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

### **Addendum**

#### *Summary*

This addendum to the report on the technical expert review of the first biennial transparency report of Andorra, 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 May 2024 in Andorra la Vella.



## Abbreviations and acronyms

2006 IPCC Guidelines	<i>2006 IPCC Guidelines for National Greenhouse Gas Inventories</i>
AD	activity data
BTR	biennial transparency report
CH <sub>4</sub>	methane
CO	carbon monoxide
CO <sub>2</sub>	carbon dioxide
CO <sub>2</sub> eq	carbon dioxide equivalent
CRT	common reporting table
CTF	common tabular format
EF	emission factor
ETF	enhanced transparency framework under the Paris Agreement
GHG	greenhouse gas
HFC	hydrofluorocarbon
IPCC	Intergovernmental Panel on Climate Change
IPPU	industrial processes and product use
LPG	liquefied petroleum gas
LULUCF	land use, land-use change and forestry
MCF	methane correction factor
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 <sub>2</sub> O	nitrous oxide
NDC	nationally determined contribution
NE	not estimated
NF <sub>3</sub>	nitrogen trifluoride
NMVOC	non-methane volatile organic compound
NO	not occurring
NO <sub>x</sub>	nitrogen oxides
PaMs	policies and measures
PFC	perfluorocarbon
QA/QC	quality assurance/quality control
SO <sub>x</sub>	sulfur oxides
TERT	technical expert review team
WAM	‘with additional measures’
WEM	‘with measures’
WOM	‘without measures’

## I. Areas of improvement<sup>1</sup> identified during the technical expert review of the Party's first biennial transparency report

1. Tables 1–13 present the results of the review of the consistency with the MPGs<sup>2</sup> of the information submitted by Andorra in its BTR1. All recommendations and encouragements contained in the tables are for the next BTR, 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>
1.1	Specified in paragraphs 38 and 79 of the MPGs	<p>Andorra did not provide the CRTs referred to in chapter II of the MPGs for the electronic reporting of the information in the national inventory report on anthropogenic emissions by sources and removals by sinks of GHGs; or the CTF tables referred to in chapter III of the MPGs for the electronic reporting of the information necessary to track progress in implementing and achieving the NDC under Article 4 of the Paris Agreement.</p> <p>During the review, Andorra explained that, because the CRTs were only available in PDF format (in the annexes to decision 5/CMA.3) and not available in Spanish, it undertook the task of reconstructing all the tables internally and translating them. In addition, Andorra indicated its plans to use, for the next BTR, the latest version of the IPCC inventory software and the tools for reporting under the ETF for reporting all CRTs and CTF tables.</p> <p>The TERT recommends that Andorra report all CRTs and CTF tables in accordance with decision 5/CMA.3 in the next BTR.</p> <p>The TERT encourages Andorra to use the ETF GHG inventory reporting tool and the ETF progress reporting tool for that purpose.</p>

### 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 38 of the MPGs CRTs	<p>The Party did not submit a full set of CRTs.</p> <p>During the review, Andorra explained that, because the CRTs were only available in PDF format (in the annexes to decision 5/CMA.3) and not available in Spanish, it undertook the task of reconstructing all the tables internally and translating them. In addition, Andorra used the IPCC inventory software (version 2.69) to export several tables, which are included in appendices II–III to the BTR1, but those tables are not the same as the tables adopted in decision 5/CMA.3.</p> <p>The TERT recommends that the Party report all CRTs in accordance with decision 5/CMA.3 in the next BTR.</p> <p>The TERT encourages Andorra to use the ETF GHG inventory reporting tool for that purpose.</p>
2.G.2	Specified in paragraphs 25, 41 and 42 of the MPGs Key category analysis	<p>Andorra did not report the summary overview for key categories using CRT 7 (see ID# 2.G.1 above).</p> <p>During the review, Andorra explained that, because the CRTs were only available in PDF format (in the annexes to decision 5/CMA.3) and not available in Spanish, it undertook the task of reconstructing all the tables internally and translating them.</p>

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

<sup>2</sup> Decision 18/CMA.1, annex.

ID#	Reporting requirement	Description of area of improvement with recommendation or encouragement
		<p>Andorra included in the BTR tables comparable information about the key categories analysis (with and without LULUCF).</p> <p>The TERT recommends that the Party report a summary overview for key categories using CRT 7, in accordance with decision 5/CMA.3.</p> <p>The TERT encourages Andorra to use the ETF GHG inventory reporting tool for that purpose.</p>
2.G.3	Specified in paragraphs 29 and 44 of the MPGs Uncertainty analysis	<p>Andorra reported general information on the uncertainty analysis performed using approach 1 in the BTR1 (pp.57–58). However, the reported table shows only the total uncertainty estimates per year and for the overall trend (1990–2021) and not for all source and sink categories. Andorra did not estimate the trend uncertainty of emission and removal estimates for each source or sink category, nor provide any qualitative discussion of the results.</p> <p>During the review, Andorra made available the database used to estimate uncertainties through the IPCC inventory software (version 2.69), which was assessed by the TERT. Andorra informed the TERT that it was aware that its uncertainty analysis could be improved and has therefore included it as a priority in its inventory improvement plan (appendix VI to the BTR1).</p> <p>The TERT recommends that the Party estimate and report the level and trend uncertainty of emission and removal estimates for all source and sink categories, using at least approach 1, between the starting year and the latest reporting year of the inventory time series. The TERT also recommends that Andorra report and provide a qualitative discussion of the results in the next BTR.</p>
2.G.4	Specified in paragraphs 34 and 46 of the MPGs QA/QC and verification	<p>Andorra reported general information on its QA/QC system in the BTR1 (p.57) but did not document an inventory QA/QC plan.</p> <p>During the review, Andorra explained that it has QA/QC procedures in place but they are not documented in a QA/QC plan.</p> <p>The TERT recommends that the Party report or document all QA/QC procedures in place as a QA/QC plan and present such information in the next BTR.</p>
2.G.5	Specified in paragraphs 35 and 46 of the MPGs QA/QC and verification	<p>Andorra did not provide information on general inventory QA/QC procedures or the application of category-specific QC procedures for key categories.</p> <p>During the review, Andorra explained that it has general and category-specific QC procedures in place but they are not documented in a QA/QC plan. It also explained that it has conducted QA of its GHG inventory involving international inventory experts.<sup>a</sup></p> <p>The TERT recommends that the Party include information on general inventory QC procedures in the next BTR.</p> <p>The TERT encourages Andorra to include information on category-specific QC procedures and implement any QA procedures in the next BTR.</p>
2.G.6	Specified in paragraph 37 of the MPGs Other	<p>Andorra used the 100-year time-horizon global warming potential values from the IPCC Fifth Assessment Report for reporting aggregate emissions and removals of GHGs, expressed in CO<sub>2</sub> eq. However, in section 2.1.8 of the BTR1 (p.58) concerning metrics, Andorra included the statement “Non mandatory (to be evaluated in the inventory improvement plan)”.</p> <p>The TERT encourages the Party not to include such a statement in the next BTR to avoid possible misinterpretation about the metrics used.</p>
2.G.7	Specified in paragraphs 39–40, in conjunction with paragraphs 20–24, of the MPGs and paragraph 28 of decision 5/CMA.3 Methods	<p>Andorra did not report complete information on the methods used, or the descriptions, assumptions, references and sources of information used for the EFs and AD used, to compile the GHG inventory.</p> <p>During the review, Andorra provided some additional information for some activities, namely those related to international aviation; the CO<sub>2</sub> EFs for road transport; the splicing techniques applied in filling AD gaps for the residential, tertiary and industrial sectors; and land representation (see ID#s 3.E.4, 3.E.5, 3.E.7, 6.L.1 and 6.L.2 below).</p> <p>The TERT recommends that the Party enhance the description of the methods used, including the rationale for the choice of methods, and its reporting of the descriptions, assumptions, references and sources of information used for the EFs</p>

<i>ID#</i>	<i>Reporting requirement</i>	<i>Description of area of improvement with recommendation or encouragement</i>
		and AD used, to compile the GHG inventory, ensuring that the inventory is complete for all categories.
2.G.8	Specified in paragraph 47 of the MPGs Completeness	<p>The Party did not report emissions and removals for all categories, gases and carbon pools considered in the GHG inventory throughout the reported years on a gas-by-gas basis in units of mass at the most disaggregated level, with emissions by sources listed separately from removals by sinks, using the CRTs. The TERT noted that this is linked to the Party not using the agreed CRTs.</p> <p>During the review, Andorra explained that, because the CRTs were only available in PDF format (in the annexes to decision 5/CMA.3) and not available in Spanish, it undertook the task of reconstructing all the tables internally and translating them. Andorra used the IPCC inventory software (version 2.69) to export summary tables, but the summary tables included in the BTR1 do not present all the required information.</p> <p>The TERT recommends that the Party report emissions and removals for all categories, gases and carbon pools considered in the GHG inventory throughout the reported period on a gas-by-gas basis in units of mass at the most disaggregated level using the agreed CRTs.</p> <p>The TERT encourages Andorra to use the ETF GHG inventory reporting tool for that purpose.</p>
2.G.9	Specified in paragraphs 48–49 of the MPGs Completeness	<p>The Party did not report estimates of emissions of NF<sub>3</sub> and did not disaggregate data by chemical for HFCs and PFCs (see ID# 4.I.1 below).</p> <p>During the review, Andorra explained that NF<sub>3</sub> emissions do not occur in the country.</p> <p>The TERT notes the recommendation on fluorinated gases in ID# 4.I.1 below and also recommends that the Party clarify its reporting of NF<sub>3</sub> emissions in the next BTR, either by providing estimates or showing evidence that those emissions do not occur in the country.</p>
2.G.10	Specified in paragraph 51 of the MPGs Completeness	Andorra did not provide information on precursor gases (see ID# 3.E.2 below).
2.G.11	Specified in paragraph 52 of the MPGs Completeness	<p>Andorra did not report indirect N<sub>2</sub>O emissions from sources other than those in the agriculture and LULUCF sectors.</p> <p>The TERT encourages Andorra to report indirect N<sub>2</sub>O emissions from sources other than those in the agriculture and LULUCF sectors as a memo item or provide information to clarify whether the emissions occur in the country.</p>
2.G.12	Specified in paragraph 50 of the MPGs Inventory submission	<p>Andorra did not report GHG emissions by sources and removals by sinks in accordance with the sectors listed in the MPGs. Specifically, in the tables provided in appendix III to the BTR1, emissions from the agriculture sector are not separated from those from the LULUCF sector.</p> <p>During the review, Andorra explained that because the CRTs were only available in PDF format (in the annexes to decision 5/CMA.3) and not available in Spanish, it undertook the task of reconstructing all the tables internally and translating them. In addition, Andorra used the IPCC inventory software (version 2.69) to export several tables.</p> <p>The TERT recommends that the Party report emissions and removals from the LULUCF sector separately from those from the agriculture sector, in accordance with the agreed CRTs, in the next BTR.</p> <p>The TERT encourages Andorra to use the ETF GHG inventory reporting tool for that purpose.</p>
2.G.13	Specified in paragraph 53 of the MPGs Completeness	Andorra did not report emissions from fuel used for international aviation as a separate entry (see ID# 3.E.4 below).
2.G.14	Specified in paragraph 54 of the MPGs Completeness	Andorra did not provide information on how feedstocks and non-energy use of fuels have been accounted for in the inventory, under the energy or IPPU sectors, in accordance with the 2006 IPCC Guidelines.

<i>ID#</i>	<i>Reporting requirement</i>	<i>Description of area of improvement with recommendation or encouragement</i>
		The TERT recommends that the Party report how feedstocks and non-energy use of fuels have been accounted for in the inventory, under the energy or IPPU sectors, in accordance with the MPGs and the agreed CRTs (see also ID# 3.E.3 below).
2.G.15	Specified in paragraph 56 of the MPGs  Methods	Andorra did not provide supplementary information on emissions and removals from harvested wood products estimated using the production approach.  During the review, Andorra explained that, because there is no production of the harvested wood products paper, wood panels and sawn wood in the country, it did not report information on emissions and removals from harvested wood products.  The TERT recommends that the Party include this explanation in the next BTR.
2.G.16	Specified in paragraphs 30–31 of the MPGs  Notation keys	Andorra did not report all categories for which methods are included in the 2006 IPCC Guidelines, or use the notation keys properly in completing the CRTs for all categories and subcategories or gases that were not reported.  During the review, Andorra explained that, because it used the IPCC inventory software (version 2.69) to export several tables, notation keys were not used in accordance with the reporting requirements.  The TERT recommends that the Party report all CRTs in accordance with decision 5/CMA.3 in the next BTR. The TERT also recommends that the Party use notation keys where numerical data are not available when completing the CRTs, in accordance with the reporting requirements (para. 31 of the MPGs).  The TERT encourages Andorra to use the ETF GHG inventory reporting tool for that purpose.
2.G.17	Specified in paragraph 32 of the MPGs  Completeness	Andorra did not report information on categories that are insignificant according to the emission threshold defined in the MPGs.  During the review, Andorra explained that it has not yet evaluated the level of emissions for categories that could potentially be defined as insignificant according to the threshold defined in the MPGs.  The TERT recommends that the Party evaluate categories that could potentially be defined as insignificant according to the threshold defined in the MPGs and report information on categories that are insignificant in the next BTR.
2.G.18	Specified in paragraph 6 in conjunction with paragraph 57 of the MPGs  Time series	Andorra did not report a complete time series back to 1990. The TERT noted that the Party has applied flexibility for this provision. Specifically, Andorra reported estimates only for 1990, 1995, 2000, 2005 and 2010–2021. The Party did not provide an estimated time frame for improving its reporting in this regard.  During the review, Andorra explained that it is assessing how to apply IPCC splicing techniques in order to report a consistent time series, and, once it has a better understanding of the required efforts, it will be able to provide an estimated time frame for improving its reporting in this regard.  The TERT recommends that the Party include an estimated time frame for improving its reporting of a complete time series in the next BTR.
2.G.19	Specified in paragraph 58 of the MPGs  Time series	Andorra reported the latest year of the GHG inventory as 2021, which is consistent with the provision that the latest reporting year shall be no more than two years prior to the submission of the national inventory report.

<sup>a</sup> Organized by the secretariat as a process independent from the technical expert review to support developing countries in reporting; see <https://unfccc.int/process-and-meetings/transparency-and-reporting/support-for-developing-countries/ghg-support#MAIN->.

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 34–35 of the MPGs  1. General (energy sector)	The Party did not document whether category-specific QA/QC procedures are employed for the energy sector.  During the review, the Party explained that it has in place QA/QC mechanisms for the energy sector data but not all of them are documented or explained in the BTR1. One of the main mechanisms is the National Energy Register, information on which is provided in chapter 2.1.2 of the BTR1. The National Energy Register, a tool set up

ID#	Reporting requirement	Description of area of improvement with recommendation or encouragement
3.E.2	Specified in paragraph 51 of the MPGs 1.A Fuel combustion – sectoral approach – precursor gases	<p>through law 21/2018 on the promotion of energy transition and climate change for the centralized monitoring and control of the country's energy flows and whose operating conditions are established by regulation, was put into operation in early 2024. The purpose of the National Energy Register is to centralize data on the quantities of thermal and electrical energy produced, consumed, stored, imported and exported on a national scale to determine and establish the national energy balance from a quantitative point of view and provide objective and transparent information in this regard. The TERT noted that category-specific QA/QC procedures for all categories do not have to be included in the BTR but could be documented in a stand-alone document.</p> <p>The TERT recommends that the Party elaborate an inventory QA/QC plan in accordance with the 2006 IPCC Guidelines and paragraph 35 of the MPGs for the energy sector and make reference to it in the next BTR (see also ID# 2.G.4 above).</p> <p>The ERT noted that, according to paragraph 51 of the MPGs, each Party should provide information on the precursor gases CO, NO<sub>x</sub> and NMVOCs, as well as SO<sub>x</sub>. However, Andorra did not provide estimates of emissions of the precursor gases.</p> <p>During the review, Andorra indicated that this is an area that it plans to explore further, taking into account its national circumstances.</p> <p>The TERT encourages the Party to estimate emissions of CO, NO<sub>x</sub>, NMVOCs and SO<sub>x</sub> using consistent AD that it uses to estimate GHG emissions from combustion of all fuels used in the country.</p>
3.E.3	Specified in paragraphs 36 and 54 of the MPGs Fuel combustion – reference approach – CO <sub>2</sub>	<p>The BTR (appendix V, p.257) provides an analysis of the comparison between the reference and the sectoral approach used for estimating CO<sub>2</sub> emissions from fuel combustion. The TERT noted that the Party did not exclude in the reference approach the carbon associated with non-energy use of fuels, but did report in table 22 of the BTR1 the quantity of lubricants used as AD to estimate CO<sub>2</sub> emissions from non-energy use of fuels for category 2.D.1.</p> <p>During the review, the Party explained that it has data on the consumption of kerosene wax based on import data. The main importers of the product are two companies related to the repair and installation of machinery and the repair and maintenance of skis. Therefore, lubricants and paraffins are not used for energy purposes in the country and there are no emissions associated with their combustion. Andorra is aware that it does not need to provide data on lubricants and paraffins for category 2.D. The TERT noted that this issue is not related to the exclusion of non-energy use of fuels in the reference approach but rather that, when comparing CO<sub>2</sub>-related fuel combustion emissions between the reference and the sectoral approach, the Party should transparently demonstrate that it has excluded the carbon used for non-energy use of fuels in the reference approach.</p> <p>In addition, the TERT noted that lubricants are also likely to be used in the country in two-stroke engines, particularly for grass cutting, chainsaws and other small-engine applications. Therefore, if that is the case, the inventory could be incomplete in that regard, and it would be important to include lubricant use associated with two-stroke engine fuel use in the reference and the sectoral approach.</p> <p>The TERT recommends that Andorra report on its progress in quantifying the amount of lubricants used and the associated GHG emissions from combustion in two-stroke engines and recalculate the CO<sub>2</sub> emission estimates for non-energy use of lubricants.</p> <p>The TERT encourages the Party to transparently report on excluded carbon associated with non-energy use of fuels in the comparison of the reference and the sectoral approach to estimating CO<sub>2</sub> emissions from fuel combustion.</p>
3.E.4	Specified in paragraphs 32 and 47 of the MPGs International aviation – CO <sub>2</sub>	<p>Andorra did not report emissions from fuel used for international aviation.</p> <p>According to its BTR1 (p.65) Andorra has only one heliport, located in La Massana, and no airport. However, there are no scheduled passenger flights to heliports in Andorra, although it is possible to book taxi helicopter flights from Barcelona, Lleida, Perpignan or Toulouse for fixed prices. The TERT noted that those emissions constitute international aviation.</p> <p>During the review, Andorra further explained that it has only one heliport, located in La Massana, but another national heliport is being constructed in Pal. Andorra is</p>

ID#	Reporting requirement	Description of area of improvement with recommendation or encouragement
3.E.5	Specified in paragraphs 21–22 of the MPGs 1.A.3 Transport – CO <sub>2</sub>	<p>aware that some medical or emergency flights take place, transporting passengers to hospitals in Barcelona or Toulouse, and that the associated emissions should be considered under international aviation. Andorra also explained that it was not possible to gather data on the annual number of this type of flights.</p> <p>Andorra reported CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O emissions estimated on the basis of the total amount of imported jet kerosene, which are all accounted for as domestic aviation. The TERT noted that this approach implies that emissions associated with domestic aviation are not reported accurately because they also include emissions from international aviation and therefore result in an overestimation of emissions from domestic aviation and an underestimation (or lack of estimation) of emissions from international aviation.</p> <p>The TERT recommends that the Party (1) document transparently all activities related to international aviation and domestic aviation and how it treats emissions from international aviation and separates them from domestic aviation; and (2) make efforts to collect AD associated with international aviation, subtracting it from the AD for domestic aviation, and report the related CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O emissions accordingly.</p> <p>The TERT encourages the Party to estimate and report CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O emissions associated with international aviation.</p> <p>The CO<sub>2</sub> EFs used for liquefied natural gas, gasoline and diesel oil for the BTR1, the same as those used for the Party’s fourth biennial update report, are presented in table 5 of the BTR1. The key observation is that all three CO<sub>2</sub> EFs presented are significantly below the default IPCC range for CO<sub>2</sub> EFs. The Party explained during the review that these EFs were sourced from Spain’s 2023 GHG inventory to the UNFCCC, compiled by the Spanish Ministry for the Ecological Transition and the Demographic Challenge, given that all three fuels are sourced from Spain and should, therefore, have the same fuel characteristics. During the review, the TERT asked the Party to clarify if it has done any investigation with respect to the characteristics (calorific value and/or carbon content) of the fuels. During the review, Andorra responded that it has not yet investigated the characteristics of the fuels even though it is aware of the need to do so in order to improve transparency. The Party clarified that carrying out an analysis of the methodology used by Spain to determine the carbon content of the fuels has been included in the inventory improvement plan (appendix VI to the BTR1) as an immediate priority. The Party also explained that the EFs being used do not take into account that the total fuel consumption of gasoline and diesel oil in Andorra includes fuel imported from France, and acknowledged the need to determine a weighted average CO<sub>2</sub> EF for these fuels. The TERT concluded that there is a potential issue of accuracy for this important category.</p> <p>The TERT recommends that the Party either engage with the inventory compilers in Spain and France to source information for determining country-specific CO<sub>2</sub> EFs for liquified natural gas, gasoline and diesel oil, and determine weighted average EFs for these fuels, and use information sourced from Spain and France on CO<sub>2</sub> EFs to determine CO<sub>2</sub> EF uncertainty values for liquified natural gas, gasoline and diesel oil; or document in the BTR why the EFs are outside the IPCC default range of CO<sub>2</sub> EFs for gasoline and diesel oil.</p>
3.E.6	Specified in paragraph 21 of the MPGs 1.A.3.b Road transportation – CO <sub>2</sub> , CH <sub>4</sub> and N <sub>2</sub> O	<p>In its BTR1 (p.208) the Party explained that global fuel import data were used to disaggregate fuel consumption for road transportation between domestic and foreign vehicles. However, the BTR1 does not include a comparison of fuel consumption for road transportation estimated using vehicle kilometres travelled (bottom-up fuel consumption estimation) with that derived from global fuel import data (top-down fuel consumption estimation) or demonstrate how the results of the comparison are used to reconcile or correct the bottom-up estimation of fuel consumption using mileage data.</p> <p>During the review, the Party clarified that an unpublished 2021 study prepared by the Andorra Research + Innovation institute enabled the inventory team to improve the characterization of fuel consumption in the transport sector. Thanks to the information provided on the vehicles of residents (domestic) and tourists by type of vehicle (according to the classification in the 2006 IPCC Guidelines) and by type of fuel (gasoline or diesel), it was possible to distribute fuel consumption for road</p>



ID#	Reporting requirement	Description of area of improvement with recommendation or encouragement
		<p>transportation for 2020–2021 according to the characterization of the mobile fleet. The same study identifies the domestic (internal) mileage by vehicle; however, it is important to note that not all the fuel imported and loaded in Andorra is consumed in the country, since the majority (79.6 per cent) of fuel consumption is outside the borders of Andorra. Despite this, data on mileage by vehicle type are not available for vehicles with foreign licence plates (which represent 60 per cent of fuel consumption for road transportation) and therefore the methodology based on travel mileage could not be used in Andorra. An improvement in this area would be to characterize the distribution of average mileage by type of vehicle and type of fuel and include buses or heavy-duty vehicles in the characterization of foreign-registered vehicles (because currently information is available only on passenger vehicles). The TERT agrees with the Party’s plan on compiling detailed information on vehicle kilometres travelled to improve the estimates.</p> <p>The TERT recommends that the Party make efforts to collect the data required for applying a higher-tier methodology for estimating CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O emissions from road transportation, ensuring that it considers the methodologies of neighbouring countries (Spain and France) to avoid potential double counting of fuel used by foreign-registered vehicles in its territory, and report thereon in the next BTR.</p>
3.E.7	<p>Specified in paragraphs 21 and 47 of the MPGs</p> <p>1.A.4 Other sectors – CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O</p>	<p>The BTR1 (p.202) states that data distribution for the entire time series with respect to fuel consumption in the residential, commercial/institutional and industrial sectors was estimated by extrapolating data on thermal energy consumption in buildings published in a 2011 white paper on energy in Andorra. The TERT noted that it is unclear which extrapolation technique was used and whether it is in line with the splicing techniques suggested in the 2006 IPCC Guidelines (vol. 1, chap. 5).</p> <p>During the review, the Party explained that the fuel consumption distribution data published in the aforementioned white paper were used for the whole time series, applying the same distributions for all inventory years. These distributions have been used for the whole time series because no other data are available and because it was assumed that there has not been any structural change in the energy and economic systems that would substantially influence the fuel consumption distribution by sector. However, the Party has included compiling a national energy balance that ensures the exhaustiveness of the data collected, as well as disaggregating the information by residential, industrial, commercial and institutional sector, in its inventory improvement plan (appendix VI to the BTR) as an immediate priority.</p> <p>Furthermore, it is expected that the National Energy Registry will enable progress in making this improvement by helping to compile energy statistics that allow periodic reporting of fuel consumption disaggregated by sector. Therefore, it is expected that new estimates will be extrapolated from new data.</p>
3.E.8	<p>Specified in paragraph 31 of the MPGs</p> <p>1.B.1.b Fuel transformation – CO<sub>2</sub> and CH<sub>4</sub></p>	<p>Each Party shall use notation keys where numerical data are not available when completing CRTs, indicating the reasons why emissions from sources and removals by sinks and associated data for specific sectors, categories and subcategories or gases are not reported. In the emission summary tables in the BUR (p.152) for 2018, the Party reported emissions from solid fuel transformation as “NE” without providing an explanation as to why the emissions were not estimated.</p> <p>During the review, the Party explained that solid fuel transformation activities do not occur in the country. The TERT noted that the correct notation key to use, therefore, is “NO”.</p> <p>The ERT recommends that the Party use “NO” to indicate that CO<sub>2</sub> and CH<sub>4</sub> fugitive emissions from solid fuel transformation do not occur in Andorra.</p>
3.E.9	<p>Specified in paragraph 32 of the MPGs</p> <p>1.B.2.a Oil – CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O</p>	<p>The BTR1 (p.197) states that 50 per cent of LPG consumption (butane and propane) is used in the commercial/institutional sector, while the balance is used in the residential sector. The TERT noted that the BTR1 is not transparent as to how LPG is transported and distributed to consumers in the commercial/institutional and</p>

<i>ID#</i>	<i>Reporting requirement</i>	<i>Description of area of improvement with recommendation or encouragement</i>
		residential sectors and whether any fugitive emissions occur or they are considered negligible for this activity.  During the review, the Party clarified that Andorra’s energy consumption of LPG is insignificant (less than 1.5 per cent of the total energy consumption) and it did not estimate fugitive emissions from the transportation of this fuel. In addition, there are no distribution networks for butane or propane, which are distributed in gas bottles, and so butane- and propane-associated GHG emissions are not expected. However, in the case of LPG, no demonstration of insignificance of emissions was reported in the BTR1 for category 1.B.2.a.iii.  The TERT recommends that the Party estimate fugitive CO <sub>2</sub> , CH <sub>4</sub> and N <sub>2</sub> O emissions from the transportation of LPG or demonstrate that these emissions are insignificant.
3.E.10	Specified in paragraph 52 of the MPGs  1.A Fuel combustion – sectoral approach – indirect emissions – CO <sub>2</sub>	Andorra did not report estimates of indirect CO <sub>2</sub> emissions for the energy sector.  During the review, the Party explained that it did not report the emissions because, according to the MPGs, the reporting of indirect CO <sub>2</sub> emissions from the atmospheric oxidation of CH <sub>4</sub> , CO and NMVOCs is not mandatory. Additionally, there is no gas or oil extraction, refining or processing in Andorra, and natural gas is not transported. However, Andorra clarified that transportation and distribution activities for refined products (gasoline, diesel oil, aviation kerosene) produce NMVOC emissions. Hence, the estimation of NMVOC emissions from the transportation and distribution of liquid fuels in tanks has been included in the Party’s inventory improvement plan (appendix VI to the BTR) as a mid- to long-term priority. Also, the Environment and Sustainability Department of the Government of Andorra is elaborating a national inventory of air pollutants, focused on road transportation and the residential sector, that includes NMVOCs. This will provide continuity and improve on the national survey of air pollutants in the residential, tertiary, institutional and transport sectors performed in 2005, which concluded that total emissions of gases such as CO, NMVOCs and SO <sub>x</sub> were less than 3 t/year. Hence, estimating emissions of these gases has not been a priority in Andorra’s national GHG inventory. The Party mentioned that there could be a low-priority capacity-building need for improving technical understanding, interpretation and application of the <i>2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories</i> in this regard.  The TERT encourages the Party, if it intends to estimate indirect emissions from fuel use, to use the AD that it has already compiled to estimate indirect CO <sub>2</sub> emissions from the energy sector.

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 paragraph 49 of the MPGs  – HFCs and PFCs	Andorra reported in its BTR1 (appendices II–III) emissions of fluorinated gases only by group, such as HFCs, rather than by individual chemical, and only reported emissions in CO <sub>2</sub> eq and not in units of mass. The MPGs require reporting of fluorinated gases by individual species and in both units of mass and CO <sub>2</sub> eq.  During the review, Andorra clarified that data were available in the calculation tool used, but the information was not reported in the BTR1.  The TERT recommends that Andorra report emissions of fluorinated gases by individual chemical species and in both units of mass and CO <sub>2</sub> eq.
4.I.2	Specified in paragraphs 21 and 47 of the MPGs  – HFCs and PFCs	Andorra reported in its BTR1 (pp.216–218) that there is currently insufficient data available to enable it to follow the categorization of activities recommended in the 2006 IPCC Guidelines as all fluorinated gas consumption is reported in one category, and that the emissions reported under refrigeration and air conditioning probably also include emissions from other activities, such as foam blowing and fire protection.  During the review, Andorra clarified that data on fluorinated gas consumption were assessed by gas rather than by end-use category and that this has been identified as an area for potential future improvement.

<i>ID#</i>	<i>Reporting requirement</i>	<i>Description of area of improvement with recommendation or encouragement</i>
		The TERT recommends that Andorra disaggregate data on consumption of fluorinated gases by use, such as domestic refrigeration, commercial refrigeration, stationary air conditioning and mobile air conditioning, and use the relevant EFs and parameters from the 2006 IPCC Guidelines to estimate emissions in the appropriate BTR categories.

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	Specified in paragraphs 21 and 23 of the MPGs 3.A.1 Cattle – CH <sub>4</sub>	<p>In its BTR1 (table 6, p.53) Andorra reported that CH<sub>4</sub> emissions from enteric fermentation was identified as a key category. Within the category, cattle livestock was identified as a significant species, contributing 80 per cent of the total CH<sub>4</sub> emissions from enteric fermentation in 2021. Additionally, in its BTR1 (p.56) Andorra reported that tier 1 methodology was used together with default EFs from the 2006 IPCC Guidelines (vol. 4, chap. 10, tables 10.10 and 10A.2) to estimate CH<sub>4</sub> emissions from enteric fermentation for all livestock categories.</p> <p>During the review, the Party clarified that it was not possible to implement tier 2 methodology owing to a lack of country-specific data (e.g. on birthweight, weight gain, feed digestibility). However, the Party indicated that an ongoing study to evaluate the mass of slaughtered animals may provide data on animal weight. The TERT concluded that this indicates an issue of accuracy and that the approach used by Andorra to estimate CH<sub>4</sub> emissions from enteric fermentation of cattle is not in line with the 2006 IPCC Guidelines (vol. 4, chap. 10, figure 10.2).</p> <p>Therefore, the TERT recommends that Andorra collect country-specific data on performance parameters (e.g. birthweight, weight gain, feed intake, digestible energy of feed rations) and develop country-specific enteric fermentation EFs for cattle livestock using a tier 2 approach, or clearly document in the next BTR why the methodological choice was not in line with the corresponding decision tree in the 2006 IPCC Guidelines or with para. 23 of the MPGs.</p>
5.A.2	Specified in paragraphs 21 and 32 of the MPGs 3.A Enteric fermentation and 3.B Manure management – CH <sub>4</sub> and N <sub>2</sub> O	<p>In its BTR1 (p.183) Andorra reported “0” for CH<sub>4</sub> emissions from enteric fermentation and CH<sub>4</sub> and N<sub>2</sub>O emissions from manure management for all livestock categories except cattle, sheep, goats and horses for the entire time series.</p> <p>During the review, Andorra clarified that three farms in the country keep small numbers of poultry and some households keep swine and rabbits, but those livestock populations are insignificant. The TERT concluded that the Party is not estimating the associated emissions. The TERT noted that not estimating emissions from swine, poultry and rabbits is not in line with the 2006 IPCC Guidelines, which provide the default EFs and parameters required to estimate CH<sub>4</sub> emissions from enteric fermentation of swine (vol. 4, chap. 10, table 10.10) and CH<sub>4</sub> and N<sub>2</sub>O emissions from manure management of poultry, swine and rabbits (vol. 4, chap. 10, tables 10.15, 10.16 and 10.19). The TERT concluded that this indicates an issue of completeness.</p> <p>The TERT recommends that Andorra collect relevant data and estimate and report CH<sub>4</sub> emissions from enteric fermentation and CH<sub>4</sub> and N<sub>2</sub>O emissions from manure management of poultry, swine and rabbits using tier 1 methodology, or report “NE” in CRTs 3.B(a) and 3.B(b) and justify that the emissions are below the threshold of significance.</p>
5.A.3	Specified in paragraphs 21–22 of the MPGs – N <sub>2</sub> O	<p>In its BTR1 (p.239) Andorra stated that data on the N content of the total amount of inorganic N fertilizer imported into the country and used on agricultural soils are not available. Therefore, Andorra estimated direct and indirect N<sub>2</sub>O emissions from synthetic fertilizer using the total amount of inorganic fertilizer imported into the country without adjusting the data for the percentage of N contained in the fertilizer. Andorra stated that evaluating data on the N content of inorganic fertilizer imported into the country has been included as a priority in its inventory improvement plan (appendix VI to the BTR1).</p> <p>The TERT considers that the approach implemented by Andorra is not in line with the 2006 IPCC Guidelines (vol. 4, section 11.2.1.3) as it leads to an overestimation</p>

<i>ID#</i>	<i>Reporting requirement</i>	<i>Description of area of improvement with recommendation or encouragement</i>
		of direct and indirect N <sub>2</sub> O emissions from inorganic fertilizer applied to agricultural soils and therefore an issue of accuracy.  The TERT recommends that Andorra collect data on the N content of the inorganic fertilizer imported into the country and used on agricultural soils, and accordingly revise the estimates of direct and indirect N <sub>2</sub> O emissions from inorganic N fertilizer applied to agricultural soils.
5.A.4	Specified in paragraphs 21 and 32 of the MPGs  3.D.1.d Crop residues – N <sub>2</sub> O	In its BTR1 (p.239) Andorra reported that direct and indirect N <sub>2</sub> O emissions from crop residues left on agricultural soils were not estimated owing to a lack of AD on yield for various annual crop species, perennial grasses and grass/clover pastures.  During the review, the Party explained that, for tobacco cultivation, the emissions were not estimated because there is a legal act that prohibits leaving tobacco residues in fields, but it does not apply to residues of other annual and perennial crops (e.g. perennial grasses and grass/clover pastures). Additionally, Andorra confirmed that data on yields of annual and perennial crops are not available. The TERT concluded that this indicates an issue of completeness.  The TERT recommends that Andorra collect data on yields of annual crops and perennial crops (e.g. grass/clover pastures) and management practices to estimate direct and indirect N <sub>2</sub> O emissions for this category. Alternatively, the Party could explore the data reported by neighbouring countries (after careful analysis of whether the data are applicable for the national circumstances of Andorra) and use those data to estimate the emissions. The TERT also recommends that Andorra estimate and report direct and indirect N <sub>2</sub> O emissions from crop residues left on agricultural soils or report them as “NE” and justify that the emissions are below the threshold of significance.

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 paragraphs 21–22 of the MPGs  Land representation – CO <sub>2</sub>	Andorra reported in its BTR1 emissions and removals associated with the six IPCC land-use categories (forest land, cropland, grassland, wetlands, settlements and other land), but no information about its definitions of the land uses. During the review, the Party confirmed that it does not have such information but has included this as a priority in its inventory improvement plan (appendix VI to the BTR1).  The TERT noted that the methodology used by Andorra may not be in accordance with the 2006 IPCC Guidelines (vol. 4, chap. 3) because the Party should describe and apply definitions consistently for the land area over time and describe the methods and definitions used to determine areas of managed and unmanaged land. The TERT noted that this is a transparency issue that may affect the accuracy of the inventory.  The TERT recommends that Andorra include information on the definitions and methods used to determine land uses in the BTR in accordance with the 2006 IPCC Guidelines (vol. 4, section 3.2).
6.L.2	Specified in paragraphs 21, 24, 34 and 35 of the MPGs  Land representation – CO <sub>2</sub>	Andorra reported in its BTR1 (appendix IV) the methodology used to identify AD (areas) for land uses and land-use changes within the time series. Information on land-use representation (areas of land use and land-use conversion matrix) is provided in the database of the IPCC software and in tables 40, 44–47 and 49 in appendix IV to the BTR1.  The TERT noted that the provided land-use representation is not accurate because (1) there are differences in the total area of the country reported across the time series (e.g. 54,502.3 ha for 2021 and 49,153.6 ha for 2020); (2) there are differences between the final area of land use reported for year X and the initial area of the same land use reported for year X+1 (e.g. the final area of forest land reported for 2019–2020 is 18,932.2 ha but the initial area of forest land reported for 2020–2021 is 18,630.1 ha); and (3) there are no AD for annual conversions and, as a consequence, there are no estimations of the change in carbon stocks in biomass and dead organic matter. Therefore, the TERT considers that the land-use representation is not in accordance with the 2006 IPCC Guidelines (vol. 4, chap. 3) or the MPGs (para. 24).

ID#	Reporting requirement	Description of area of improvement with recommendation or encouragement
6.L.3	Specified in paragraph 21 of the MPGs 4.C Grassland – CO <sub>2</sub>	<p>During the review, the Party shared with the TERT the calculations in the IPCC inventory software and explained in more detail the methodology used by Andorra and the related results using the AD obtained by the data providers (Andorra Research + Innovation) and the process of completing the information in the IPCC inventory software. The TERT noted some problems in the processing of the AD in the IPCC inventory software, for instance the AD included in the “area entry table” correspond to the accumulation of land under conversions that occurred in the previous 19 years, but there is no information entered in the “annual area table”, which is necessary to calculate annual land-use conversions. The TERT concludes that this represents a potential issue of accuracy, which may have a significant impact on the inventory. The TERT noted that some of the issues identified could be resolved if a better QA/QC system were implemented.</p> <p>The Party acknowledged the inconsistencies identified by the TERT in the land-representation AD and indicated that there is an ongoing improvement process to address them and properly use the IPCC inventory software. This involves contracting a consultancy to enhance use of the IPCC inventory software and the 2006 IPCC Guidelines.</p> <p>The TERT recommends that the Party, if it continues to use the IPCC inventory software, improve its method of entering land-representation data in the software, enhance QA/QC activities to detect possible misclassification of the land-use areas during the time series and revise all the estimated annual emissions and removals from land conversions accordingly.</p> <p>Andorra reported in its BTR1 (appendix IV) that grassland is sustainably managed with moderate grazing, but there is no information about the parameters used for the stock change factors for annual change in organic carbon stocks in mineral soils. During the review, the Party provided the parameters used for the stock change factors for annual change in organic carbon stocks in mineral soils for grassland. The TERT noted that Andorra used the following values for relative stock change factors: 1 for the stock change factor for the land-use system, 1.14 for the stock change factor for management regime and 0 for the stock change factor for input of organic matter, from the 2006 IPCC Guidelines (vol. 4, chap. 2, equation 2.25, and vol. 4, chap. 6, table 6.2).</p> <p>The TERT identified that the stock change factor for input of organic matter (0) that was used is not in accordance with the 2006 IPCC Guidelines because the values for grassland that is sustainably managed with moderate grazing should be 1.0 or 1.11 according to the additional management inputs. Hence, the TERT concluded that the inventory is not fully accurate.</p> <p>During the review, Andorra recognized mistakes in the parameters used for stock change factors for annual change in organic carbon stocks in mineral soils for grassland. The Party indicated that an improvement process to address the errors and properly use the IPCC inventory software (see ID# 6.L.2 above) is ongoing. The TERT noted that some of the issues identified could be resolved if a better QA/QC system were implemented.</p> <p>The TERT recommends that Andorra use the stock change factors for annual change in organic carbon stocks in mineral soils from the 2006 IPCC Guidelines (vol. 4, chap. 2, equation 2.25, and vol. 4, chap. 6, table 6.2), revise its estimates accordingly and enhance its QA/QC activities.</p>
6.L.4	Specified in paragraph 47 of the MPGs 4(III) Direct and indirect N <sub>2</sub> O emissions from N mineralization/immobilization – N <sub>2</sub> O	<p>The Party reported in its BTR1 (appendix IV, pp.239–240) that it did not estimate N<sub>2</sub>O emissions from mineralization associated with loss of soil organic matter, resulting from change of land use or management on mineral soils, owing to a lack of information about changes in land use across the time series and a lack of data on the carbon and N content of the organic matter in the soils. However, Andorra reported emissions of carbon associated with loss of soil carbon through change in land use, for instance forest land converted to cropland, which is a source of N<sub>2</sub>O emissions. The TERT considers that the approach implemented by Andorra is not in line with the 2006 IPCC Guidelines (vol. 4, section 11.2.1), which state that N<sub>2</sub>O emissions from N mineralization should be estimated for all cases where loss of soil carbon occurs.</p> <p>During the review, the Party clarified that it has included estimating direct N<sub>2</sub>O emissions from N mineralization associated with loss of soil organic matter resulting</p>

<i>ID#</i>	<i>Reporting requirement</i>	<i>Description of area of improvement with recommendation or encouragement</i>
		<p>from land-use change in its inventory improvement plan (appendix VI to the BTR1). The TERT concludes that there is a potential issue of completeness.</p> <p>The TERT recommends that Andorra estimate and report N<sub>2</sub>O emissions from N mineralization associated with loss of soil organic matter, resulting from change of land use or management on mineral soils, in accordance with the 2006 IPCC Guidelines (vol. 4, section 11.2.1).</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 47 of the MPGs</p> <p>5.A.3 Uncategorized waste disposal sites – CH<sub>4</sub></p>	<p>Andorra reported in its BTR1 (p.247) that there are no landfills in the country, but alluded to landfills that were previously in operation where emissions may continue to occur. During the review, Andorra acknowledged that landfills, while no longer receiving waste, can still be sources of CH<sub>4</sub> emissions and noted that this issue has been included in the inventory improvement plan (appendix VI to the BTR1). The TERT notes that this may represent a completeness issue. The TERT also notes that it can be difficult to obtain historical data on waste handling dating back several decades, but recognizes that the IPCC model can be completed using IPCC default data and some expert judgment, such as by using proxies like population growth and/or gross domestic product to backcast waste amounts and by soliciting expert advice on historical waste composition.</p> <p>The TERT recommends that Andorra estimate and report CH<sub>4</sub> emissions from landfills no longer in operation using the first-order decay methodology contained in the 2006 IPCC Guidelines (vol. 5, chap. 3).</p>
7.W.2	<p>Specified in paragraph 21 of the MPGs</p> <p>5.D Wastewater treatment and discharge – CH<sub>4</sub></p>	<p>Andorra reported in its BTR1 (p.252) four different wastewater pathways that are present in the country. However, it is not clear how these pathways relate to the pathways described in the 2006 IPCC Guidelines (vol. 5, table 6.3). Furthermore, in the BTR1 (p.253) it is stated that an MCF of 0.1 was used for all types of wastewater treatment, which seems inconsistent with the 2006 IPCC Guidelines, which have a default MCF for untreated discharge of 0.1, but, for example, an MCF of 0 for centralized aerobic treatment plants, 0.5 for septic tanks and several other values for different types of system.</p> <p>During the review, Andorra clarified that, even though four pathways are described in the BTR1, only two have been considered throughout the time series (untreated discharge and aerobic treatment plants), while emissions associated with the other two pathways are considered negligible. Regarding the choice of MCF, Andorra explained that national data were not available.</p> <p>The TERT recommends that Andorra use the correct IPCC default MCF for aerobic wastewater treatment or provide a justification for using a country-specific value.</p>
7.W.3	<p>Specified in paragraphs 21–22 of the MPGs</p> <p>5.D.2 Industrial wastewater – N<sub>2</sub>O</p>	<p>From the BTR1 it is not clear whether the IPCC default parameters for non-consumed protein and industrial and commercial co-discharged protein were included in the calculation of emissions for this category. During the review, Andorra explained that there is not a lot of industrial activity in the country and that wastewater is usually co-discharged.</p> <p>The TERT recommends that Andorra use the IPCC default values for non-consumed protein and industrial and commercial co-discharged protein to estimate the emissions or justify in the BTR the country-specific parameters used.</p>

### 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>
		No issues 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>
		No issues identified

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 paragraph 67 of the MPGs	<p>Andorra did not provide all the necessary information for some of the selected indicators of progress towards the NDC. Specifically, base-year values for the indicators “Government’s electric vehicles” and “Energy audits of heated public buildings” were not reported.</p> <p>During the review, Andorra explained that it plans to report base-year values for these two indicators in the next BTR, considering any eventual changes in the list of indicators as a result of the potential change in the type of NDC target from an emission reduction compared with a ‘business as usual’ scenario to an economy-wide emission reduction.</p> <p>The TERT recommends that the Party report in the next BTR the base-year values for the indicators that it has selected for tracking progress towards the NDC.</p>
10.2	Specified in paragraph 68 of the MPGs	<p>Andorra did not provide the most recent information for some of the selected indicators of progress towards the NDC for each reporting year during the implementation period of the NDC. Specifically, the value for “Industry sector emissions and product use according to the national GHG inventory” was not reported. In addition, the values for “Government’s electric vehicles” and “Energy audits of heated public buildings” were reported as pending validation.</p> <p>During the review, Andorra explained that it plans to report the most recent information for each reporting year during the implementation period of the NDC in the next BTR, considering any eventual changes in the list of indicators as a result of the potential change in the type of NDC target from an emission reduction compared with a ‘business as usual’ scenario to an economy-wide emission reduction.</p> <p>The TERT recommends that the Party report in the next BTR the most recent values for the indicators that it has selected for tracking progress towards the NDC.</p>
10.3	Specified in paragraph 69 of the MPGs	<p>The description of the ‘traffic light colour code’ approach used to track progress in relation to each indicator reported in the BTR (p.76) is not sufficiently detailed.</p> <p>During the review, Andorra explained that it compared the most recent information for each selected indicator with the base-year value and applied a ‘traffic light colour code’, where green represents appropriate progression towards its NDC targets, orange a progression that does not respond to the set ambition, and red a progression that requires action for its improvement or that there is no quantitative information available to assess it and then a qualitative assessment is performed.</p> <p>The TERT recommends that the Party enhance the transparency of the description of the ‘traffic light colour code’ approach, in particular how the quantifiable values of the indicators (if any) are used to determine the colours and therefore to track progress in implementing the NDC.</p>

<i>ID#</i>	<i>Reporting requirement</i>	<i>Description of area of improvement with recommendation or encouragement</i>
10.4	Specified in paragraph 74(b–c) of the MPGs	<p>Andorra provided in its BTR1 a general description of the methodology and accounting approach used for compiling the information necessary to track progress towards the NDC, but did not report a description of each methodology and/or accounting approach used for constructing the ‘business as usual’ scenario, or each indicator selected to track progress towards the NDC.</p> <p>During the review, Andorra recognized the need to provide more detailed information on the methodology and accounting approach used; however, owing to its limited human, technical and administrative capacity, other improvements have been prioritized by the Party, and it was not able to report in detail on the methodology and accounting approach used or to complete CTF table 3.</p> <p>The TERT recommends that the Party enhance in the next BTR the description of each methodology and/or accounting approach used for constructing the ‘business as usual’ scenario and each indicator selected to track progress towards the NDC.</p>
10.5	Specified in paragraph 75(a), (c) and (g) in conjunction with paragraph 74 of the MPGs	<p>Andorra did not provide, as part of the description of the methodology and accounting approach used, the information required on key parameters, assumptions, definitions, data sources and models used; metrics used; sector-, category- or activity-specific assumptions, methodologies and approaches consistent with IPCC guidance, including the approach used to address emissions and subsequent removals from natural disturbances on managed land, the approach used to account for emissions and removals from harvested wood products and the approach used to address the effects of age-class structure in forests; and the methodologies used to track progress arising from the implementation of PaMs.</p> <p>During the review, Andorra recognized the need to provide more detailed information on the methodology and accounting approach used; however, owing to its limited human, technical and administrative capacity, other improvements have been prioritized by the Party, and it was not able to report in detail on the methodology and accounting approach used or to complete CTF table 3. Andorra also explained that it does not consider any LULUCF contribution beyond the GHG inventory. Therefore, the description of the approach used to address emissions and subsequent removals from natural disturbances on managed land, the approach used to account for emissions and removals from harvested wood products and the approach used to address the effects of age-class structure in forests would not be applicable.</p> <p>The TERT recommends that the Party provide in the next BTR the above-listed information required by paragraph 75(a), (c) and (g) of the MPGs.</p>
10.6	Specified in paragraph 76(b–c) of the MPGs	<p>Andorra did not explain how the methodology for each reporting year is consistent with the methodology or methodologies used when communicating the NDC; and methodological inconsistencies with its most recent national inventory report.</p> <p>During the review, Andorra recognized the need to provide more detailed information on the methodology and accounting approach used; however, owing to its limited human, technical and administrative capacity, other inventory improvements have been prioritized by the Party, and it was not able to provide the requested information.</p> <p>The TERT recommends that the Party provide in the next BTR the information required by paragraph 76(b–c) of the MPGs.</p>
10.7	Specified in paragraph 77(a) of the MPGs	<p>Andorra provided in its BTR1 a structured summary of progress towards the NDC containing all required elements, but did not follow the format of the agreed CTF table 4.</p> <p>During the review, Andorra explained that, because the CTF tables were only available in PDF format (in the annexes to decision 5/CMA.3) and not available in Spanish, it undertook the task of reconstructing all the tables internally and translating them. During that process, it deemed it appropriate to consolidate some tables to optimize efficiency. Andorra reported information for CTF tables 1, 2, 4 and 10 in a consolidated manner in one table in appendix VII to the BTR1, excluding the information required by paragraph 77(d) of the MPGs. In the future, Andorra plans to report all CTF tables included in the annexes to decision 5/CMA.3 using the ETF progress reporting tool.</p>



<i>ID#</i>	<i>Reporting requirement</i>	<i>Description of area of improvement with recommendation or encouragement</i>
		<p>The TERT recommends that the Party report the structured summary in the next BTR using the format of the agreed CTF table 4.</p> <p>The TERT encourages the Party to use the ETF reporting tool, once available, for reporting the CTF tables.</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 83 of the MPGs	<p>Andorra did not report information on costs of each action, policy and measure reported; non-GHG mitigation benefits; or how the mitigation actions interact with each other, as appropriate.</p> <p>During the review, Andorra explained that, considering that this information is not mandatory, it did not estimate the costs of each action or identify non-GHG mitigation benefits or interactions between mitigation actions. Owing to its limited human, technical and administrative capacity for reporting information on the costs of each action, non-GHG mitigation benefits and interactions between mitigation actions, other improvements have been prioritized by the Party. A relevant capacity-building need has been identified but not prioritized by the Party.</p> <p>The TERT encourages Andorra to provide in its next BTR, in the description column of CTF table 5, information on costs of each action, policy and measure reported; non-GHG mitigation benefits; and how the mitigation actions interact with each other, as appropriate, or to indicate that it has elected not to report this information and explain why.</p>
11.2	Specified in paragraphs 85–86 of the MPGs	<p>Andorra did not report estimates of expected and achieved GHG emission reductions for its actions, policies and measures in the tabular format referred to in paragraph 82 of the MPGs (CTF table 5). Hence, the Party also did not describe the methodologies and assumptions used to estimate the GHG emission reductions or removals due to each action, policy or measure.</p> <p>During the review, Andorra explained that it has identified gaps in its technical capacity to evaluate and quantify emission reductions resulting from mitigation actions; hence, it needed to apply flexibility with respect to this reporting requirement for the BTR1 and mentioned this as a high-priority capacity-building need in the BTR1 (section 6.6).</p> <p>The TERT encourages the Party to estimate, to the extent possible, the expected and achieved GHG emission reductions for its actions, policies and measures and report them in CTF table 5, and to describe, to the extent possible, the methodologies and assumptions used. If the Party deems it is not possible to report consistently with paragraphs 85–86 of the MPGs, the TERT encourages the Party to explain this in the next BTR.</p>
11.3	Specified in paragraph 6 in conjunction with paragraph 85 of the MPGs	<p>Andorra applied flexibility with respect to reporting estimates of expected and achieved GHG emission reductions for its actions, policies and measures in the tabular format referred to in paragraph 82 of the MPGs. Andorra identified the reporting of expected and achieved GHG emission reductions for its actions, policies and measures as a high-priority capacity-building need for consideration. However, the Party did not provide its estimated time frame for improving its reporting in this regard.</p> <p>During the review, Andorra explained its capacity constraints and provided information on its improvement plan and estimated time frame for improvement in this regard. In particular, Andorra has started using available projection models or software that allow it to estimate expected and achieved GHG emission reductions, and anticipates that the estimates will be provided in the next BTR.</p> <p>The TERT recommends that the Party provide the detailed information provided during the review on its plans to improve its estimation of expected and achieved GHG emission reductions for its actions, policies and measures, with estimated time frames in case the proposed improvement plans cannot be fully implemented in time for the next BTR.</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>
		No issues 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 6 in conjunction with paragraphs 92 and 102 of the MPGs	<p>Andorra applied flexibility with respect to reporting on projections; specifically, in accordance with paragraph 102 of the MPGs, it used a less detailed methodology and provided less coverage. The Party applied this flexibility with respect to paragraphs 94, 95 and 97–100 of the MPGs. The TERT also considered paragraph 102 of the MPGs when assessing the Party's adherence to paragraphs 96 and 101 of the MPGs, and assessed adherence with these paragraphs in terms of whether the reporting is complete and transparent considering the methodology and coverage applied. The Party did not provide information on its capacity constraints or an improvement plan and self-determined estimated time frame for improvement in relation to its reporting on projections.</p> <p>During the review, Andorra explained its capacity constraints and provided an improvement plan and estimated time frame for improvement in this regard. In particular, the Party has started to use available models and software for its projections and anticipates that the projections will be improved and updated for the next BTR.</p> <p>The TERT recommends that the Party provide the detailed information provided during the review on its plans to improve and update its projections, with estimated time frames for such improvement plans in case they cannot be fully implemented in time for the next BTR.</p>
13.2	Specified in paragraphs 94 and 102 of the MPGs	<p>Andorra did not report WEM projections for all GHG emissions and removals. The Party reported outdated WEM projections only for CO<sub>2</sub> and for the energy sector by backcasting two mitigation scenarios rather than projecting GHG emissions with existing measures.</p> <p>During the review, Andorra provided information on its plans to improve and update the WEM projections for the next BTR.</p> <p>Noting the flexibility applied by Andorra, the TERT encourages the Party to report WEM projections for all GHG emissions and removals.</p>
13.3	Specified in paragraphs 94 and 102 of the MPGs	<p>Andorra did not report WAM projections for all GHG emissions and removals. The Party reported outdated backcasted mitigation scenarios for CO<sub>2</sub> emissions in the energy sector instead of WAM projections. It also reported outdated WOM projections consisting of a baseline scenario.</p> <p>During the review, Andorra provided information on its plans to improve and update the WAM projections for the next BTR.</p> <p>The TERT encourages the Party to report WAM and WOM projections for all GHG emissions and removals.</p>
13.4	Specified in paragraphs 95 and 102 of the MPGs	<p>Andorra did not report projections beginning from the most recent year in the national inventory report or extend them at least 15 years beyond the next year ending in 0 or 5. Andorra presented projections beginning from 2011 and for 2030 and 2050.</p> <p>During the review, Andorra explained its capacity constraints in this regard and its plans to improve and update the GHG emission projections as a top priority for its next BTR.</p> <p>Noting the flexibility applied by Andorra, the TERT encourages the Party to report projections beginning from the most recent year in the national inventory report and extend them at least 15 years beyond the next year ending in 0 or 5.</p>
13.5	Specified in paragraph 6 in conjunction with	<p>Andorra applied flexibility with respect to reporting projections beginning from the most recent year in the national inventory report and extending them at least 15 years beyond the next year ending in 0 or 5, but provided projections for 2030 and</p>

<i>ID#</i>	<i>Reporting requirement</i>	<i>Description of area of improvement with recommendation or encouragement</i>
	paragraph 95 of the MPGs	<p>2050. The Party did not provide its estimated time frame for improving and updating its projections using the most recent GHG inventory available and extending them at least 15 years beyond the next year ending in 0 or 5.</p> <p>During the review, Andorra provided information on its plans to improve and update the projections, including the starting point and the end year, for the next BTR.</p> <p>The TERT recommends that the Party provide the detailed information provided during the review on its plans and time frame for improving and updating the projections, if the proposed improvements cannot be fully implemented in time for the next BTR.</p>
13.6	Specified in paragraphs 96(c) and 102 of the MPGs	<p>Andorra did not report the assumptions on PaMs included in the WEM and WAM projections. Specifically, it provided information on assumptions by sector but not for the specific PaMs included in the WEM and WAM projections.</p> <p>During the review, Andorra explained the constraints on its capacity to quantify the effect of PaMs and shared its plans to quantify the effect of PaMs and describe any assumptions used, if relevant, for the next BTR.</p> <p>The TERT encourages the Party to include in the description of the methodology used to update the projections detailed methodological information on the PaMs included in the WEM and WAM projections.</p>
13.7	Specified in paragraphs 96(d) and 102 of the MPGs	<p>Andorra did not provide a sensitivity analysis for its projections.</p> <p>During the review, Andorra explained that, owing to its limited human, technical and administrative capacity, it prioritized other inventory improvements, directing efforts towards areas where they can be most effective in addressing national climate action and mandatory reporting obligations.</p> <p>The TERT encourages the Party to provide a sensitivity analysis for any of the projections, together with a brief explanation of the methodologies and parameters used, once the Party has addressed the top-priority capacity-building need to improve and update its projections.</p>
13.8	Specified in paragraphs 97 and 102 of the MPGs	<p>Andorra did not report projections for the key indicators used to determine progress towards the NDC.</p> <p>During the review, Andorra explained that it was not possible to estimate projected emission reductions by key indicator as it was not possible to disaggregate energy consumption by subsector (residential, commercial and institutional). However, the Party is developing a National Energy Registry that will enable it to estimate the projected reductions.</p> <p>Noting the flexibility applied by Andorra, the TERT encourages the Party to provide projections for all key indicators that it has selected to determine progress towards its NDC once the required disaggregated data are available.</p>
13.9	Specified in paragraphs 98 and 102 of the MPGs	<p>Andorra did not report projections by gas.</p> <p>During the review, Andorra explained its capacity constraints in this regard and plans to improve and update the projections for the next BTR.</p> <p>Noting the flexibility applied by Andorra, the TERT encourages the Party to include projections by gas, as well as for the national total, using a common metric consistent with that in its national inventory report in its next BTR.</p>
13.10	Specified in paragraphs 99 and 102 of the MPGs	<p>Andorra did not report projections relative to actual inventory data for the preceding years. Specifically, it presented the projections performed for the updated NDC, which include historical GHG emissions for 1990–2011.</p> <p>During the review, Andorra explained its capacity constraints in this regard and plans to improve and update its projections using the latest available national GHG emission inventory for the next BTR.</p> <p>Noting the flexibility applied by Andorra, the TERT encourages the Party to present projections starting from the last GHG inventory year and including the historical GHG emissions for the preceding years.</p>
13.11	Specified in paragraphs 100 and 102 of the MPGs	<p>Andorra did not report projections with and without LULUCF in accordance with CTF tables 7–9.</p>

<i>ID#</i>	<i>Reporting requirement</i>	<i>Description of area of improvement with recommendation or encouragement</i>
		During the review, Andorra explained its capacity constraints in this regard and plans to improve and update the projections, including national totals with and without LULUCF, for the next BTR.  Noting the flexibility applied by Andorra, the TERT encourages the Party to report updated projections with and without LULUCF in accordance with CTF tables 7–9.

## II. Capacity-building needs<sup>3</sup> 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

2. Table 14 presents capacity-building needs identified by the TERT in consultation with the Party during the technical expert review of its BTR1.

Table 14

### Capacity-building needs identified in consultation with the Party

<i>ID#</i>	<i>Reporting requirement</i>	<i>Capacity-building need</i>
1	Specified in paragraph 29 of the MPGs	Collecting and analysing data for deriving uncertainty values for CO <sub>2</sub> EFs for the energy sector (high priority)
2	Specified in paragraphs 29, 40 and 44 of the MPGs	Reporting the results of the derivation of uncertainty for CO <sub>2</sub> EFs and uncertainty information for the energy sector (high priority)
3	Specified in paragraph 54 of the MPGs	Compiling an energy balance to support the estimation of emissions using the reference and the sectoral approach for the energy sector (high priority) <sup>a</sup>
4	Specified in paragraph 21 of the MPGs	Collecting and collect the data required for applying a higher-tier methodology for estimating CO <sub>2</sub> , CH <sub>4</sub> and N <sub>2</sub> O emissions from road transportation (high priority)
5	Specified in paragraph 52 of the MPGs	Collecting the required data for estimating indirect CO <sub>2</sub> emissions from the energy sector
6	Specified in paragraph 53 of the MPGs	Collecting AD from domestic and overseas operators involved in international aviation to report emissions from international aviation
7	Specified in paragraph 53 of the MPGs	Reporting on non-energy use of fuels in the comparison of the reference and the sectoral approach to estimating CO <sub>2</sub> emissions from fuel combustion
8	Specified in paragraph 54 of the MPGs	Providing support for enhancing human capacity as well for maintaining and enhancing the national energy registry to enable the compilation of Andorra's energy balance (high priority)
9	Specified in paragraphs 21 and 47 of the MPGs	Using the splicing techniques provided in the 2006 IPCC Guidelines (vol. 1, chap. 5) to separate emissions from the residential, tertiary and industrial sectors
10	Specified in paragraphs 34–35 of the MPGs	Developing and documenting category-specific QA/QC procedures for the energy sector
11	Specified in paragraph 51 of the MPGs	Estimating and reporting emissions of precursor gases (i.e. CO, NMVOCs, NO <sub>x</sub> and SO <sub>x</sub> )
12	Specified in paragraphs 21 and 47 of the MPGs	Obtaining the necessary data and information or using proxy methodologies considering experience of other Parties to allow for a more disaggregated and accurate calculation of emissions of HFCs by individual use
13	Specified in paragraph 21 of the MPGs	Conducting studies to obtain the country-specific data on performance parameters (e.g. birthweight, weight gain, feed intake, digestible energy of feed rations), including associated uncertainty rates, that are necessary for developing country-specific enteric fermentation EFs for cattle livestock subcategories

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

<i>ID#</i>	<i>Reporting requirement</i>	<i>Capacity-building need</i>
14	Specified in paragraphs 21 and 32 of the MPGs	Collecting data (e.g. by conducting surveys or studies) on yields of annual crops and perennial grasses, and grass/clover pastures, including associated uncertainty rates, for estimating direct and indirect N <sub>2</sub> O emissions from crop residues left on agricultural soils
15	Specified in paragraph 21 of the MPGs	Improving technical understanding of the LULUCF sector in order to improve the land representation and land-use matrix for the time series as well as the use of IPCC methodologies (high priority)
16	Specified in paragraph 21 of the MPGs	Using the IPCC inventory software for estimating emissions and removals from the LULUCF sector (high priority)
17	Specified in paragraphs 34–35 of the MPGs	Developing and implementing enhanced QA/QC for the LULUCF sector, particularly in relation to AD and the resulting estimates of emissions and removals (high priority)
18	Specified in paragraph 47 of the MPGs	Developing a methodology for estimating historical waste generation and waste composition for landfilled waste
19	Specified in paragraphs 83, 85, 86, 94, 95, 96(c–d) and 97–100 of the MPGs	Applying a projections model or software for estimating the costs of and describing the interactions between mitigation actions; estimating expected and achieved GHG emission reductions and describing the methodologies and assumptions used; estimating WOM, WEM and WAM projections using the latest GHG inventory available and extending the projections at least 15 years beyond the next year ending in 0 or 5; providing methodological descriptions of PaMs included in the WEM and WAM projections; providing estimates of historical emissions for up until the latest GHG inventory year available; making projections for key indicators of progress towards the NDC; estimating projections by gas and for a national total using common metrics with and without LULUCF; and performing a sensitivity analysis for the projections (high priority)
20	Specified in paragraphs 67–69 of the MPGs	Estimating annual quantitative values for selected indicators of progress towards the NDC (e.g. indicators related to specific mitigation actions) and comparing the most recent value with the base-year value (in association with the use of a ‘traffic light colour code’ for tracking progress) (high priority)

<sup>a</sup> Capacity-building need identified by the Party in its BTR1.

## **Annex**

### **Documents and information used during the review**

#### **A. Reference documents**

BTR1 of Andorra. Available at <https://unfccc.int/first-biennial-transparency-reports>.

IPCC. 2006. *2006 IPCC Guidelines for National Greenhouse Gas Inventories*. S Eggleston, L Buendia, K Miwa, et al. (eds.). Hayama, Japan: Institute for Global Environmental Strategies. Available at <http://www.ipcc-nggip.iges.or.jp/public/2006gl>.

“Modalities, procedures and guidelines for the transparency framework for action and support referred to in Article 13 of the Paris Agreement”. Annex to decision 18/CMA.1. FCCC/PA/CMA/2018/3/Add.2. Available at <https://unfccc.int/documents/193408>.

#### **B. Additional information provided by the Party**

Responses to questions during the review were received from Carles Miquel Garcia, Anna Boneta Herrero, Meritxell Cuyas Lamana and Albert Goma Roca (Government of Andorra, State Secretariat for Energy Transition, Transport and Mobility), including additional material.

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