 and 47 of the MPGs 1.B.1.a.i.3 Abandoned underground mines – CH ₄ | <p>The Party highlighted in NID section 3.3.3.2 that coal mine closures have occurred in the country since the beginning of the time series. However, the TERT noted that emissions for subcategory 1.B.1.a.i.3 abandoned underground mines were reported in CRT 1.B.1 as “NO”. The TERT noted that CRT 9 lists subcategory 1.B.1.a.i.3, reporting that there is no information available for this category, which suggests that the Party might have intended to report the emissions as “NE”. The TERT also noted that collecting more information on abandoned underground mines is listed as a planned improvement in the NID.</p> <p>During the review, the Party clarified that it experienced issues with uploading data to the CRT Reporter tool and, in developing a solution for entering information into its CRTs, a programming error resulted in certain values being reported as “NO” that would have otherwise been reported as zero, “NA” or “NE”. The Party clarified that this issue likely had an impact on emissions reported for category 1.B.1.a.i underground mines and that it is working to resolve the issue prior to its next submission of CRTs. However, the Party did not indicate whether it intended to report emissions for subcategory 1.B.1.a.i.3 as “NE”.</p> <p>The TERT recommends that the Party estimate and report fugitive emissions for subcategory 1.B.1.a.i.3 or, if those estimates are not available, report those emissions as “NE” and provide information on the reasons for lack of completeness. If the Party considers that those emissions are insignificant, the TERT encourages the Party to derive a likely level of emissions for subcategory 1.B.1.a.i.3 to support their insignificance.</p> |
| 3.E.5 | Specified in paragraphs 21 and 23 of the MPGs 1.B.2.a Oil and 1.B.2.b Natural gas – CH ₄ | <p>The Party indicated in its NID (section 3.3.4.3) that emissions reported under categories 1.B.2.a oil and 1.B.2.b natural gas were estimated using a tier 1 approach. The TERT noted that the Party identified CH₄ emissions for categories 1.B.2.a oil and 1.B.2.b natural gas as key categories. The TERT noted that the NID does not explain why a higher-tier methodology for estimating CH₄ emissions for categories 1.B.2.a and 1.B.2.b was not applied, as required by paragraph 23 of the MPGs.</p> <p>The TERT recommends that the Party use an appropriate method from the 2006 IPCC Guidelines to estimate fugitive emissions from oil and natural gas or, if it is not possible to move from a tier 1 approach, document in the NID the reasons for not following the relevant decision tree from the 2006 IPCC Guidelines. When country-specific data can be obtained, the TERT encourages the Party to explore using a higher-tier methodology for estimating emissions for category 1.B.2.b.v natural gas distribution.</p> |
| 3.E.6 | Specified in paragraphs 30, 32 and 47 of the MPGs 1.B.2.a Oil and 1.B.2.b Natural gas – CO ₂ , CH ₄ and N ₂ O | <p>The TERT noted that AD and emissions for subcategories 1.B.2.a.iii.1 exploration (oil) and 1.B.2.b.i exploration (natural gas) were reported as “NO”. The TERT reviewed the list of activities included in Chile’s oil and natural gas fugitive emission estimates, and requested clarification on whether emissions from well drilling, well testing or well servicing activities were included.</p> <p>During the review, the Party clarified that emissions from well drilling, well testing and well servicing activities were not included in the estimates for the oil and natural gas category. The Party also indicated that there is no available information to confirm whether such activities occurred in Chile during the time series. The TERT noted that Chile did produce crude oil and natural gas during the time series, as reported in its national energy balance. The TERT also noted that the 2006 IPCC Guidelines (vol. 2, chap. 4) provide default EFs for calculating fugitive emissions from well drilling, well testing and well servicing activities and suggested AD for producing a complete time series of AD and emissions.</p> <p>The TERT recommends that the Party estimate emissions for subcategories 1.B.2.a.iii.1 and 1.B.2.b.i in accordance with the 2006 IPCC Guidelines (vol. 2, chap. 4) or justify reporting emissions as “NE” if they are found to be insignificant in line with paragraph 32 of the MPGs.</p> |
| 3.E.7 | Specified in paragraphs 24 and 31 of the MPGs and paragraph 28 of decision 5/CMA.3 | <p>The Party reported “NO” for CH₄ emissions for subcategory 1.B.2.b.vi.1 gas post-meter in CRT 1.B.2. However, the TERT noted that the Party reported fugitive CH₄ emissions for subcategory 1.B.2.b.v natural gas distribution using quantitative values, which indicates that fugitive CH₄ emissions from post-meter sources beyond the end of the distribution network potentially also occur.</p> |

| <i>ID#</i> | <i>Reporting requirement</i> | <i>Description of area of improvement with recommendation or encouragement</i> |
|--|------------------------------|---|
| 1.B.2.b.vi.1 1.B.2.b Natural gas – CH ₄ | Natural gas | <p>During the review, the Party provided further information on the distribution of natural gas in Chile, as well as a description of its primary end users. The Party stated that approximately 20 per cent of households in Chile are connected to a natural gas distribution network.</p> <p>Tier 1 EFs and default methods for estimating emissions from post-meter sources are provided in the 2019 Refinement to the 2006 IPCC Guidelines (vol. 2, chap. 4). The TERT acknowledged that, while it is not mandatory to report post-meter fugitive emissions according to the MPGs, these likely do occur in Chile, and, as such, reporting emissions for subcategory 1.B.2.b.vi.1 is an area for potential improvement of the completeness of the GHG inventory.</p> <p>The TERT encourages the Party to estimate and report fugitive CH₄ emissions for subcategory 1.B.2.b.vi.1 using the default method presented in the 2019 Refinement to the 2006 IPCC Guidelines. If those estimates are not available, the TERT encourages the Party to report emissions as “NE” for the subcategory and provide appropriate justification in CRT 9.</p> |

Table 4

Areas of improvement of the reporting on greenhouse gas emissions and removals – industrial processes and product use sector

| <i>ID#</i> | <i>Reporting requirement</i> | <i>Description of area of improvement with recommendation or encouragement</i> |
|------------|--|---|
| 4.I.1 | Specified in paragraphs 20 and 22 of the MPGs 2.A.1 Cement production – CO ₂ | <p>The Party reported in its NID (section 4.2.2.1) that it applied a tier 2 method for estimating CO₂ emissions from cement production. For CKD, as direct company data could not be collected in time for the inventory, the Party applied a constant value of 0.2 per cent (factor 1.002) for the 1990–2020 time series. This value was determined after consultation with industry representatives, who concluded that the value should be between zero and 0.67 per cent.</p> <p>However, the Party did not explain in the NID how the 0.2 per cent value was determined from the 0–0.67 per cent range. In addition, the 2006 IPCC Guidelines (vol. 3, chap. 2) indicate that CO₂ from lost CKD typically ranges from about 1.5 per cent for modern plants to about 20 per cent for plants with high CKD losses, with the default value of 0.2 per cent selected by Chile falling outside this range.</p> <p>During the review, the Party explained that the emission estimates for cement production contain errors resulting from the incorrect placement of the decimal point in the CKD value. The Party clarified that a value of 2 per cent for CKD should have been applied instead of 0.2 per cent. Therefore, the CO₂ estimates for category 2.A.1 were underestimated. The 2 per cent value corresponds to the 2006 IPCC Guidelines default value and was communicated by national cement operators as the appropriate value for use in the GHG inventory.</p> <p>The TERT recommends that the Party consult with national cement operators to obtain plant-specific CKD values and apply these in the estimation of CO₂ emissions from cement production.</p> |
| 4.I.2 | Specified in paragraphs 21, 23 and 39 of the MPGs 2.A.1 Cement production – CO ₂ | <p>Chile reported in its NID (section 4.2.2.3) that the CaO content of clinker has fluctuated between 65.0 and 67.0 per cent since 1990, while the CO₂ IEF, calculated excluding the CKD correction factor, is constant throughout the time series (0.51 t CO₂/t clinker). However, it is unclear from the NID which CaO content was applied for each year or whether company data were used. Based on the reported range of CaO content, the EF without CKD should have varied between 0.5101 and 0.52587 t CO₂/t clinker over the years of the time series.</p> <p>The TERT noted that the CO₂ IEFs in CRT 2(I).A–H indicate that a constant CaO content of 65 per cent was applied across the entire time series. The NID does not explain how plant-specific data were used in estimating annual emissions or justify the use of 65 per cent for all years.</p> <p>During the review, the Party explained that the default tier 1 EF for clinker from the 2006 IPCC Guidelines was applied. This EF was considered appropriate by the inventory team following consultations with cement plant operators, who confirmed that it adequately represents the CaO content.</p> |

| ID# | Reporting requirement | Description of area of improvement with recommendation or encouragement |
|-------|--|--|
| 4.I.3 | Specified in paragraphs 21, 40 and 47 of the MPGs 2.A.4 Other process uses of carbonates – CO ₂ | <p>The TERT recommends that the Party revise the description of the method for estimating CO₂ emissions from cement production in the NID to clearly indicate that a tier 1 EF was applied and to provide justification for why a tier 2 EF was not developed on the basis of plant-specific data. The TERT encourages the Party to utilize plant-specific data on the CaO content of clinker to develop a tier 2 CO₂ EF that varies throughout the time series to reflect annual fluctuations in the reported CaO content.</p> <p>The Party reported in its NID (section 4.2.2) that estimates of CO₂ emissions from other process uses of carbonates include estimates of emissions from pulp and paper and sugar industries, but acknowledged the potential omission of emissions from desulfurization of exhaust gases in power plants and smelters.</p> <p>The TERT noted that, beyond these sources, the 2006 IPCC Guidelines identify additional potential CO₂-emitting uses of carbonates, such as in metallurgy (as fluxes or slagging agents), ceramics production, soda ash use outside the glass industry and non-metallurgical magnesia production from magnesite. The TERT observed that the NID provides no information for this category on the completeness of these sources.</p> <p>During the review, the Party explained that a carbonate balance approach was applied to estimate AD for the mineral industry sectors other than cement, lime and glass production. Through this approach, the Party believes that all relevant emissions were covered in the national GHG inventory, although there is some level of uncertainty regarding which specific activity these uses of carbonates and associated emissions were included under.</p> <p>The TERT recommends that the Party continue its efforts to map the use of carbonates in processes other than cement, lime and glass production in order to improve both the completeness of CO₂ emission estimates for category 2.A.4 and the allocation of associated CO₂ emissions to specific subcategories.</p> |
| 4.I.4 | Specified in paragraphs 35 and 49 of the MPGs 2.F.1 Refrigeration and air conditioning (2.F.1.e Mobile air conditioning and 2.F.1.f Stationary air conditioning) – HFCs | <p>The Party reported in its NID (tables 11–9) that only one refrigerant, HFC-134a, is used in mobile air conditioning. However, CTF table 2(II).B-Hs2 provides data and estimates of emissions for additional refrigerants: HFC-32, HFC-125 and HFC-143a.</p> <p>During the review, the Party explained that this discrepancy was due to an error: the refrigerant and emission data for mobile air conditioning were mistakenly reported under stationary air conditioning, and vice versa. The Party indicated that the CTF tables will be corrected accordingly for the next submission.</p> <p>The TERT recommends that the Party correct the misallocation of emissions between mobile and stationary air conditioning and strengthen its QC procedures to prevent such errors when transferring data from working files to CTF tables.</p> |
| 4.I.5 | Specified in paragraphs 21, 39 and 49 of the MPGs 2.F.1 Refrigeration and air conditioning – HFCs | <p>The Party reported in its NID (tables 4–45) the EFs applied for emissions during initial installation (manufacturing). However, the corresponding values (product manufacturing factors) reported in CRT 2(II).B-Hs2 are inconsistent with those in the NID. In addition, the IEFs reported in the CRTs were considerably higher, falling outside the range recommended by the 2006 IPCC Guidelines (vol. 3, chap. 7, table 7.9); specifically, comparing the factors reported in NID table 4.45 with the IEF values in CRT 2(II).B-Hs2, the TERT noted differences for the following subcategories:</p> <ul style="list-style-type: none"> • Domestic refrigeration: 1 per cent in the NID, compared with annual IEFs ranging from 28 to 1,114 per cent for different gases in the CRT; • Commercial refrigeration: 3 per cent in the NID, compared with 6–30 per cent in the CRT; • Industrial refrigeration: 3 per cent in the NID, compared with 29–38 per cent in the CRT; • Transport refrigeration: 1 per cent in the NID, compared with 22–400 per cent in the CRT; • Mobile air conditioning: 0.5 per cent in the NID, compared with 5–16 per cent in the CRT; • Stationary air conditioning: 1 per cent in the NID, compared with 18 per cent in the CRT. |

| <i>ID#</i> | <i>Reporting requirement</i> | <i>Description of area of improvement with recommendation or encouragement</i> |
|------------|---|---|
| | | <p>Furthermore, the TERT noted that, since domestic refrigerators and mobile air-conditioning equipment are imported and not produced domestically, the associated emissions with initial installation (manufacturing) should be reported as “NO”.</p> <p>During the review, the Party confirmed that emissions from domestic refrigerators and mobile air-conditioning equipment should be reported as “NO” since the refrigerators and equipment are imported already equipped with HFCs. The Party also confirmed that the issues identified in CRT 2(II).B-Hs2 related to manufacturing emissions were also visible in its working calculation files; however, the Party stated that it requires additional time to further verify the underlying data and calculation steps for all subcategories in order to fully trace the potential errors and make the necessary corrections.</p> <p>The TERT recommends that the Party further assess its estimation of emissions from the manufacturing of refrigeration and air-conditioning equipment (filled into new equipment) to ensure consistency with the 2006 IPCC Guidelines. The TERT also recommends that the Party continue improving the transparency and accuracy of its methodology for reporting those emissions under this category as its verification of the underlying data and calculations progresses.</p> |
| 4.I.6 | <p>Specified in paragraphs 21, 39 and 49 of the MPGs</p> <p>2.F.1 Refrigeration and air conditioning – HFCs</p> | <p>The Party reported in its NID (table 4-43) that the assumed lifetime of domestic refrigeration systems is 15 years. Accordingly, under the tier 2 method applied, systems introduced in 2007 would be expected to be fully decommissioned in 2022. The TERT noted that, by comparing the data in CRT 2(II).B-Hs2 for 2007 and 2022, it appears that the total amount of refrigerant filled into newly manufactured products in 2007 remains as a bank until decommissioning, and is fully emitted during disposal. The TERT also noted that this method may have led to two potential sources of inaccuracy. Firstly, according to table 7.9 in the 2006 IPCC Guidelines (vol. 3, chap. 7), end-of-life emissions should be estimated by considering a percentage of the initial charge remaining in the product. For domestic refrigeration, this factor ranges between 0 and 80 per cent; however, the Party applied a factor of 100 per cent in its calculations, which is outside the IPCC range. This may have led to an overestimation of emissions. Secondly, when estimating end-of-life emissions, the Party considered only the amount of refrigerant filled into domestically manufactured products, without accounting for refrigerant contained in imported equipment. This may lead to an underestimation of emissions. The TERT observed a similar issue for other subcategories, such as mobile air conditioning, for which the 2006 IPCC Guidelines (vol. 3, chap. 7, table 7.9) propose a factor of up to 50 per cent, indicating an even larger deviation from the recommended range.</p> <p>During the review, the Party confirmed that the issues identified in CRT 2(II).B-Hs2 related to disposal emissions are also visible in its working calculation files. However, the Party requires additional time to further verify the underlying data and calculation steps in order to fully trace the potential errors and make the necessary corrections.</p> <p>The TERT recommends that the Party further assess its estimation of emissions from the disposal of refrigeration and air-conditioning equipment to ensure consistency with the 2006 IPCC Guidelines. The TERT also recommends that the Party continue improving the transparency and accuracy of its methodology for reporting emissions under this category as its verification of the underlying data and calculations used to estimate emissions for these subcategories.</p> |

Table 5

Areas of improvement of the reporting on greenhouse gas emissions and removals – agriculture sector

| <i>ID#</i> | <i>Reporting requirement</i> | <i>Description of area of improvement with recommendation or encouragement</i> |
|------------|--|---|
| 5.A.1 | <p>Specified in paragraphs 20 and 39 of the MPGs</p> <p>3. General (agriculture)</p> | <p>The TERT noted that, in many cases, emission estimates for the agriculture sector rely on expert judgment, such as for MMS distribution, animal weight, rice cultivation period, feed digestibility and ratio of limestone/dolomite use in soils. The TERT notes that while expert judgment is often necessary to determine parameters, it is important that it is thoroughly documented and periodically checked and updated. In addition, reliance on expert judgment also underlines the need for additional AD collection to replace or support the use of</p> |

| ID# | Reporting requirement | Description of area of improvement with recommendation or encouragement |
|-------|---|--|
| 5.A.2 | Specified in paragraph 39 of the MPGs 3.A.1 Cattle – CH ₄ | <p>expert judgment, especially for critical parameters and variables like MMS distribution.</p> <p>During the review, Chile clarified that work on documentation of expert judgment has started and will be done more systematically in the future, including periodically verifying or updating expert judgment. Chile also acknowledged the need to collect more AD.</p> <p>The TERT recommends that Chile transparently document its process for obtaining expert judgment for the NID, including its process for documenting and archiving expert judgment. Furthermore, the TERT recommends that Chile collect data for critical parameters, such as MMS distribution, to reduce its dependence on expert judgment and increase the accuracy of the inventory.</p> <p>In CRT 3.A, Chile provided information on average gross energy intake and the average CH₄ conversion rate. On the basis of this information, the Party used equation 10.21 in the 2006 IPCC Guidelines (vol. 4, chap. 10) to estimate the EFs. Using this information, the TERT was able to replicate the IEFs reported in CRT 3.A for beef cattle, heifer, beef cattle younger than two years old and beef cattle aged between one and two. However, for dairy cattle and calves, the values calculated by the TERT during the review do not match the values reported by the Party in the CRTs. The dairy cattle IEF was reported as 84.52 kg CH₄/head, while the TERT, using equation 10.21 from the 2006 IPCC Guidelines, calculated an EF of 86.29 kg CH₄/head. Similarly, the IEF reported by the Party for calves was 32.16 kg CH₄/head, while the EF calculated by the TERT is 31.27 kg CH₄/head.</p> <p>During the review, Chile explained that the discrepancies are likely attributable to the fact that the calculations were performed at the regional level and then weighted nationally on the basis of the distribution of production systems.</p> <p>The TERT recommends that Chile investigate the discrepancies and correct any errors in the weighting of gross energy intake and/or the average CH₄ conversion rate as reported in the CRTs.</p> |
| 5.A.3 | Specified in paragraph 20 of the MPGs 3.B Manure management – CH ₄ | <p>Information reported by Chile in CRT 3.B(a) indicates that the entirety of Chile is considered to be in the temperate climate zone, and the choice of the Party for the CH₄ conversion factor values from the 2006 IPCC Guidelines indicates that the warm temperate (dry) climate zone was used. However, figure 3A.5.1 from the 2006 IPCC Guidelines (vol. 4, chap. 3, annex 3A.5) shows that Chile may consist of multiple climate zones, for example warm temperate dry, but also warm temperate moist and cold temperate moist.</p> <p>During the review, Chile acknowledged that, while the majority of livestock is in the climate zone reported in CRT 3.B(a), there are indeed other climate zones in Chile. The Party indicated that the allocation by climate region for future submissions will be at the regional level, ensuring improved accuracy, comparability with the 2006 IPCC Guidelines and transparency.</p> <p>The TERT recommends that Chile enhance the accuracy of the inventory by allocating livestock populations and CH₄ conversion factor values to the correct climate zones and select CH₄ conversion factor values from the 2006 IPCC Guidelines consistently with the updated allocation by climate zone.</p> |
| 5.A.4 | Specified in paragraphs 20 and 39 of the MPGs 3.B.3 Swine – CH ₄ and N ₂ O | <p>The NID (table 5-20) presents the MMS distribution for different animal types, including swine. For swine, a very large proportion of the livestock population (61 per cent in 2022) was allocated to aerobic treatment MMS, which is quite unusual as this MMS is rarely used by Parties in their reporting.</p> <p>During the review, Chile explained that the distribution of swine MMS was provided by the Pork Producers Trade Association of Chile (Asociación Gremial de Productores de Cerdos de Chile), which represents over 90 per cent of national pork production. Chile indicated that it would check with the association whether the allocation is correct.</p> <p>The TERT recommends that Chile revisit the allocation of swine to aerobic treatment MMS and revise its calculation of CH₄ emissions from manure management from swine, as appropriate. Furthermore, the TERT recommends that Chile include more information in the NID on the choice of MMS,</p> |

| <i>ID#</i> | <i>Reporting requirement</i> | <i>Description of area of improvement with recommendation or encouragement</i> |
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| | | especially in cases where there is extensive use of MMS that are not normally used at scale. |
| 5.A.5 | Specified in paragraph 39 of the MPGs 3.D.1.b.i Animal manure applied to soils – N ₂ O | <p>The TERT noted that in CRT 3.D, for 2022, 55,836 t N was reported from animal manure applied to soils as AD. However, when summing the N amount in CRT 3.B(b) for all animal categories across MMS (excluding pasture, range and paddock), the TERT found a total amount of 116,058 t N.</p> <p>During the review, Chile explained that the difference is explained by loss of N through volatilization, which the TERT acknowledged may occur; however, the TERT noted that there is also an addition of N through the use of bedding material in solid MMS. The TERT concluded that the explanation in the NID could be improved to increase transparency.</p> <p>The TERT recommends that Chile improve transparency by adding information to the NID on N flow from animal housing to field application, thus explaining the apparent inconsistent reporting of N excreted between CRTs 3.D and 3.B(b).</p> |
| 5.A.6 | Specified in paragraph 39 of the MPGs 3.D.1.d Crop residues – N ₂ O | <p>The TERT noted that very little information is included in the NID (chap. 5.5.2) on estimates of emissions from crop residues, preventing the TERT from understanding the calculation of these estimates.</p> <p>During the review, Chile shared the relevant calculation spreadsheet for the calculation of emissions from crop residues and stated that more information on the method used to estimate emissions would be included in future submissions.</p> <p>The TERT recommends that Chile improve transparency by including more information on the methodology and AD (e.g. areas and yields per crop type) used to estimate emissions from crop residues.</p> |
| 5.A.7 | Specified in paragraph 39 of the MPGs 3.D.2.b N leaching and run-off – N ₂ O | <p>The Party stated in the NID (chap. 5.5.2) that leaching is only considered to occur in Ñuble and south of Ñuble, but not in regions to the north of Ñuble. It also stated that a value of 0.3 for $Frac_{LEACH-(H)}$ was used to estimate N leaching, while 0.24 was reported in CRT 3.D for 2022. The TERT noted that, since no regional information was provided on N inputs, it was not possible for the TERT to replicate the calculation of N leached.</p> <p>During the review, Chile provided a detailed spreadsheet showing the calculations of N leached and indirect emissions at the regional level, which confirmed that 0.24 as $Frac_{LEACH-(H)}$ was correctly used in the estimation of N and N₂O emissions and that the text in the NID was incorrect.</p> <p>The TERT recommends that Chile improve the transparency of the NID by including the information necessary to replicate the calculation of N added to soil and N₂O emissions, that is, the N inputs for the regions where leaching is assumed to occur.</p> |
| 5.A.8 | Specified in paragraph 39 of the MPGs 3.F Field burning of agricultural residues | <p>In CRT 3.F, the Party reported data on the field burning of agricultural residues. The TERT noted that the amount reported under total biomass burned is the product of the area burned and the biomass available, but does not take into account the combustion factor. This means that the IEFs appear inconsistent with the default values from the 2006 IPCC Guidelines, even though the NID states that the default EFs were used.</p> <p>During the review, Chile confirmed that the combustion factor was included in the emission calculations but was not reflected in CRT 3.F under total biomass burned. The TERT noted that the emissions were calculated and reported accurately.</p> <p>The TERT recommends that Chile correct the data reported for total biomass burned in CRT 3.F to correctly reflect the combustion factor.</p> |

Table 6

Areas of improvement of the reporting on greenhouse gas emissions and removals – land use, land-use change and forestry sector

| <i>ID#</i> | <i>Reporting requirement</i> | <i>Description of area of improvement with recommendation or encouragement</i> |
|------------|---------------------------------------|--|
| 6.L.1 | Specified in paragraph 47 of the MPGs | Chile reported CO ₂ emissions and removals from organic soils in forest land remaining forest land in CRT 4.A as “NE”. In accordance with the 2006 IPCC |

| ID# | Reporting requirement | Description of area of improvement with recommendation or encouragement |
|-------|--|--|
| 4.A.1 | Forest land remaining forest land – CO ₂ | <p>Guidelines (vol. 4, chap. 4.2.3.1), reporting carbon stock changes for this category is mandatory for drained organic soils.</p> <p>During the review, Chile explained that information on the area of organic soils in forest land is not currently available. The Party indicated that data collection on the area of organic soils is included in its improvement plan (see NID section 6.12). Chile also stated that, once AD become available, it intends to estimate and report emissions and removals for this category using tier 1 methodology.</p> <p>The TERT recommends that Chile collect country-specific data on organic soils in forest land remaining forest land and report emissions and removals for this category using at least a tier 1 method in accordance with the 2006 IPCC Guidelines.</p> |
| 6.L.2 | <p>Specified in paragraph 47 of the MPGs</p> <p>4.B.1 Cropland remaining cropland – CO₂</p> | <p>Chile reported CO₂ emissions and removals from annual cropland in cropland remaining cropland in CRT 4.B as “NA” for all carbon pools. In accordance with the 2006 IPCC Guidelines (vol. 4, chap. 5.2.3.1), under the tier 1 approach reporting carbon stock changes for this category is mandatory for soil organic matter.</p> <p>During the review, Chile explained that it currently lacks AD to monitor changes in cropland remaining cropland with respect to cropland types and different land-management practices. Consequently, the Party assumes that there are no changes in carbon content in mineral soils in cropland. Chile added that collecting country-specific AD on cropland types and management practices, as well as country-specific data on soil carbon content in cropland, was identified as a priority in the national improvement plan (NID section 6.12), but that implementing improvements is subject to the availability of technical and financial resources.</p> <p>The TERT recommends that Chile advance the collection of country-specific AD on cropland types and management practices, as well as country-specific data on soil carbon content in annual cropland, and report emission and removal estimates for cropland remaining cropland, as appropriate.</p> |
| 6.L.3 | <p>Specified in paragraphs 20 and 47 of the MPGs</p> <p>4.C.1 Grassland remaining grassland – CO₂</p> | <p>Chile reported CO₂ emissions and removals for grassland remaining grassland in CRT 4.C as “NA”. In accordance with the 2006 IPCC Guidelines (vol. 4, chap. 6.2.3.1), under the tier 1 approach reporting carbon stock changes for this category is mandatory for soil organic matter.</p> <p>During the review, Chile explained that it lacks AD disaggregated by grassland management practice under grassland remaining grassland. Consequently, Chile assumes that there are no changes in carbon content in mineral soils in grassland and reported all grassland area as unmanaged in the land-transition matrix (CRT 4.1), which are reported as “NA”. Chile noted that collecting country-specific AD on grassland management practices, as well as country-specific data on soil carbon content in grassland, was identified as a priority in the national improvement plan (NID section 6.12), but that implementing this improvement is subject to the availability of technical and financial resources.</p> <p>The TERT recommends that Chile advance the collection of country-specific AD on grassland management practices, as well as country-specific data on soil carbon content in grassland, to enable reporting of emissions and removals for this category, as appropriate, and enable Chile to report on managed and unmanaged grassland on a disaggregated basis in CRT 4.1.</p> |
| 6.L.4 | <p>Specified in paragraphs 20 and 47 of the MPGs</p> <p>4(II) Emissions and removals from drainage and rewetting and other management of organic and mineral soils – N₂O and CH₄</p> | <p>Chile reported emissions and removals from drainage, rewetting and other management of organic and mineral soils for all land categories in CRT 4(II) as “NE”. In accordance with the 2006 IPCC Guidelines (vol. 4, chap. 11.2.1), reporting N₂O emissions and removals from drainage of organic soils for forest land, cropland and grassland is mandatory.</p> <p>In addition, the Wetlands Supplement (chaps. 2–3) provides guidance for reporting CH₄ emissions from drainage of organic soils for forest land, cropland and grassland; N₂O and CH₄ emissions from rewetting of organic soils for forest land, cropland and grassland; and N₂O and CH₄ emissions from drainage and rewetting of organic soils for wetlands.</p> <p>During the review, Chile explained that it lacks the data needed to identify organic soils and wetland areas, such as peatland, and estimate the emissions that occur in these ecosystems. Chile noted that collecting these country-specific data</p> |

| <i>ID#</i> | <i>Reporting requirement</i> | <i>Description of area of improvement with recommendation or encouragement</i> |
|------------|------------------------------|--|
| | | <p>was identified as a priority in the national improvement plan (NID section 6.12) and would enable the use of the EFs provided in the Wetlands Supplement. It noted that implementing this improvement is subject to the availability of technical and financial resources.</p> <p>The TERT recommends that Chile collect country-specific data on drainage of organic soils for forest land, cropland and grassland and report N₂O emissions and removals for this category. The TERT encourages Chile to collect country-specific data on organic soils and wetland areas, such as peatland, which will enable it to apply methods provided in the Wetlands Supplement and report emissions and removals for the categories in CRT 4(II).</p> |

Table 7

Areas of improvement of the reporting on greenhouse gas emissions and removals – waste sector

| <i>ID#</i> | <i>Reporting requirement</i> | <i>Description of area of improvement with recommendation or encouragement</i> |
|------------|--|--|
| 7.W.1 | <p>Specified in paragraph 29 of the MPGs</p> <p>General (waste) – CH₄ and N₂O</p> | <p>The Party reported uncertainty values for each subcategory under the waste sector in the NID, including combined uncertainty ranges for CH₄ and N₂O emissions. The uncertainty analysis was based on data sets no longer used in the inventory and there was limited documentation of methods used to determine uncertainty values. The TERT noted that, despite methodological improvements such as data updates and parameter refinements having been made for other parts of the inventory, these were not reflected in the uncertainty analysis. The approach used for Chile's uncertainty analysis follows a simplified error propagation method from the 2006 IPCC Guidelines.</p> <p>During the review, the Party explained that it plans to update the uncertainty analysis for the next inventory cycle using new data sources and to improve methodological transparency. The Party also mentioned that additional capacity is needed for improving data processing and completing uncertainty tables consistently across all waste subcategories.</p> <p>The TERT encourages the Party to update the uncertainty analysis using available data. The TERT notes that, for that purpose, including trend analysis and incorporating recent methodological improvements would further enhance accuracy and transparency of the inventory for the waste sector.</p> |
| 7.W.2 | <p>Specified in paragraphs 20, 21 and 24 of the MPGs</p> <p>5.A Solid waste disposal – CH₄</p> | <p>The Party reported CH₄ emissions from solid waste disposal sites using the first-order decay method, in line with the 2006 IPCC Guidelines. The same values for the DOC, MCF, k and OX parameters were used across the 1990–2022 time series. The values for these parameters were mostly based on the default values from the 2006 IPCC Guidelines; updated values from the 2019 Refinement to the 2006 IPCC Guidelines for DOC_f, OX and MCF were not yet implemented.</p> <p>During the review, the Party explained that the implementation of 2019 Refinement to the 2006 IPCC Guidelines parameters is planned for future submissions, in coordination with the Circular Economy Office. The Party also explained that national studies are ongoing to collect data on waste composition and management practices, which will support the development of country-specific parameters for DOC, MCF and OX. The TERT noted that the application of the 2019 Refinement to the 2006 IPCC Guidelines is not mandatory under the MPGs; however, applying the methodological improvements therein would further enhance the accuracy and comparability of estimates of CH₄ emissions from solid waste disposal sites.</p> <p>The TERT encourages the Party to consider applying the updated parameters from the 2019 Refinement to the 2006 IPCC Guidelines for DOC_f, OX and MCF and, where possible, to develop country-specific first-order decay parameters for DOC, DOC_f, MCF, k and OX, reflecting national waste composition and landfill management conditions.</p> |
| 7.W.3 | <p>Specified in paragraphs 24, 39 and 40 of the MPGs</p> <p>5.D.2 Industrial wastewater treatment – N₂O</p> | <p>The Party reported CH₄ and N₂O emissions from industrial wastewater treatment in the NID and CTF tables, using default parameters in line with the 2006 IPCC Guidelines. This approach is consistent with IPCC good practice for non-key categories.</p> <p>During the review, the Party explained that data on the concentration of N in wastewater streams are not yet available at the national level and that current estimates are based on IPCC default values. It also explained that it plans to</p> |

| <i>ID#</i> | <i>Reporting requirement</i> | <i>Description of area of improvement with recommendation or encouragement</i> |
|------------|------------------------------|---|
| | | collaborate with the Circular Economy Office to improve its data collection in this regard and develop country-specific parameters for wastewater in line with the 2019 Refinement to the 2006 IPCC Guidelines. The TERT encourages the Party to continue its efforts to improve data availability and, where feasible, to explore the development of national parameters for wastewater to further enhance the accuracy of N ₂ O emission estimates. |

C. Information necessary to track progress in implementing and achieving the nationally determined contribution under Article 4 of the Paris Agreement

Table 8

Areas of improvement of the reporting on national circumstances and institutional arrangements

| <i>ID#</i> | <i>Reporting requirement</i> | <i>Description of area of improvement with recommendation or encouragement</i> |
|------------|------------------------------|--|
| NA | NA | No areas of improvement identified |

Table 9

Areas of improvement of the description of the nationally determined contribution under Article 4 of the Paris Agreement, including updates

| <i>ID#</i> | <i>Reporting requirement</i> | <i>Description of area of improvement with recommendation or encouragement</i> |
|------------|---------------------------------------|---|
| 9.1 | Specified in paragraph 64 of the MPGs | The NDC of Chile covers multiple targets and associated indicators, some of which are related to total GHG emissions excluding LULUCF. During the review, Chile informed the TERT that any recalculations of GHG inventory data might result in a modification to the NDC targets. The TERT encourages Chile, for future submissions, if appropriate, to specify in the documentation box(es) of the relevant CTF tables whether and how the NDC targets have been modified and the reasons for the modification. |
| 9.2 | Specified in paragraph 64 of the MPGs | The TERT noted, from additional information provided during the review, that the BTR2 will cover two NDCs: the 2020 and the 2025 NDCs. The TERT understands that the 2020 NDC, updated in 2022, is essentially covered by the 2025 NDC, with the time frame extended for some targets and some new targets added. The TERT encourages Chile to clearly describe targets in both NDCs and the interrelations between them in order to ensure transparency. |

Table 10

Areas of improvement of the reporting of the information necessary to track progress in implementing and achieving the nationally determined contribution under Article 4 of the Paris Agreement

| <i>ID#</i> | <i>Reporting requirement</i> | <i>Description of area of improvement with recommendation or encouragement</i> |
|------------|---|---|
| 10.1 | Specified in paragraphs 68–69 of the MPGs | Chile included an NDC target to reduce black carbon emissions by 25 per cent compared with the 2016 level by 2030. During the review, Chile informed the TERT that it is facing difficulties in preparing an accurate black carbon inventory, which is required for providing information for its indicator CN_1 on the percentage of annual black carbon emissions compared with the 2016 level. The TERT noted that data on black carbon emissions by source type could benefit from data on other elements related to the implementation of the relevant actions, policies and measures not directly related to the impact on GHG emissions. Nevertheless, most actions, policies and measures aimed at reducing CO ₂ emissions can also contribute to reducing black carbon emissions. The TERT recommends that Chile improve its institutional arrangements so that it is able to collect data on black carbon by source type, in collaboration with line ministries and local governments and through sectoral mitigation plans and regional and communal climate change action plans, thereby enabling the Party |

| <i>ID#</i> | <i>Reporting requirement</i> | <i>Description of area of improvement with recommendation or encouragement</i> |
|------------|---|--|
| | | to provide information for its indicator CN_1 for each reporting year and compare that information with the associated target. |
| 10.2 | Specified in paragraph 74(c) of the MPGs | <p>The TERT noted that some of the explanations in Chile's CTF tables of the indicators used to track NDC progress are not fully transparent because accompanying information and necessary clarifications in the BTR were not provided. The TERT also noted that the additional information in the BTR, including the mathematical formulas for the indicators, provides the necessary clarity on the use of the indicators.</p> <p>During the review, Chile informed the TERT that, in some cases, CTF Reporter does not allow for inputting all of the necessary information (e.g. formulas) owing to formatting issues.</p> <p>The TERT encourages Chile, when providing information in the CTF tables, to refer to and draw on the explanations provided in the BTR, including explanations of where formulas can be found in the BTR, with a view to ensuring complete information in the CTF tables in case technical difficulties are encountered in inputting information owing to limitations with CTF Reporter.</p> |
| 10.3 | Specified in paragraphs 75(f) and 77(d) of the MPGs | <p>The TERT noted that Chile indicated in its BTR its plans to make use of ITMOs under Article 6 of the Paris Agreement towards its NDC for future BTR submissions.</p> <p>The TERT recommends that Chile provide information in its BTR on any additional domestic institutional arrangements used for facilitating its use of ITMOs under Article 6 of the Paris Agreement and clarify how it is planning to apply ITMOs towards achieving its NDC targets, for example by providing the formulas related to how ITMOs relate to the relevant NDC target and its indicators.</p> |

Table 11

Areas of improvement of the reporting on mitigation policies and measures, actions and plans, including those with mitigation co-benefits resulting from adaptation actions and economic diversification plans, related to implementing and achieving the nationally determined contribution under Article 4 of the Paris Agreement

| <i>ID#</i> | <i>Reporting requirement</i> | <i>Description of area of improvement with recommendation or encouragement</i> |
|------------|---------------------------------------|--|
| 11.1 | Specified in paragraph 80 of the MPGs | <p>Chile reported in its BTR the actions, policies and measures implemented and adopted by the seven sectoral mitigation authorities that are to prepare GHG emission budgets and, consequently, prepare sectoral mitigation plans (Ministries of Energy; Transport and Telecommunications; Mining; Health; Agriculture; Public Works; and Housing and Urban Planning). At the time of the preparation of the BTR, those plans were still under development. Chile is planning on including actions, policies and measures from the sectoral mitigation plans in its next BTR. The TERT also noted that not all actions, policies and measures reported in the BTR were reported in CTF table 5, particularly the measures implemented by the Ministry of Health included in section 3.4.1.4 of the BTR.</p> <p>During the review, Chile explained that, although the Ministry of Health is one of the sectoral mitigation authorities, at the time of preparing the BTR all the actions, policies and measures it was working on were in the design phase and none of them had been planned, adopted or implemented. Therefore, it was decided not to include them in CTF table 5 and instead to describe them in narrative format only.</p> <p>The TERT recommends that the Party improve its reporting on actions, policies and measures by providing clearer information on the approach used to decide which actions, policies and measures are reported in CTF table 5 and describe any constraints encountered in doing so.</p> |
| 11.2 | Specified in paragraph 81 of the MPGs | <p>Chile reported actions, policies and measures for the energy, IPPU, LULUCF and waste management sectors, but did not present such information for the transport sector. The TERT noted that several actions, policies and measures implemented by the Ministry of Transport and Telecommunications could be categorized under the transport sector, but were reported under the energy sector instead.</p> <p>During the review, Chile explained that it reported those measures under the energy sector because it reports that information in accordance with the categories used in the national GHG inventory, which are also the categories used for the</p> |

| ID# | Reporting requirement | Description of area of improvement with recommendation or encouragement |
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| 11.3 | Specified in paragraph 82(d) of the MPGs | <p>accounting of sectoral budgets in Chile’s national reporting system. Nevertheless, Chile informed the TERT that it is considering reporting actions, policies and measures under the transport sector in future submissions.</p> <p>The TERT recommends that the Party identify actions, policies and measures related to transport, as appropriate, and categorize them, to the extent possible. If the Party deems that it is not possible to report in accordance with paragraph 81 of the MPGs, the TERT recommends that the Party describe under which other sector actions, policies and measures related to transport are reported in the BTR.</p> <p>Chile did not report in CTF table 5 information on the type of instrument for actions policies and measures using the types of instruments specified in paragraph 82(d) of the MPGs; instead, Chile reported using one of the types as “técnico” (technical), which does not appear in the list provided in the MPGs.</p> <p>During the review, Chile explained that discussions of the sectoral mitigation plans considered multiple types of instruments: regulatory, economic, institutional, technical and educational, among others. It also provided information on the difficulty encountered in assigning a single type of instrument to a measure or action, as most of them require a combination of elements that often overlap. Chile also explained that the instrument types used are intended to be useful both for reporting on the sectoral mitigation plans and for international transparency submissions, and therefore a broader set of instrument types was needed.</p> <p>The TERT recommends that the Party clarify the types of instrument used in the BTR that are additional or alternative to those set out in paragraph 82(d) of the MPGs and its reasons for using them.</p> |
| 11.4 | Specified in paragraphs 80 and 83 of the MPGs | <p>The TERT noted that, for the 24 mitigation actions , policies and measures reported by Chile, information on estimates of costs, non-GHG mitigation benefits and interactions was provided for 6; estimates only of non-GHG mitigation benefits were provided for 10; estimates of non-GHG mitigation benefits and interactions were provided for 4; and estimates of non-GHG mitigation benefits and costs were provided for 4.</p> <p>During the review, Chile explained that it faced constraints in estimating costs and interactions for all actions, policies and measures reported but expects to be able to report that information in future BTRs.</p> <p>In addition to the mitigation measures reported in CTF table 5, Chile described in the BTR a series of measures, such as creating enabling conditions for reducing GHG emissions, the results of which are not all quantifiable. The Party also reported interactions among the measures in CTF table 5 and those in the BTR, even for those not included in the CTF table.</p> <p>The TERT noted that, in accordance with paragraph 83 of the MPGs, Chile may provide in its next BTR, in the description column of CTF table 5, information on the costs of each action, policy and measure reported; non-GHG mitigation benefits; and how the mitigation actions, policies and measures interact with each other, as appropriate, or indicate that it has elected not to report this information and explain why. For those actions, policies and measures for which interactions are reported, the TERT encourages Chile to only report those interactions between actions, policies and measures reported in CTF table 5, focusing on those that have the most significant impact on GHG emissions or removals, in accordance with paragraph 80 of the MPGs.</p> |
| 11.5 | Specified in paragraphs 80, 82, 83 and 84 of the MPGs | <p>In its 2020 NDC, updated in 2022, Chile outlined an integration component, making reference to several mitigation co-benefits from adaptation and economic diversification actions, such as the Party’s commitments pertaining to LULUCF and wetlands (restoration of native forests, reforestation, etc.). However, Chile did not report in CTF table 5 information on actions, policies and measures contributing to mitigation co-benefits resulting from adaptation actions or economic diversification plans, including information consistent with paragraphs 80, 82 and 83 of the MPGs.</p> <p>During the review, the Party explained that it did not provide information on actions, policies and measures contributing to mitigation co-benefits resulting from adaptation actions or economic diversification plans owing to capacity constraints.</p> |

| <i>ID#</i> | <i>Reporting requirement</i> | <i>Description of area of improvement with recommendation or encouragement</i> |
|------------|---|---|
| | | The TERT recommends that Chile include information, to the extent possible, on actions, policies and measures contributing to mitigation co-benefits resulting from adaptation actions or economic diversification plans in the information to be reported under paragraphs 80 and 82 of the MPGs. The TERT notes that Chile may also include in the next submission the information specified in paragraph 83 of the MPGs. |
| 11.6 | Specified in paragraph 85 in conjunction with paragraph 6 of the MPGs | <p>Chile did not report in CTF table 5 information on expected and achieved GHG emission reductions for all reported actions, policies and measures. Of the 24 mitigation actions, policies and measures reported, estimates of both achieved and projected reductions and/or removals were provided for 8; only estimates of achieved (ex post) reductions and/or removals were provided for 11; only estimates of projected reductions and/or removals were provided only for 1; and no estimates of either achieved or projected reductions and/or removals were provided for 4. Chile applied flexibility in accordance with paragraph 85 of the MPGs for reporting estimates of expected and achieved emission reductions and/or removals and concisely clarified the capacity constraints it faced in this regard, further providing self-determined time frames for improvement in relation to those capacity constraints.</p> <p>During the review, the Party explained that it faced difficulties in calculating baselines for estimated and expected GHG emission reductions for each policy and measure.</p> <p>The TERT encourages Chile to estimate, to the extent possible, expected and achieved GHG emission reductions for all its actions, policies and measures and report them in CTF table 5, in line with paragraph 85 of the MPGs and the Party's self-determined time frames for improvement.</p> |
| 11.7 | Specified in paragraph 86 of the MPGs | <p>The TERT found that the document entitled annex 1 ("Estimaciones de las reducciones de las emisiones de GEI logradas y proyectadas para las medidas de mitigación"), available online through a link on page 188 of the BTR, which provides information on the assumptions and methods used to estimate achieved and projected GHG emission reductions, was not included in the BTR submission itself.</p> <p>During the review, Chile explained that, owing to time constraints, the annex was not drafted by the time of submission and therefore was not included in the submission. However, the Party noted that the original intention had been to include it as part of the BTR.</p> <p>The TERT recommends that the Party present information, to the extent possible, describing the assumptions and methods used to estimate GHG emission reductions or removals resulting from each action, policy and measure as part of the next BTR submission.</p> |

Table 12

Areas of improvement of the summary of greenhouse gas emissions and removals

| <i>ID#</i> | <i>Reporting requirement</i> | <i>Description of area of improvement with recommendation or encouragement</i> |
|------------|------------------------------|--|
| NA | NA | No areas of improvement identified |

Table 13

Areas of improvement of the projections of greenhouse gas emissions and removals

| <i>ID#</i> | <i>Reporting requirement</i> | <i>Description of area of improvement with recommendation or encouragement</i> |
|------------|---------------------------------------|---|
| 13.1 | Specified in paragraph 94 of the MPGs | For the BTR1, Chile defined the WOM scenario as encompassing the actions, policies and measures implemented since 2022, and the WM scenario as achieving the 2050 carbon neutrality goal, and not what measures are included. However, the TERT noted that, in accordance with the definition in footnote 1 to paragraph 94 of the MPGs, the WOM scenario chosen by Chile should instead be considered the WM scenario (as the WOM scenario should consider actions, policies and measures adopted after the year chosen as the starting point for the projection and not yet implemented), while the WM scenario should be considered the 'with additional measures' scenario. |

| <i>ID#</i> | <i>Reporting requirement</i> | <i>Description of area of improvement with recommendation or encouragement</i> |
|------------|---|---|
| | | The TERT recommends that Chile consider defining the scenarios in accordance with footnote 1 to paragraph 94 of the MPGs and include explanations in the BTR. |
| 13.2 | Specified in paragraphs 96(d) and 102 of the MPGs | <p>The TERT noted that Chile applied flexibility for not reporting a sensitivity analysis.</p> <p>The TERT recognized that Chile has undertaken excellent projection analyses, as shown in its 2020 NDC (covering not only projection scenarios, but also marginal cost curve development, for example). The TERT also noted that similar exercises have been implemented for the preparation of the 2025 NDC.</p> <p>In this context, the TERT notes that Chile, in addressing its capacity constraints for conducting a sensitivity analysis, is encouraged to undertake a study of the assumptions underlying gross domestic product, as well as other relevant variables used in the projection analyses, and develop policy objective specific assessments for mitigation measures under consideration by the country. In that regard, Chile may also conduct modelling exercises that would be useful for future policymaking.</p> |
| 13.3 | Specified in paragraph 101 of the MPGs | <p>In its BTR, Chile included graphs for WOM and WM scenario projections. However, the TERT found that the transparency of the information in these graphs could be enhanced. It noted that the Party did not provide a single graph overlaying both scenarios for easier comparison; that the timeline (horizontal axis) provided is not linear; and that the information is not linked to past inventory trends, making it easy to misinterpret the direction of change. It thus noted that, in addition to the single graph mentioned, a few additional graphs may be helpful for facilitating understanding of the overall picture prior to 2050. Furthermore, the TERT noted that providing such scenario projections for individual sectors, and reporting information on them in the BTR, would be effective as Chile considers future policy shifts.</p> <p>The TERT encourages Chile to enhance the information in its graphs showing scenario projections by providing additional graphs, enhancing their user-friendliness and reporting sector-level analyses and their implications.</p> |

Table 14

Areas of improvement of other information relevant to tracking progress in implementing and achieving the nationally determined contribution under Article 4 of the Paris Agreement

| <i>ID#</i> | <i>Reporting requirement</i> | <i>Description of area of improvement with recommendation or encouragement</i> |
|------------|------------------------------|--|
| NA | NA | No areas of improvement identified |

II. Capacity-building needs³ identified by the Party and by the technical expert review team in consultation with the Party during the technical expert review of its first biennial transparency report

- Table 15 presents capacity-building needs identified by the Party and by the TERT in consultation with the Party during the technical expert review of its BTR1.

Table 15

Capacity-building needs identified in consultation with the Party

| <i>ID#</i> | <i>Reporting requirement</i> | <i>Area in which capacity-building is needed</i> |
|-------------------|---------------------------------------|--|
| General reporting | | |
| 1_CBN.1 | Specified in paragraph 29 of the MPGs | Estimating uncertainty values, for example accounting for changes over time in uncertainties |

³ As referred to in paras. 7, 8 and 162(d) of the MPGs.

| <i>ID#</i> | <i>Reporting requirement</i> | <i>Area in which capacity-building is needed</i> |
|-------------------|--|---|
| NIR – energy | | |
| 3.E_CBN.1 | Specified in paragraph 26 of the MPGs | Revising historical AD on residential biomass consumption reported in the national energy balance |
| 3.E_CBN.2 | Specified in paragraphs 20 and 35 of the MPGs | Maintaining and improving QA/QC procedures related to compiling the national energy balance (high priority) |
| 3.E_CBN.3 | Specified in paragraphs 21–22 and 24 of the MPGs | Collecting the data necessary for developing country-specific CO ₂ EFs for the main solid fuels consumed in Chile in the manufacturing sector (high priority) |
| 3.E_CBN.4 | Specified in paragraphs 21–22 and 24 of the MPGs | Collecting the data necessary for developing country-specific CO ₂ EFs for the main gaseous fuels consumed in Chile (high priority) |
| 3.E_CBN.5 | Specified in paragraphs 21–22 and 24 of the MPGs | Collecting data on vehicle and mobile equipment numbers and usage statistics to improve allocation of fuels to the appropriate vehicle classes, engine types and other machinery |
| 3.E_CBN.6 | Specified in paragraphs 34–36 of the MPGs | Developing procedures to address significant differences between the sectoral and the reference approaches and incorporating these procedures into existing QC processes |
| 3.E_CBN.1 | Specified in paragraph 21 of the MPGs | Enhancing technical capacity to apply higher-tier methodologies for estimating fugitive emissions from key sources in the oil and natural gas sector |
| NIR – IPPU | | |
| 4.I_CBN.1 | Specified in paragraphs 40 and 47 of the MPGs | Identifying and mapping industries, other than cement, lime and glass, that use carbonates with a view to improving the completeness of the IPPU inventory and the allocation of associated CO ₂ emissions to these industries |
| NIR – agriculture | | |
| 5.A_CBN.1 | Specified in paragraph 20 of the MPGs | Improving data-collection systems to include variables that are important for estimating agriculture emissions (high priority) |
| 5.A_CBN.2 | Specified in paragraph 20 of the MPGs | Collecting sufficient background data, implementing methodological improvements in accordance with the national inventory improvement plan, and documenting any methodologies and data used (high priority) |
| NIR – LULUCF | | |
| 6.L_CBN.1 | Specified in paragraphs 20 and 47 of the MPGs | Collecting the data required for reporting CO ₂ emissions and removals from annual cropland in cropland remaining cropland (high priority) |
| 6.L_CBN.2 | Specified in paragraphs 20 and 47 of the MPGs | Collecting the data required for reporting CO ₂ emissions and removals from grassland remaining grassland (high priority) |
| 6.L_CBN.3 | Specified in paragraphs 20 and 47 of the MPGs | Collecting the data required for reporting emissions and removals from drainage, rewetting and other management of organic and mineral soils |
| NIR – waste | | |
| 7.W_CBN.1 | Specified in paragraph 24 of the MPGs | Implementing improvements from the 2019 Refinement to the 2006 IPCC Guidelines to enhance emission estimates for the wastewater subcategory in order to improve methodological accuracy |
| 7.W_CBN.2 | Specified in paragraphs 20–24 of the MPGs | Exploring the use of and applying remote-sensing technologies for landfill monitoring and regulation with a view to improving data accuracy and supporting the implementation of national waste management policies |

| <i>ID#</i> | <i>Reporting requirement</i> | <i>Area in which capacity-building is needed</i> |
|--|---|---|
| Information necessary to track progress in implementing and achieving the NDC under Article 4 of the Paris Agreement | | |
| 10_CBN.1 | Specified in paragraph 65 of the MPGs | Reporting and managing multiple NDC targets and associated indicators, including quantitative and binary ones, and subtargets in a structural manner, including matters related to measurement, reporting and verification and progress tracking of the NDC with a view to operationalizing not only the 2020 but also the 2025 NDC (high priority) |
| 10_CBN.2 | Specified in paragraphs 75(f) and 76(d) of the MPGs | Operationalizing a national system and institutional arrangements for the consideration of mechanisms under Article 6 of the Paris Agreement, including the processes of adjustments related to the transfer of ITMOs to and/or from other Parties, and reporting related information in future BTRs, as well as developing a methodology for considering the transfer of ITMOs for tracking and assessment of NDC achievements |
| 10_CBN.3 | Specified in paragraph 75(g) of the MPGs | Enabling collaboration between the Ministry of Environment and other ministries on institutionalizing a measurement, reporting and verification system for mitigation actions, policies and measures, taking into consideration good practices from other Parties for facilitating the tracking of NDC achievement, and implementing measures to ensure objective-sharing and good communication among ministries, which are crucial for ensuring a ‘plan-do-check-act’ process can take place in a stepwise manner |
| Mitigation policies, measures, actions and plans | | |
| 11_CBN.1 | Specified in paragraph 80 of the MPGs | Strengthening the integration of regional and subregional actions, policies and measures into the national climate information system by enhancing communication between sectoral ministries and local representatives, and tracking and reporting actions, policies and measures at the national level |
| 11_CBN.2 | Specified in paragraph 84 of the MPGs | Identifying and quantifying the impact of mitigation actions, policies and measures that generate mitigation co-benefits arising from adaptation actions or economic diversification plans |
| 11_CBN.3 ^a | Specified in paragraph 85 of the MPGs | Estimating expected and achieved GHG emission reductions from actions, policies and measures and describing the methodologies and assumptions used in this regard (high priority) |
| Projections | | |
| 13_CBN.1 ^a | Specified in paragraph 96(d) of the MPGs | Developing specific purpose-oriented bottom-up modular components for projection analysis, particularly related to aspects related to energy demand, considering policy objectives additional to the current generic economy-wide model, such as those related to the use of electric vehicles and carbon pricing |
| 13_CBN.2 | Specified in paragraph 101 of the MPGs | Enhancing the ability of projection modellers and policymakers to communicate with one another, including on how to extract insights into and the implications of projection results, and collaboratively make use of any analytical tool supporting the development of projections. This requires modellers to develop a model (or submodules for the model) specific to the requirements for policymaking actions |

^a Capacity-building need identified by the TERT in consultation with the Party relating to the flexibilities applied by it as per the MPGs.

