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Report on the technical review of the eighth national communication and the technical review of the fifth biennial report of Italy

Parties included in Annex I to the Convention were requested by decision 6/CP.25 to submit their eighth national communication to the secretariat by no later than 31 December 2022. According to decision 15/CMP.1, Parties included in Annex I to the Convention that are also Parties to the Kyoto Protocol are required to include in their national communications supplementary information under Article 7, paragraph 2, of the Kyoto Protocol. This report presents the results of the technical review of the eighth national communication and relevant supplementary information under the Kyoto Protocol of Italy, conducted by an expert review team in accordance with the “Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention” and the “Guidelines for review under Article 8 of the Kyoto Protocol”.

Developed country Parties were requested by decision 6/CP.25 to submit their fifth biennial report to the secretariat by no later than 31 December 2022. This report presents the results of the technical review of the fifth biennial report of Italy, conducted by an expert review team in accordance with the “Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention”.

The review of these submissions took place in Rome from 23 to 27 October 2023.



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Abbreviations and acronyms

AEA	annual emission allocation
AR	Assessment Report of the Intergovernmental Panel on Climate Change
BR	biennial report
CH ₄	methane
CNR	National Research Council of Italy
CO ₂	carbon dioxide
CO ₂ eq	carbon dioxide equivalent
COP	Conference of the Parties
CRS	Creditor Reporting System
CTF	common tabular format
DAC	Development Assistance Committee
ERT	expert review team
ESD	European Union effort-sharing decision
ESR	European Union effort-sharing regulation
ETS	emissions trading scheme
EU	European Union
EU ETS	European Union Emissions Trading System
EURO-CORDEX	Coordinated Regional Downscaling Experiment (European branch)
F-gas	fluorinated gas
GDP	gross domestic product
GHG	greenhouse gas
GWP	global warming potential
HFC	hydrofluorocarbon
IE	included elsewhere
IPCC	Intergovernmental Panel on Climate Change
IPPU	industrial processes and product use
ISPRA	Institute for Environmental Protection and Research
LULUCF	land use, land-use change and forestry
MASE	Ministry of Environment and Energy Security of Italy
N ₂ O	nitrous oxide
NA	not applicable
NAP	national adaptation plan
NC	national communication
NE	not estimated
NF ₃	nitrogen trifluoride
NO	not occurring
non-Annex I Party	Party not included in Annex I to the Convention
NRRP	National Recovery and Resilience Plan
OECD	Organisation for Economic Co-operation and Development
PaMs	policies and measures
PFC	perfluorocarbon
reporting guidelines for supplementary information	“Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol. Part II: Reporting of supplementary information under Article 7, paragraph 2”
SF ₆	sulfur hexafluoride
TIMES	The Integrated Market Allocation–Energy Flow Optimization Model System
UNESCO	United Nations Educational, Scientific and Cultural Organization

UNFCCC reporting guidelines on BRs	“UNFCCC biennial reporting guidelines for developed country Parties”
UNFCCC reporting guidelines on CTF tables	“Common tabular format for ‘UNFCCC biennial reporting guidelines for developed country Parties’”
UNFCCC reporting guidelines on NCs	“Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications”
WAM	‘with additional measures’
WEM	‘with measures’
WOM	‘without measures’

I. Introduction and summary

A. Introduction

1. This is a report on the in-country technical review of the NC8 and BR5 of Italy. The review was organized by the secretariat in accordance with the “Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention”, particularly “Part IV: UNFCCC guidelines for the technical review of biennial reports from Parties included in Annex I to the Convention” and “Part V: UNFCCC guidelines for the technical review of national communications from Parties included in Annex I to the Convention” (annex to decision 13/CP.20), and the “Guidelines for review under Article 8 of the Kyoto Protocol” (annex to decision 22/CMP.1 and annex I to decision 4/CMP.1).
2. In accordance with decision 13/CP.20, a draft version of this report was transmitted to the Government of Italy, which provided comments that were considered and incorporated with revisions into this final version of the report.
3. The review was conducted from 23 to 27 October 2023 in Rome by the following team of nominated experts from the UNFCCC roster of experts: Violeta Hristova (Bulgaria), Medeia Inashvili (Georgia), Jennifer Mutua (Kenya), Kiyoto Tanabe (Japan) and Danhui Xu (China). Violeta Hristova and Medeia Inashvili were the lead reviewers. The review was coordinated by Kristina Kaar and Davor Vesligaj (secretariat).

B. Summary

4. The ERT conducted a technical review of the information reported in the NC8 of Italy in accordance with the UNFCCC reporting guidelines on NCs,¹ the reporting guidelines for supplementary information, in particular the supplementary information required under Article 7, paragraph 2, and on the minimization of adverse impacts under Article 3, paragraph 14, of the Kyoto Protocol² and of the information reported in the BR5 of Italy in accordance with the UNFCCC reporting guidelines on BRs.³

1. Timeliness

5. The NC8 was submitted on 30 December 2022, before the deadline of 31 December 2022 mandated by decision 6/CP.25.
6. The BR5 was submitted on 30 December 2022, before the deadline of 31 December 2022 mandated by decision 6/CP.25. The CTF tables were also submitted on 30 December 2022.

2. Completeness, transparency of reporting and adherence to the reporting guidelines

7. Issues and gaps identified by the ERT related to the information reported by Italy in its NC8 are presented in tables 1–2. The information reported, including the supplementary information under the Kyoto Protocol, mostly adheres to the UNFCCC reporting guidelines on NCs. The ERT concludes that the issue of a mandatory nature related to supplementary information under the Kyoto Protocol does not influence the Party’s ability to fulfil its commitments for the second commitment period of the Kyoto Protocol.
8. The ERT noted that Italy made improvements to the reporting in its NC8 compared with that in its NC7, including by addressing many recommendations and encouragements from the previous review report in the areas of PaMs, projections and the total effects of PaMs, financial, technological and capacity-building support, vulnerability assessment,

¹ Decision 6/CP.25, annex.

² Decision 15/CMP.1, annex, and decision 3/CMP.11, annex III.

³ Decision 2/CP.17, annex.

climate change impacts and adaptation measures, research and systematic observation, and supplementary information related to the Kyoto Protocol.

Table 1

Assessment of completeness and transparency of mandatory information reported by Italy in its eighth national communication

<i>Section of NC</i>	<i>Completeness</i>	<i>Transparency</i>	<i>Reference to description of recommendation</i>
Executive summary	Complete	Transparent	–
National circumstances relevant to GHG emissions and removals	Complete	Transparent	–
GHG inventory	Complete	Transparent	–
PaMs	Mostly complete	Transparent	Issue 3 in table I.2
Projections and the total effect of PaMs	Mostly complete	Transparent	Issues 3–4 in table I.3
Vulnerability assessment, climate change impacts and adaptation measures	Complete	Mostly transparent	Issue 1 in table I.5
Financial resources and transfer of technology	Mostly complete	Mostly transparent	Issues 1–3 and 6 in table I.4
Research and systematic observation	Complete	Transparent	–
Education, training and public awareness	Complete	Transparent	–

Note: A list of recommendations pertaining to the completeness and transparency issues identified in this table is included in annex I. The assessment of completeness and transparency by the ERT in this table is based only on the “shall” reporting requirements.

Table 2

Assessment of completeness and transparency of mandatory supplementary information under the Kyoto Protocol reported by Italy in its eighth national communication

<i>Supplementary information under the Kyoto Protocol</i>	<i>Completeness</i>	<i>Transparency</i>	<i>Reference to description of recommendation</i>
National system	Complete	Transparent	–
National registry	Complete	Transparent	–
Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	Complete	Transparent	–
PaMs in accordance with Article 2	Complete	Mostly transparent	Issue 1 in table I.8
Domestic and regional programmes and/or arrangements and procedures	Complete	Transparent	–
Information under Article 10 ^a	Complete	Transparent	–
Financial resources	Complete	Transparent	–
Minimization of adverse impacts in accordance with Article 3, paragraph 14	Complete	Transparent	–

Note: A list of recommendations pertaining to the completeness and transparency issues identified in this table is included in annex I. The assessment of completeness and transparency by the ERT in this table is based only on the “shall” reporting requirements.

^a The assessment refers to information provided by the Party on the provisions contained in Article 4, paras. 3, 5 and 7, of the Convention, as reported under Article 10 of the Kyoto Protocol, which is relevant only to Parties included in Annex II to the Convention. An assessment of the information on the other provisions of Article 10 of the Kyoto Protocol is provided under the relevant substantive headings under the Convention, for example research and systematic observation.

9. Issues and gaps identified by the ERT related to the information reported by Italy in its BR5 are presented in table 3. The information reported mostly adheres to the UNFCCC reporting guidelines on BRs.

10. The ERT noted that Italy made improvements to the reporting in its BR5 compared with that in its BR4, by addressing some recommendations and encouragements from the

previous review report in the areas of its quantified economy-wide emission reduction target and related assumptions, conditions and methodologies, progress in achievement of quantified economy-wide emission reduction targets and relevant information, PaMs, projections, and the provision of financial, technological and capacity-building support to developing country Parties.

Table 3

Summary of completeness and transparency of mandatory information reported by Italy in its fifth biennial report

<i>Section of BR</i>	<i>Completeness</i>	<i>Transparency</i>	<i>Reference to description of recommendation</i>
GHG emissions and removals	Complete	Transparent	–
Quantified economy-wide emission reduction target and related assumptions, conditions and methodologies	Complete	Mostly transparent	Issue 1 in table II.1
Progress in achievement of targets	Complete	Mostly transparent	Issue 2 in table II.2
Provision of support to developing country Parties	Mostly complete	Mostly transparent	Issues 1–2 in table II.4

Note: A list of recommendations pertaining to the completeness and transparency issues identified in this table is included in annex II. The assessment of completeness and transparency by the ERT in this table is based only on the “shall” reporting requirements.

II. Technical review of the information reported in the eighth national communication and fifth biennial report

A. National circumstances relevant to greenhouse gas emissions and removals

1. Technical assessment of the reported information

11. The NC8 contains key data on legislation, population trends, geography and land use, climate and climate change, economic developments, energy, transport, the buildings sector, industry, trade, the services sector, agriculture, forestry, resource efficiency and wastewater. An economic recession and the coronavirus disease 2019 pandemic had a significant impact on recent emission trends, with a reduction in production levels that affected the energy and industrial process sectors and a decline in the use of fuel for transport. One of the major updates on national circumstances in the NC8 since the NC7 is the explanation of various changes of national circumstances caused by the impact of and recovery from the pandemic. In this context, the NRRP is highlighted, which is a package of investments and reforms that is part of Next Generation EU,⁴ a plan and fund established at the European level to respond to the pandemic crisis and to transform the economies of the EU member States in view of future challenges, including ecological transition. A recent reorganization of the Government’s structure is also clearly explained, including a clarification that MASE is now playing a central role in the protection of the environment, ecosystems and cultural resources in Italy.

2. Assessment of adherence to the reporting guidelines

12. The ERT assessed the information reported in the NC8 of Italy and recognized that the reporting is complete and transparent, and thus adheres to the UNFCCC reporting guidelines on NCs. There were no issues raised during the review relating to the topics discussed in this chapter of the review report.

⁴ See https://next-generation-eu.europa.eu/index_en.

B. Greenhouse gas inventory information⁵

1. Technical assessment of the reported information

13. Italy reported information in its BR5 and NC8 on its historical GHG emissions and inventory arrangements using GWP values from the AR4. More recent information on GHG emissions was reported in Italy's 2023 annual submission, which used GWP values from the AR5. Total GHG emissions⁶ excluding emissions and removals from LULUCF decreased by 26.2 per cent between 1990 and 2020, while total GHG emissions including net emissions or removals from LULUCF decreased by 32.0 per cent over the same period. Emissions peaked in 2005 and decreased thereafter. Emissions excluding emissions and removals from LULUCF in 2021 increased compared with 2020. The changes in total emissions were driven mainly by factors such as economic recession, policies adopted at the European and national level to increase the production of energy from renewable sources, the shift from oil products to lower-carbon fuels (natural gas) for producing energy, and the pandemic.

14. Table 4 illustrates the emission trends by sector and by gas for Italy. The emissions reported in the 2023 annual submission differ from the data reported in CTF table 1 in that the inventory has been recalculated to account for the change in GWP values owing to the move from using the AR4 to the AR5. The recalculation of emissions resulted in an increase in total estimated emissions without LULUCF of 0.3 per cent for 1990 and an increase of 1 per cent for 2020.

Table 4

Greenhouse gas emissions by sector and by gas for Italy for 1990–2021

	GHG emissions (kt CO ₂ eq)					Change (%)		Share (%)	
	1990	2000	2010	2020	2021	1990–2020	2020–2021	1990	2021
<i>Sector</i>									
1. Energy	425 548.31	460 325.94	429 903.67	300 047.93	332 832.13	–29.5	10.9	81.6	79.7
A1. Energy industries	137 620.14	144 873.56	137 466.63	81 633.56	86 427.96	–40.7	5.9	26.4	20.7
A2. Manufacturing industries and construction	92 149.73	96 243.77	70 057.55	45 831.68	53 863.41	–50.3	17.5	17.7	12.9
A3. Transport	102 191.95	123 944.25	115 908.96	86 559.54	103 279.81	–15.3	19.3	19.6	24.7
A4. and A5. Other	79 383.33	83 173.89	96 794.28	79 829.80	83 553.00	0.6	4.7	15.2	20.0
B. Fugitive emissions from fuels	14 203.15	12 090.46	9 676.26	6 193.35	5 707.95	–56.4	–7.8	2.7	1.4
C. CO ₂ transport and storage	NO	NO	NO	NO	NO	NA	NA	NA	NA
2. IPPU	39 257.16	38 367.94	38 960.39	31 039.64	31 852.11	–20.9	2.6	7.5	7.6
3. Agriculture	37 675.99	37 184.86	32 224.53	33 426.51	32 717.22	–11.3	–2.1	7.2	7.8
4. LULUCF	–3 488.73	–21 554.14	–41 684.59	–32 544.72	–27 473.16	–832.9	15.6	NA	NA
5. Waste	18 998.88	24 099.40	22 377.11	20 455.80	20 189.97	7.7	–1.3	3.6	4.8
6. Other ^a	NO	NO	NO	NO	NO	NA	NA	NA	NA
<i>Gas^b</i>									
CO ₂	438 904.30	470 524.12	436 534.30	303 281.27	337 229.88	–30.9	11.2	84.2	80.8
CH ₄	54 975.34	57 706.29	52 690.46	47 513.41	47 087.05	–13.6	–0.9	10.5	11.3
N ₂ O	24 192.83	26 923.24	18 089.98	17 345.70	17 193.34	–28.3	–0.9	4.6	4.1

⁵ GHG emission data in this section, which use GWP values from the AR5, are based on Italy's 2023 annual submission, version 1, which has not yet been subject to review. All emission data in subsequent chapters are based on Italy's BR5 CTF tables, which use GWP values from the AR4 unless otherwise noted.

⁶ In this report, the term “total GHG emissions” refers to the aggregated national GHG emissions expressed in terms of CO₂ eq excluding LULUCF and including indirect CO₂ emissions, unless otherwise specified.

	GHG emissions (kt CO ₂ eq)					Change (%)		Share (%)	
	1990	2000	2010	2020	2021	1990–2020	2020–2021	1990	2021
HFCs	372.00	2 802.55	14 324.79	16 035.05	15 387.77	4 210.5	–4.0	0.1	3.7
PFCs	2 614.99	1 363.28	1 376.64	498.66	395.32	–80.9	–20.7	0.5	0.1
SF ₆	420.89	620.97	404.94	257.18	257.50	–38.9	0.1	0.1	0.1
NF ₃	NA, NO	13.26	20.17	16.24	15.23	–	–6.2	–	0.0
Total GHG emissions excluding LULUCF, including indirect CO₂	521 480.34	559 978.14	523 465.70	384 969.88	417 591.43	–26.2	8.5	100.0	100.0
Total GHG emissions including LULUCF, including indirect CO₂	517 991.61	538 424.00	481 781.11	352 425.15	390 118.28	–32.0	10.7	NA	NA

Source: GHG emission data: Italy's 2023 annual submission, version 1.

^a Emissions and removals reported under the sector other (sector 6) are not included in total GHG emissions.

^b Emissions by gas without LULUCF. The Party did not report indirect CO₂ emissions separately in common reporting format table 6 but included them under the IPU sector (solvent use).

15. In brief, Italy's national inventory arrangements were established in accordance with legislative decree 51 of 7 March 2008, which instituted the national system for the Italian GHG inventory. There have been no changes in these arrangements since the BR4 and NC7. ISPRA is the single national entity in charge of the development and compilation of the national GHG inventory. The national system, including all updated information on institutional, legal and procedural arrangements for estimating emissions and removals of GHGs and for reporting and archiving inventory information, is described in the publicly available annual reports prepared by ISPRA. MASE inherited the duties of the former Ministry of the Environment and is responsible for the endorsement of the inventory and for communicating it to the UNFCCC secretariat. The inventory is also submitted to the European Commission under the GHG monitoring mechanism (EU decision 280/2004/EC).

2. Assessment of adherence to the reporting guidelines

16. The ERT assessed the information reported in the NC8 and BR5 of Italy and recognized that the reporting is complete and transparent, and thus adheres to the UNFCCC reporting guidelines on NCs and the UNFCCC reporting guidelines on BRs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

3. National system for the estimation of anthropogenic emissions by sources and removals by sinks

(a) Technical assessment of the reported information

17. Italy provided in the NC8 a description of how its national system for the estimation of anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol is performing the general and specific functions defined in the annex to decision 19/CMP.1 in conjunction with decisions 3/CMP.11 and 4/CMP.11. The description includes all the elements mandated by paragraph 30 of the annex to decision 15/CMP.1. The NC8 also contains a reference to the description of the national system provided in the document *National Greenhouse Gas Inventory System in Italy. Year 2018* (ISPRA, 2018).

(b) Assessment of adherence to the reporting guidelines

18. The ERT assessed the information reported in the NC8 of Italy and recognized that the reporting is complete and transparent, and thus adheres to the reporting guidelines for supplementary information. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

4. National registry

(a) Technical assessment of the reported information

19. In its NC8 Italy provided information on how its national registry performs the functions in accordance with the annex to decision 13/CMP.1 in conjunction with decision 3/CMP.11 and the annex to decision 5/CMP.1 and complies with the requirements of the technical standards for data exchange between registry systems.

(b) Assessment of adherence to the reporting guidelines

20. The ERT assessed the information reported in the NC8 of Italy and recognized that the reporting is complete and transparent, and thus adheres to the reporting guidelines for supplementary information. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

C. Quantified economy-wide emission reduction target and related assumptions, conditions and methodologies

1. Technical assessment of the reported information

21. Italy reported information on its economy-wide emission reduction target in its BR5. For Italy the Convention entered into force on 14 July 1994. Under the Convention Italy committed to contributing to the achievement of the joint EU economy-wide emission reduction target of 20 per cent below the 1990 level by 2020.

22. The target for the EU and its member States is formalized in the EU 2020 climate and energy package. The legislative package regulates emissions of CO₂, CH₄, N₂O, HFCs, PFCs and SF₆ using GWP values from the AR4 to aggregate the GHG emissions of the EU until 2020. Emissions and removals from the LULUCF sector are not included in the quantified economy-wide emission reduction target under the Convention.

23. The EU-wide targets are primarily implemented through the EU ETS and ESD. The EU ETS covers mainly point emissions sources in the energy, industry and aviation sectors. An EU-wide emission cap was put in place for 2013–2020 for the EU ETS with the goal of reducing emissions by 21 per cent below the 2005 level by 2020. For 2030, a reduction target of 62 per cent below the 2005 level has been set for emissions covered by the EU ETS. The ESD became operational in 2013 and covers sectors outside the EU ETS, including transport (excluding aviation and international maritime transport), residential and commercial buildings, agriculture, small industry and waste. The ESD is regulated through targets for each member State that add up to a reduction at the EU level of 10 per cent below the 2005 level by 2020. The ESR, the successor to the ESD, was adopted in 2018 and amended in 2023 with the target of reducing emissions covered under the ESR by 40 per cent below the 2005 level by 2030.

24. The EU generally allows its member States to use units from the Kyoto Protocol mechanisms for compliance purposes, subject to a number of restrictions in terms of origin and type of project and up to an established limit. Operators and airline operators can use such units to fulfil their requirements under the EU ETS, and member States can use such units for their national ESD targets, within specific limitations.

25. The European Commission set out its vision for a climate-neutral EU in November 2018, and in December 2019 presented the European Green Deal as a road map with actions for making the EU economy sustainable. The European Council endorsed in December 2019 the objective of making the EU climate-neutral by 2050. As part of the European Green Deal, the 2050 climate-neutrality target was made binding in the first European Climate Law, adopted in 2021. It also increased the ambition of the 2030 emission reduction target to at least 55 per cent below the 1990 level. Member States will set out any increased ambition in the update of their national energy and climate plans.

26. Italy has a national target of reducing its emissions to 13 per cent below the 2005 level by 2020 for ESD sectors. This target has been translated into binding quantified AEAs for

2013–2020. Italy’s AEAs change following a linear path from 308,161.63 kt CO₂ eq in 2013 to 291,006.10 kt CO₂ eq in 2020.⁷ Under the ESR, Italy has a national target of reducing emissions from covered sectors to 33 per cent below the 2005 level by 2030.

27. In addition to its ESD target, Italy reported in its BR5 that the European Council and the European Parliament reached a provisional political agreement on stronger emission reduction targets for member States under the ESR in November 2022. For Italy, the proposal increases the national reduction target to 43.7 per cent below the 2005 level by 2030.

2. Assessment of adherence to the reporting guidelines

28. The ERT assessed the information reported in the BR5 of Italy and identified an issue relating to transparency and thus adherence to the UNFCCC reporting guidelines on BRs. The finding is described in table II.1.

D. Information on policies and measures

1. Technical assessment of the reported information

29. Italy provided in its NC8 and BR5 information on its PaMs⁸ implemented, adopted and planned to fulfil its commitments under the Convention. In order to be consistent with the EU reporting, Italy used 31 December 2019 as a cut-off date for considering a policy or measure as implemented and, given the uncertainties on new targets and policies at the EU level, considered all other PaMs as planned. Italy’s set of PaMs is similar to that previously reported, with a few exceptions. Decree 34 of 2020 established the Superbonus incentive scheme for energy efficiency in buildings, which stimulates retrofitting interventions in residential buildings to improve seismic and energy performance. Support is provided in the form of a tax deduction, spread over five years, for those who carry out the interventions. In July 2021 Italy adopted the NRRP, which includes climate change mitigation measures and sustainable economic growth measures towards an inclusive, climate-resilient and net zero emission future. The largest resource allocation under the NRRP is for mission 2, green revolution and ecological transition, amounting to EUR 59.06 billion. To guarantee coherence with the EU submission, which relies on data provided by EU member States in March 2021, the NRRP PaMs have not been taken into account in the Party’s NC8 and BR5.

30. Italy reported on its policy context and legal and institutional arrangements in place for implementing its commitments and monitoring and evaluating the effectiveness of its PaMs. Italy also provided information on changes to its institutional, legal, administrative and procedural arrangements used for domestic compliance, monitoring, reporting, archiving of information and evaluation of progress towards its target. MASE inherited the duties of the former Ministry of the Environment (law 55/2021), which include sustainable development; the protection of biodiversity, ecosystems and the marine coastal heritage; the safeguarding of land and water; climate change policies; energy efficiency and the circular economy; and waste cycle management. MASE, in consultation with other relevant ministries, is responsible for preparing a report on the status of implementation of GHG emission reduction commitments and emission trends and projections. Furthermore, in 2021 the Interministerial Committee for Ecological Transition was established, under the Italian Council of Ministers, with the aim of ensuring the coordination of national policies for ecological transition and related activities.

31. In its reporting on PaMs, Italy did not provide the estimated mitigation impacts for all of its individual PaMs. Instead, the Party explained in its NC8 that estimates were provided for groups of PaMs for the energy sector owing to their interactions and cross-sectoral nature, in order to avoid double counting. Italy provided estimates of the mitigation impact for the following groups of PaMs in the energy sector: energy production and transformation; energy efficiency, renewables and electrification in the industry sector; energy efficiency,

⁷ According to the EU transaction log.

⁸ The UNFCCC reporting guidelines on BRs use the term “mitigation actions”, whereas the UNFCCC reporting guidelines on NCs use the term “policies and measures”. The terms are used interchangeably in this report to refer to the relevant information in either the NC or BR.

renewables and electrification in the public sector; and energy efficiency, renewables and electrification in the transport sector.

32. The key overarching related cross-sectoral policy in the EU is the 2020 climate and energy package, adopted in 2009, which includes the revised EU ETS and the ESD. The package is supplemented by renewable energy and energy efficiency legislation and legislative proposals on the 2020 targets for CO₂ emissions from cars and vans, the carbon capture and storage directive, and the general programmes for environmental conservation, namely the 7th Environment Action Programme and the clean air policy package. The 2021 European Climate Law, which forms part of the European Green Deal, made climate neutrality by 2050 legally binding and raised the EU-wide 2030 emission reduction target to at least 55 per cent compared with the 1990 level. In 2023, the EU adopted several pieces of legislation that were part of the “Fit for 55” package intended to help achieve the new 2030 target. These new laws strengthened both the ESR and EU ETS 2030 targets, extended the EU ETS to include maritime shipping from 2024 and established the Social Climate Fund to address equitability of mitigation impacts. They also created the EU ETS 2 to cover at the point of distribution most fuel used in sectors not covered by the EU ETS, beginning in 2027.

33. The 2021–2030 EU-wide policies are operationalized through the national energy and climate plans of EU member States, which should set out national objectives for each of the five dimensions of the Energy Union, namely energy security; the internal energy market; energy efficiency; decarbonization; and research, innovation and competitiveness. The national energy and climate plans are periodically updated to reflect changes to EU policy, such as the implementation of the European Green Deal. Italy’s National Energy and Climate Plan specifies that its national target is to reduce emissions from ESR sectors to 33 per cent below the 2005 level by 2030 (see para. 26 above), and that all PaMs included in the NC8 and BR5 are consistent with those presented in the National Energy and Climate Plan.

34. Italy highlighted the domestic mitigation actions that are under development, such as those being revised to align with the more ambitious 2030 target of the EU to reduce domestic emissions by at least 55 per cent compared with the 1990 level, including promoting and supporting the use of renewable energy sources in energy production and transformation; increasing energy end-use efficiency; supporting the use of biofuels and other fuels with low environmental impact; supporting intermodality and emission reduction in the transport sector; increasing energy efficiency and renewable energy production in the public sector; and increasing energy efficiency and renewable energy production in the industry sector. The mitigation effect of promoting and supporting the use of renewable energy sources in energy production and transformation is the most significant. Other policies that have delivered significant emission reductions are increasing energy end-use efficiency, supporting biofuels and other fuels with low environmental impact, and supporting intermodality and emission reduction in transport. Table 5 provides a summary of the reported information on the PaMs of Italy.

Table 5
Summary of information on policies and measures reported by Italy

<i>Sector</i>	<i>Key PaMs^a</i>	<i>Estimated mitigation impact in 2020 (kt CO₂ eq)</i>	<i>Estimated mitigation impact in 2030 (kt CO₂ eq)</i>
Policy framework and cross-sectoral measures	EU ETS	NE	NE
Energy			
Energy production and transformation	Promotion and support to the renewable energy sources	NE	24 800
Transport	Increase energy end-use efficiency, support biofuels and other fuels with low environmental impact, support intermodality and emission reduction	NE	24 200
Other	Increase energy efficiency and renewable energy production and emission reduction in the public sector	NE	9 300
IPPU	Increase energy efficiency and renewable energy production in the industry sector	NE	4 600

<i>Sector</i>	<i>Key PaMs^a</i>	<i>Estimated mitigation impact in 2020 (kt CO₂ eq)</i>	<i>Estimated mitigation impact in 2030 (kt CO₂ eq)</i>
Industry/industrial processes	Use of F-gases – research and development of new technologies in the sectors using HFCs or alternatives	NE	NE
Agriculture	Rationalization in the use of nitrogen fertilizer	NE	NE
	Recovery of biogas from animal storage systems	NE	NE
LULUCF ^b	National Forest Strategy	NE	NE
Waste	Increase separate collection of urban waste	NE	NE

^a Names of PaMs reproduced as reported in Italy's BR5.

^b Not reported in CTF table 3 and not quantified.

Note: The estimated mitigation impacts are estimates of emissions of CO₂ eq avoided in a given year as a result of the implementation of mitigation actions.

2. Assessment of adherence to the reporting guidelines

35. The ERT assessed the information reported in the NC8 and BR5 of Italy and identified issues relating to completeness and transparency. The findings are described in tables I.2 and II.2.

3. Domestic and regional programmes and legislative arrangements and procedures related to the Kyoto Protocol

(a) Technical assessment of the reported information

36. In its NC8 Italy reported that the implementation of the Kyoto Protocol is underpinned by the law on the ratification of the Doha Amendment to the Kyoto Protocol (law 79/2016). The overall responsibility for climate change policymaking lies with MASE, and a number of national institutions are involved in policy implementation. MASE is responsible for elaborating the national plan for the reduction of GHG emissions to be proposed for adoption to the Interministerial Committee for Economic Planning – a governmental body chaired by the President of the Council of Ministers. Italy also reported in its NC8 that ISPRA is the single entity in charge of the development and compilation of the national GHG inventory.

37. For the second commitment period of the Kyoto Protocol, from 2013 to 2020, Italy committed to contributing to the joint EU effort to reduce GHG emissions by 20 per cent below the base-year level (see paras. 21–23 above).

38. The Party has arrangements and enforcement procedures to meet its commitments under the Kyoto Protocol, including procedures for addressing non-compliance. These include a specific annex to the economy and financial document, updated annually by the Minister of Ecological Transition and adopted by the Government of Italy.

39. Italy has provisions in place to make information on legislative arrangements and administrative procedures related to compliance and enforcement publicly accessible, such as the information tool on the environment, EcoAtl@nte, launched on 1 March 2022 by ISPRA, and the Union Registry website on which the non-confidential information required by decision 13/CMP.1, annex II.E, paragraphs 44–48, is publicly accessible.

40. Italy has national legislative arrangements and administrative procedures in place that seek to ensure that the implementation of activities under Article 3, paragraph 3, and any elected activities under Article 3, paragraph 4, of the Kyoto Protocol also contributes to the conservation of biodiversity and the sustainable use of natural resources. Among others, the National Strategy for Biodiversity, consistently with the EU Biodiversity Strategy to 2020, explicitly links biodiversity with the need to mitigate and adapt to climate change, aiming at sustainable management of the terrestrial ecosystem and the enhancement of the role of carbon sequestration.

(b) Assessment of adherence to the reporting guidelines

41. The ERT assessed the information reported in the NC8 of Italy and recognized that the reporting is complete and transparent, and thus adheres to the reporting guidelines for

supplementary information. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

4. Policies and measures in accordance with Article 2 and minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol

(a) Technical assessment of the reported information

42. In the NC8 Italy reported information on how it strives to implement PaMs under Article 2 of the Kyoto Protocol in such a way as to minimize adverse effects, including the adverse effects of climate change and effects on international trade and social, environmental and economic impacts on other Parties, especially developing country Parties. For example, Italy reported that it had ensured that measures implemented to increase the differentiation of energy sources do not affect the full liberalization of its energy markets. In the NC8 Italy also referred to its national inventory report submitted in 2022, which includes updated information on Italy's efforts to minimize adverse effects in accordance with Article 3, paragraph 14, of the Kyoto Protocol (see para. 44 below).

43. The NC8 includes information on how Italy promotes and implements the decisions of the International Civil Aviation Organization and the International Maritime Organization to limit emissions from aviation and marine bunker fuels. For example, Italy reported that the EU ETS is currently applicable to flights leaving airports located in the European Economic Area, in order to prevent double regulation or prejudging the International Civil Aviation Organization process.

44. Further information on how Italy strives to implement its commitments under Article 3, paragraph 14, of the Kyoto Protocol in such a way as to minimize adverse social, environmental and economic impacts on developing country Parties was reported in the 2022 annual submission. Italy reported on PaMs in the Italian energy sector aiming to increase energy efficiency and to develop a low-carbon energy system in the context of a global energy scenario that does not foresee a decline in income for fossil fuel exporting countries. The Party reported information on what it prioritized in implementing its commitments under Article 3, paragraph 14, including that it is not planning to further increase biomass/biofuel objectives beyond the level already established because promoting the use of biomass and biofuels can have adverse impacts in developing countries, but that it is engaged in multilateral and bilateral cooperation with developing countries to promote carbon dioxide capture and storage technologies.

(b) Assessment of adherence to the reporting guidelines

45. The ERT assessed the information reported in the NC8 of Italy and identified an issue relating to transparency and thus adherence to the reporting guidelines for supplementary information. The finding is described in table I.8.

E. Estimates of emission reductions and removals and the use of units from market-based mechanisms and land use, land-use change and forestry and progress in achieving the quantified economy-wide emission reduction target

1. Technical assessment of the reported information

46. Italy reported in its BR5 that it did not use units from market-based mechanisms under the Kyoto Protocol and other market-based mechanisms under the Convention to meet its commitment under the ESD. It reported in CTF tables 4 and 4(b) that it did not use any units from market-based mechanisms in 2019 or 2020. Given that the contribution of LULUCF activities is not included in the joint EU target under the Convention, reporting thereon is not applicable to Italy. Table 6 illustrates Italy's ESD emissions and use of units from market-based mechanisms for achieving its ESD target.

47. The ERT noted that, although LULUCF is not included in the Party's target under the Convention, Italy provided values for LULUCF in CTF table 4(a)II. During the review, Italy

explained that the information on emissions and removals from LULUCF under the Kyoto Protocol, which was taken from the relevant common reporting format table, had been included in CTF table 4(a)II in response to a request from the European Commission, to be applied by each EU member State with the aim of enhancing transparency, as explained in the BR5 (section 4.6.5).

Table 6

Summary of information on emissions covered by the European Union effort-sharing decision annual emission allocation and use of units from market-based mechanisms by Italy
(kt CO₂ eq)

<i>Year</i>	<i>ESD emissions</i>	<i>AEA</i>	<i>Use of units from market-based mechanisms</i>	<i>AEAs transferred to (–) or from (+) other Parties</i>	<i>Annual AEA surplus/deficit</i>	<i>Cumulative AEA surplus/deficit</i>
2013	273 349.15	308 161.63	NA	NA	34 812.47	34 812.47
2014	265 275.60	306 197.29	NA	NA	40 921.68	75 734.15
2015	273 282.68	304 232.94	NA	NA	30 950.26	106 684.41
2016	270 685.44	302 268.60	NA	NA	31 583.16	138 267.58
2017	270 145.34	298 252.00	NA	NA	28 106.66	166 374.24
2018	278 729.73	295 836.70	NA	NA	17 106.97	183 481.20
2019	274 938.77	293 421.40	NA	NA	18 482.62	201 963.83
2020	254 001.46	291 006.10	NA	NA	37 004.64	238 968.47

Sources: Italy's BR5 and BR5 CTF table 4(b) and EU transaction log (AEAs), which use GWP values from the AR4.

Note: For a given year, a positive number (surplus) indicates that annual or cumulative ESD emissions were lower than the corresponding AEA or cumulative AEAs, while a negative number (deficit) indicates that annual or cumulative ESD emissions were higher than the corresponding AEA or cumulative AEAs.

2. Assessment of adherence to the reporting guidelines

48. The ERT assessed the information reported in the BR5 of Italy and recognized that the reporting is complete and transparent, and thus adheres to the reporting guidelines for supplementary information. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

3. Assessment of achievement of the quantified economy-wide emission reduction target

49. In assessing the Party's contribution towards achievement of the 2020 joint EU target on the basis of the information reported in its BR5, the ERT noted that, under the EU 2020 climate and energy package, Italy committed to reducing its emissions under the ESD to 13 per cent below the 2005 level by 2020 (see para. 26 above). This target has been translated into binding quantified AEAs for 2013–2020. In 2020 Italy's ESD emissions were 12.7 per cent (37,004.64 kt CO₂ eq) below the AEA. Italy has a cumulative surplus of 238,968.47 kt CO₂ eq with respect to its AEAs between 2013 and 2020. The ERT noted that the Party did not make use of units from market-based mechanisms in 2020.

50. The ERT noted that the EU reported in its BR5 that the total GHG emissions excluding LULUCF of the EU and including the use of units from market-based mechanisms do not exceed the emission level corresponding to the target in 2020, and thus that the EU has achieved its joint target. See the report on the technical review of the BR5 of the EU for further details. Therefore, the ERT concluded that, on the basis of the information reported in the BR5 and provided during the review, Italy has met its 2020 commitment under the Convention through its contribution to achieving the joint EU target.

51. The ERT noted that the Party's ESD emissions in 2020 do not exceed its AEA for 2020.

F. Projections

1. Projections overview, methodology and results

(a) Technical assessment of the reported information

52. Italy reported in its BR5 and NC8 updated projections for 2030–2040 relative to actual inventory data for 2020 under the WEM scenario, using GWP values from the AR4. The WEM scenario reported by Italy includes PaMs implemented and adopted until 2019. The projections are for 2025 to 2040 in five-year increments.

53. In addition to the WEM scenario, Italy reported the WAM scenario. The WAM scenario includes planned PaMs. Italy provided a definition of its scenarios, explaining that its WEM scenario includes all adopted or implemented policies, such as incentives for the promotion of electricity production using renewables, supporting combined heat and power and district heating plants, supporting electrical energy saving in the industry sector, supporting energy saving and use of renewables in existing buildings through a tax incentive, co-financing energy audits for small and medium-sized enterprises, and adopting energy management systems compliant with International Organization for Standardization standard 50001. The WAM scenario includes all planned policies, such as updating and widening the mechanism to support energy savings, extending and improving the obligation to integrate renewables into existing and new buildings, an energy upgrading programme for the Central Public Administration, and increasing high-capacity and high-speed rail networks. The definitions indicate that the scenarios were prepared in accordance with the UNFCCC reporting guidelines on BRs.

54. Italy did not report a WOM scenario. During the review, Italy explained that most data on PaMs are not available from the base year (1990) and it is not possible to determine how the Italian system would have evolved without economic and technological changes and fuel shifts.

55. The projections are presented on a sectoral basis, using the same sectoral categories as those used in the reporting on mitigation actions, and on a gas-by-gas basis for CO₂, CH₄, N₂O, PFCs, HFCs and SF₆ (treating PFCs and HFCs collectively in each case) as well as NF₃ for 2030–2040. Indirect CO₂ emissions are included in the IPPU sector (solvent use) only. The projections are also provided in an aggregated format for each sector and for a Party total using GWP values from the AR4. Italy reported on factors and activities affecting emissions for each sector.

(b) Methodology, assumptions and changes since the previous submission

56. The methodology used for the preparation of the projections is identical to that used for the preparation of the emission projections for the NC7. Italy provided information on changes since the submission of its NC7 in the assumptions, methodologies, models and approaches used for the projection scenarios. The energy sector projections were developed using a partial equilibrium model (TIMES). The model follows a bottom-up demand-driven approach in which each technology is identified by technical and economic parameters and the production of a good is a consequence of the demand from the end users. The emissions from non-energy sources and other energy-related GHGs other than CO₂ have been evaluated for the NC submission by ISPRA using a family of spreadsheet models.

57. To prepare its projections, Italy relied on key underlying assumptions relating to the GDP, energy and international coal, oil and natural gas prices, carbon price, gross value added for industry and services, population, number of inhabitants per household, passenger person-kilometres and freight tonne-kilometres, among others. The assumptions were updated on the basis of the most recent economic developments at the time of the preparation of the projections. The main assumptions for the WEM scenario included trends in GDP, energy sector development and population. GDP changed from 2015 to 2020 with an average annual rate of –1.32 per cent. For 2020–2025 the average annual rate of economic growth used was 2.41 per cent, while 0.30 per cent and 0.20 per cent were used for 2025–2030 and 2030–2040 respectively. The main assumption in the energy sector included a planned increase in the efficiency of final uses and renewable sources towards the EU 2030 targets.

Population data show a constant decrease up to 2040 using an average annual rate of –0.21 per cent from 2015, in five-year increments.

58. The WAM scenario was elaborated using the same main assumptions and base year adopted for the WEM scenario and takes into consideration the policies and targets established in the National Energy and Climate Plan. The national target on reducing energy consumption to be achieved in 2030 was set at –0.8 per cent per year, while for the renewables target the share was set at 30 per cent of final energy consumption in 2030. The National Energy and Climate Plan also provides a list of planned PaMs aiming to reach the targets, such as an intense modal shift in passenger transport, developing the vehicle fleet to include 6 million battery-powered and plug-in hybrid electric vehicles, a target share of at least 55 per cent in 2030 of energy from renewable sources in gross electricity consumption and a large increase in the renovation rate in the public sector. Italy provided information in CTF table 5 on the key variables and assumptions used in the preparation of the projection scenarios.

59. Sensitivity analyses were conducted for several important assumptions, such as GDP and the price of CO₂ emission allowances in the EU ETS market. The sensitivity scenario was developed using the GDP growth rates, and it showed that changes in GDP are directly related to the level of industrial, services and freight transport activities and indirectly related to electricity generation and more generally to energy transformation processes in, for example, refineries and coke ovens. The percentage change in total CO₂ emissions from the WEM scenario is always lower than the percentage change in GDP. The sensitivity analysis on the price of CO₂ emission allowances in the EU ETS market showed that a higher price of allowances corresponds to lower emissions, although the trends are not obvious in the transport and public sectors because an increase in the cost of ETS allowances only indirectly translates into an increase in the cost of electricity for final consumers.

(c) Results of projections

60. The projected emission levels under different scenarios are presented in table 7 and figure 1.

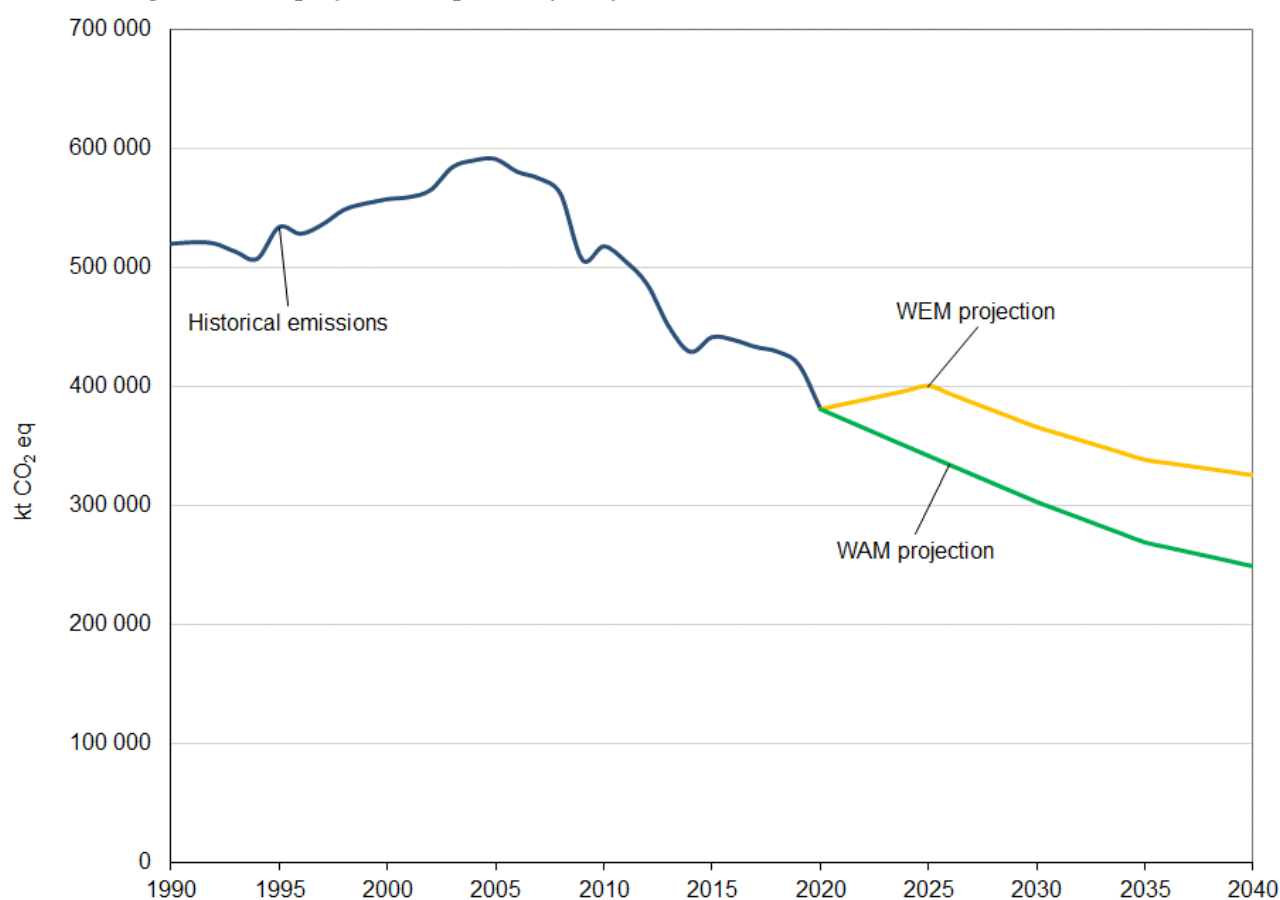
Table 7
Summary of greenhouse gas emission projections for Italy

	<i>GHG emissions (kt CO₂ eq/year)</i>	<i>Change in relation to 1990 level (%)</i>	<i>Change in relation to 2020 level (%)</i>
Inventory data 1990	519 907.94	NA	NA
Inventory data 2020	381 247.98	–26.7	NA
WEM projections for 2030	366 250.70	–29.6	–3.9
WAM projections for 2030	303 319.82	–41.7	–20.4
WEM projections for 2040	326 300.00	–37.2	–14.4
WAM projections for 2040	249 300.00	–52.0	–34.6

Sources: Italy's NC8 and BR5 CTF table 6, which use GWP values from the AR4.

Note: The projections are of GHG emissions excluding LULUCF and including indirect CO₂.

Figure 1

Greenhouse gas emission projections reported by Italy

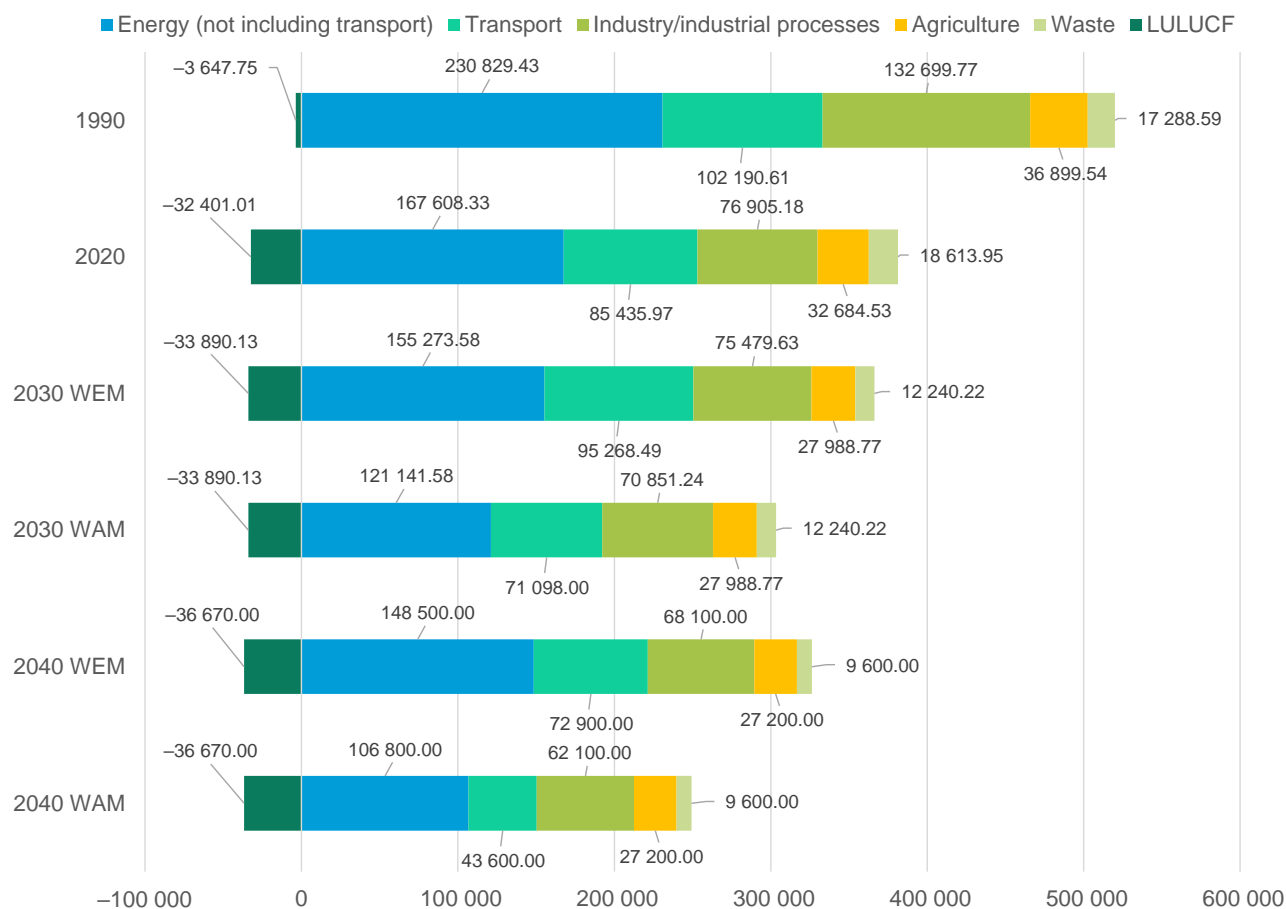
Sources: Italy's NC8, BR5 and BR5 CTF tables 1 and 6 (total GHG emissions excluding LULUCF and including indirect CO₂), which use GWP values from the AR4.

61. Italy's total GHG emissions excluding LULUCF and including indirect CO₂ are projected under the WEM scenario to decrease by 29.6 and 37.2 per cent below the 1990 level in 2030 and 2040 respectively. When including LULUCF, total GHG emissions including indirect CO₂ are projected under the WEM scenario to decrease by 35.6 and 43.9 per cent below the 1990 level in 2030 and 2040 respectively. Under the WAM scenario, emissions in 2030 and 2040 are projected to be lower than those in 1990 by 41.7 and 52.0 per cent respectively.

62. Italy presented the WEM and WAM scenarios by sector for 2030 and 2040, as summarized in figure 2 and table 8.

Figure 2
Greenhouse gas emission projections for Italy presented by sector

(kt CO₂ eq)



Sources: Italy's NC8, BR5 and BR5 CTF table 6, which use GWP values from the AR4.

Table 8
Summary of greenhouse gas emission projections for Italy presented by sector

Sector	GHG emissions and removals (kt CO ₂ eq)					Change (%)			
	1990	2030		2040		1990–2030		1990–2040	
		WEM	WAM	WEM	WAM	WEM	WAM	WEM	WAM
Energy (not including transport)	230 829.43	155 273.58	121 141.58	148 500.00	106 800.00	–32.7	–47.5	–35.7	–53.7
Transport	102 190.61	95 268.49	71 098.00	72 900.00	43 600.00	–6.8	–30.4	–28.7	–57.3
Industry/industrial processes	132 699.77	75 479.63	70 851.24	68 100.00	62 100.00	–43.1	–46.6	–48.7	–53.2
Agriculture	36 899.54	27 988.77	27 988.77	27 200.00	27 200.00	–24.1	–24.1	–26.3	–26.3
LULUCF	–3 647.75	–33 890.13	–33 890.13	–36 670.00	–36 670.00	–829.1	–829.1	–905.3	–905.3
Waste	17 288.59	12 240.22	12 240.22	9 600.00	9 600.00	–29.2	–29.2	–44.5	–44.5
Other	NO	NO	NO	NO	NO	NA	NA	NA	NA
Total GHG emissions excluding LULUCF and including indirect CO₂	519 907.94	366 250.70	303 319.82	326 300.00	249 300.00	–29.6	–41.7	–37.2	–52.0

Sources: Italy's NC8, BR5 and BR5 CTF table 6, which use GWP values from the AR4.

Note: The Party included indirect CO₂ emissions under the IPPU sector (solvent use).

63. According to the projections reported for 2030 under the WEM scenario, the most significant absolute emission reductions are expected to occur in the energy (not including transport) sector, followed by the industry/industrial processes sector and the agriculture sector, amounting to projected reductions of 75,555.85 kt CO₂ eq (32.7 per cent), 57,220.14 kt CO₂ eq (43.1 per cent) and 8,910.77 kt CO₂ eq (24.1 per cent) respectively between 1990 and 2030. The pattern of projected emissions reported for 2040 under the same scenario remains the same, although the emission reductions are more pronounced. Emission reductions in 2040 for the energy (not including transport) sector are projected to be 35.7 per cent below the 1990 level by 2040, followed by the industry/industrial processes sector (48.7 per cent) and the agriculture sector (26.3 per cent). The greater emission reductions in the industry/industrial processes sector and the energy (not including transport) sector for 2030–2040 are driven by a range of planned PaMs that target energy sector activities together with assumptions on economic activities, structural change, increases in energy efficiency and the share of renewables, and a shift towards lower-carbon fuels such as natural gas.

64. Italy presented the WEM and WAM scenarios by gas for 2030 and 2040, as summarized in table 9.

Table 9

Summary of greenhouse gas emission projections for Italy presented by gas

<i>Gas^a</i>	<i>GHG emissions and removals (kt CO₂ eq)</i>					<i>Change (%)</i>			
	<i>2030</i>		<i>2040</i>			<i>1990–2030</i>		<i>1990–2040</i>	
	<i>1990</i>	<i>WEM</i>	<i>WAM</i>	<i>WEM</i>	<i>WAM</i>	<i>WEM</i>	<i>WAM</i>	<i>WEM</i>	<i>WAM</i>
CO ₂	439 549.84	302 786.69	241 851.32	272 200.00	197 900.00	–31.1	–45.0	–38.1	–55.0
CH ₄	49 389.98	36 002.24	34 604.37	32 300.00	30 500.00	–27.1	–29.9	–34.6	–38.2
N ₂ O	27 208.91	15 864.67	15 267.03	14 900.00	14 200.00	–41.7	–43.9	–45.2	–47.8
HFCs	444.00	9 727.00	9 727.00	4 900.00	4 900.00	2 090.8	2 090.8	1 003.6	1 003.6
PFCs	2 906.86	1 560.99	1 560.99	1 600.00	1 600.00	–46.3	–46.3	–45.0	–45.0
SF ₆	408.35	309.11	309.11	300.00	300.00	–24.3	–24.3	–26.5	–26.5
NF ₃	0.00	0.00	0.00	0.00	0.00	–	–	–	–
Total GHG emissions without LULUCF	519 907.94	366 250.70	303 319.82	326 300.00	249 300.00	–29.6	–41.7	–37.2	–52.0

Sources: Italy's NC8, BR5 and BR5 CTF table 6, which use GWP values from the AR4, and information provided by the Party during the review.

^a Italy included indirect CO₂ emissions in its projections.

65. In the WEM scenario, the most significant reductions between 1990 and 2030 are projected for CO₂ (31.1 per cent), CH₄ (27.1 per cent) and N₂O emissions (41.7 per cent) (excluding LULUCF). While the pattern of projected emissions of gases reported for 2040 is similar to that of 2030, the emission reductions for CO₂ are more pronounced for 2030–2040 owing to the increase in energy efficiency and the share of renewables, and a shift towards lower-carbon fuels such as natural gas. Between 1990 and 2040, emission reductions for CO₂, CH₄ and N₂O are projected to be 38.1, 34.6 and 45.2 per cent respectively below the 1990 level.

66. The WAM scenario, by gas, follows a similar pattern to the WEM scenario. CO₂, CH₄ and N₂O emissions (excluding LULUCF) are projected to be responsible for the largest absolute reductions in emissions from 1990 to 2030, with decreases of 45.0, 29.9 and 43.9 per cent respectively. The most noticeable differences between the WEM and WAM scenarios are the result of the increase of the electric vehicle fleet, model optimization, and the extension and modernization of infrastructure and alternative fuels.

(d) Assessment of adherence to the reporting guidelines

67. The ERT assessed the information reported in the NC8 and BR5 of Italy and identified an issue relating to transparency and completeness, and thus adherence to the UNFCCC reporting guidelines on NCs and the UNFCCC reporting guidelines on BRs. The finding is described in tables I.3 and II.3.

2. Assessment of the total effect of policies and measures

(a) Technical assessment of the reported information

68. In its NC8 Italy presented the estimated effect of groups of planned measures for the energy sector (including transport). The modelling approach avoided double counting individual PaMs, and the model evaluated the impacts and interactions among measures as a package. The outcomes reflect the mix of technologies and primary emissions sources.

69. Italy reported that the total estimated effect of planned PaMs is emission reductions of 62,900 kt CO₂ eq in 2030 and 69,800 kt CO₂ eq in 2035. According to the information reported in its NC8, PaMs planned in the energy (without transport) sector will deliver the largest emission reductions (38,700 kt CO₂ eq), followed by PaMs planned in the transport sector (24,200 kt CO₂ eq) in 2030. Table 10 provides an overview of the total effect of PaMs as reported by Italy.

Table 10

Projected effects of Italy's planned, implemented and adopted policies and measures in 2030 and 2035

(kt CO₂ eq)

Sector	2030		2035	
	Effect of implemented and adopted measures	Effect of planned measures	Effect of implemented and adopted measures	Effect of planned measures
Energy (without transport)	NE	38 700	NE	47 100
Transport	NE	24 200	NE	22 700
Industry/industrial processes	NE	NE	NE	NE
Agriculture	NE	NE	NE	NE
Land-use change and forestry	NE	NE	NE	NE
Waste management	NE	NE	NE	NE
Total	–	62 900	–	69 800

Sources: Italy's NC8 and BR5, which use GWP values from the AR4.

(b) Assessment of adherence to the reporting guidelines

70. The ERT assessed the information reported in the NC8 of Italy and identified issues relating to completeness and thus adherence to the UNFCCC reporting guidelines on NCs. The findings are described in table I.3.

3. Supplementary relating to the mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol

(a) Technical assessment of the reported information

71. In the NC8 Italy did not report on plans to use market-based mechanisms to meet its Kyoto Protocol target. However, during the review Italy clarified that it did not use market-based mechanisms to meet its target under the Kyoto Protocol or under the Convention, as explained in CTF table 2(e)I. The ERT notes that reporting on the supplementarity of such mechanisms is therefore not relevant for Italy. In addition, the ERT considers that the NC8 would have been more transparent if it had explicitly included the clarification that the Party did not use market-based mechanisms to meet its Kyoto Protocol target.

(b) Assessment of adherence to the reporting guidelines

72. The ERT assessed the information reported in the NC8 of Italy and recognized that the reporting is complete and transparent, and thus adheres to the reporting guidelines for supplementary information. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

G. Provision of financial, technological and capacity-building support to developing country Parties

1. Technical assessment of the reported information

(a) Approach and methodologies used to track support provided to non-Annex I Parties

73. In its NC8 and BR5 Italy reported information on its provision of financial, technological and capacity-building support to non-Annex I Parties.

74. Italy has provided support that it considers to be “new and additional”. Its definition of “new and additional” is all resources that are newly committed and/or disbursed, on an annual basis, through the different channels and from the different sources that constitute the diverse landscape of climate finance.

75. Italy reported on the support that it has provided to non-Annex I Parties, distinguishing between support for mitigation and adaptation activities and identifying the capacity-building elements of such support. In its provision of public financial resources for non-Annex I Parties, Italy aims to strike a fair balance, over time, between support provided for mitigation activities and for adaptation activities. The main aim is to support mitigation and adaptation initiatives that are instrumental for implementing countries’ nationally determined contributions and national climate change adaptation strategies.

76. Italy’s national approach to tracking the provision of support, including information on indicators, delivery mechanisms used and allocation channels tracked, is to use a combination of all the OECD DAC Rio markers and the Aid to Environment marker for bilateral and multi-bilateral support. The methodology has been developed and agreed by MASE and the Ministry of Foreign Affairs and Development Cooperation and applied to climate finance reporting since 2017. Italy has not made any changes to its approach since the previous report. Italy refers to the OECD DAC list of recipients of official development assistance to define the beneficiaries of climate finance. Italy systematically excludes from its reported total climate finance the support provided to Parties included in Annex I to the Convention, namely Belarus, Türkiye and Ukraine.

77. Italy’s methodology and underlying assumptions used for collecting and reporting information on financial support are based on identifying the climate component in the financial flows that it classifies as official development assistance and other official flows to non-Annex I Parties. The financial instruments included in the reporting are grants, (concessional) loans and equities. Contributions are reported as either disbursed or committed only if they are reflected in official documents that are proof of the commitment or the financial transaction. Public financial support provided through bilateral channels includes both purely bilateral and multi-bilateral flows, with the climate-specific share of the projects being assessed using the Rio markers. Priority is given to climate markers for mitigation and adaptation, and disaster risk management projects are considered individually. For multilateral funds, the descriptions of the projects are the only indicators for their relevance to climate. According to this system the projects fall under mitigation, adaptation or cross-cutting categories. Regarding sectoral classification, for bilateral support Italy refers to the five-digit “purpose” codes introduced by OECD DAC for reporting to DAC CRS, which correspond to energy, transport, agriculture, forestry, water and sanitation, cross-cutting (multisectoral), other and not applicable. Projects and activities involving technology transfer and capacity-building components are tracked on a case-by-case basis, as is support focused on transferring technologies relevant to climate action and on building capacities in non-Annex I beneficiary Parties.

78. No figures on private finance mobilized through public interventions are reported for 2019–2020 because, from 2019 onward, the collection of these data has been integrated in the OECD CRS data-collection system, which is for all development finance, not only finance for climate purposes.

(b) Financial resources

79. Italy reported in its NC8 and BR5 information on its provision of financial support to non-Annex I Parties as required under the Convention, including on financial support committed and disbursed, allocation channels and annual contributions. Italy's financial support strategy is guided by its commitments made at the United Nations Climate Change Conference in Paris and in the context of the Convention and the Paris Agreement.

80. Italy provided limited information on how it seeks to ensure that the resources it provides to non-Annex I Parties effectively address their adaptation and mitigation needs: the main mechanism is checking, under the memorandums of understanding signed with non-Annex I Parties, the results of the support received as described in the Parties' progress reports, which are submitted every six months. Each memorandum of understanding establishes a joint committee responsible for overseeing, guiding and monitoring the implementation of bilateral cooperation activities, authorized to make final decisions regarding the project's launch, continuation or ending. For technology transfer, one year of successful operationalization of the technology in question is considered as the indicator for its success. Table 11 summarizes the information reported by Italy on its provision of financial support.

Table 11

Summary of information on provision of financial support by Italy in 2019–2020

(Millions of United States dollars)

<i>Allocation channel of public financial support</i>	<i>Disbursement in 2019–2020</i>
Official development assistance	9 408.51
Climate-specific contributions through multilateral channels, including:	584.02
Global Environment Facility	59.91
Adaptation Fund	42.10
Green Climate Fund	37.69
Trust Fund for Supplementary Activities	1.43
Other multinational climate change funds	23.61
Financial institutions, including regional development banks	366.85
United Nations bodies	52.44
Climate-specific contributions through bilateral, regional and other channels	549.77

Sources: Italy's BR5 CTF tables and Query Wizard for International Development Statistics, available at <http://stats.oecd.org/qwids/>.

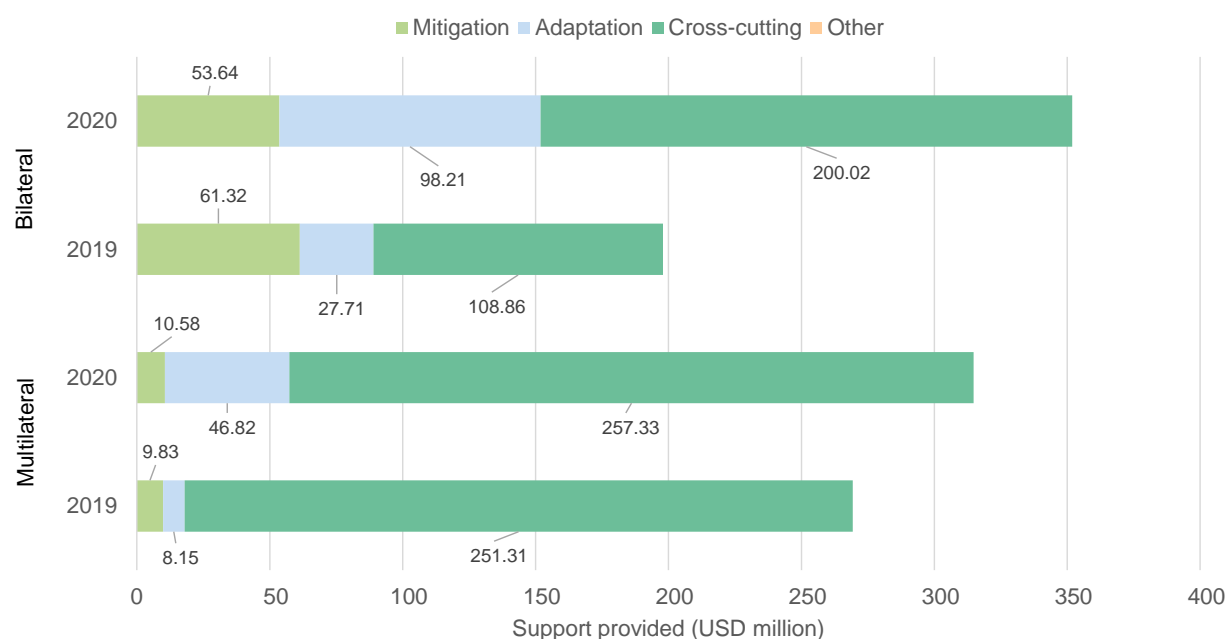
81. Italy's climate-specific public financial support⁹ totalled USD 1.13 billion in 2019–2020, representing a decrease of 9 per cent since the BR4 (2017–2018).¹⁰ However, the financial support for 2019–2020 has substantially increased compared with the levels in 2013–2014 and 2015–2016. In general, the level of financial support provided by Italy shows an increasing trend over time.

82. Italy contributed through multilateral channels USD 584.02 million in 2019–2020. The contributions were made to specialized multilateral climate change funds, such as the Global Environment Facility, the Adaptation Fund, the Green Climate Fund, the Trust Fund for Supplementary Activities, other multinational climate change funds, financial institutions, including regional development banks, and United Nations bodies. Information on financial support from the public sector provided through multilateral and bilateral channels and the allocation of that support by target area is presented in figure 3 and table 12.

⁹ For the remainder of this chapter, the term “financial support” means climate-specific financial support, unless otherwise noted.

¹⁰ Comparisons with data from previous years have been calculated directly without adjusting for inflation.

Figure 3

Provision of support by Italy in 2019–2020

Source: Italy's BR5 CTF tables 7, 7(a) and 7(b).

Table 12

Summary of information on channels of financial support reported by Italy

(Millions of United States dollars)

Allocation channel of public financial support	Amount disbursed in 2019–2020	Amount disbursed in 2017–2018	Change (%) ^a	Share of total (2019–2020) (%)
Detailed information by type of channel				
Multilateral channels				
Mitigation	20.41	14.38	41.9	3.5
Adaptation	54.97	27.23	101.9	9.4
Cross-cutting	508.64	543.92	–6.5	87.1
Other	–	–	NA	NA
Total multilateral	584.02	585.53	–0.3	100.0
Bilateral channels				
Mitigation	114.96	85.70	34.1	20.9
Adaptation	125.93	156.20	–19.4	22.9
Cross-cutting	308.88	418.48	–26.2	56.2
Other	–	–	NA	NA
Total bilateral	549.77	660.38	–16.8	100.0
Total multilateral and bilateral	1 133.79	1 245.91	–9.0	100.0

Sources: Italy's BR5 CTF tables 7, 7(a) and 7(b), and the report on the technical review of the BR4 of Italy for 2017–2018 data.

^a Note that variances in contribution amounts from year to year can occur that are not reflective of trends, owing to factors such as the biennial or triennial contribution cycles of some multilateral funds, the timing of approvals for individual bilateral projects or changes in exchange rates.

83. The Party reported detailed information on the total financial support provided through bilateral and regional channels in 2019–2020 (USD 549.77 million). During the reporting period, the strategy underlying the identification of priority countries, which was defined jointly with the Ministry of Foreign Affairs and International Cooperation, the Italian Agency for Cooperation and Cassa Depositi and Prestiti, continued to give priority to sub-Saharan countries (Botswana, Comoros, Democratic Republic of the Congo, Djibouti, Eswatini, Ethiopia, Kenya, Lesotho, Mali, Rwanda, Sao Tome and Principe, South Africa, Sudan and Zambia) and a number of other territories in the Middle East and North Africa, Eastern

Europe, Central and Latin America and Asia. The ERT noted that Italy reported its bilateral support allocated to non-Annex I Parties in 2019 and 2020 in CTF table 7(b).

84. The NC8 and the BR5 provide information on the types, sectors and instruments of support provided. The information reported shows that in 2019–2020 the average shares of bilateral and regional financial support allocated to mitigation, adaptation and cross-cutting projects were 20.9, 22.9 and 56.2 per cent respectively. In 2019–2020, the majority of financial contributions through bilateral and regional channels were allocated to the cross-cutting sector. The ERT noted that grants provided in 2019–2020 accounted for most of the bilateral and regional financial support, and that Italy intends to continue using this approach.

85. Italy explained that, according to a pilot study, for 2015–2018 private finance was mobilized through project finance, grants and direct investments in companies amounting to USD 60.875 million. Italy also explained that according to the OECD DAC methodology the majority of private finance for climate projects is mobilized in Africa and Asia. Italy did not provide data for private finance mobilized through public interventions for climate action for 2019–2020, and explained that, since 2019, the collection of these data has been integrated in the OECD CRS data-collection system, which is for all development finance, not only finance for climate purposes. Furthermore, the application of methodologies agreed in the context of the OECD CRS system is still at an early stage for Italy, hampering the Party's ability to provide data on private finance for climate action.

86. An example of Italy's support is the project Set up and Implementation of a Geoinformation System for Climate Change Vulnerability, Risk Assessment and Environment Monitoring for Viet Nam, launched under the framework of a memorandum of understanding with the Vietnamese Ministry of Natural Resources and Environment, which was approved in September 2020 with a total budget of EUR 3.5 million. The objective of the project is to implement a geoinformation system in Viet Nam for monitoring and assessing the impacts of and vulnerability to climate change in the country using remote sensing technology. The project includes the development of three case studies on saltwater intrusion assessment, wetland ecological system monitoring and subsidence monitoring in urbanized areas.

(c) Technology development and transfer

87. Italy reported on its measures and activities related to technology transfer, access and deployment benefiting developing countries, including activities undertaken by the public and private sectors.

88. Italy focused the provision of its technology transfer support on recipient countries including Angola, Brazil, Cameroon, Ethiopia, India, Lebanon and Zambia; and the support comprises 20 technology transfer activities in Africa and Latin America and the Caribbean on energy, water and sanitation, and disaster risk reduction.

89. Since its NC7 and BR4, Italy has implemented or has planned to implement a few additional measures and activities, the most recent of them being the Outer Island Fish Centre Solar Panel System (Phase II: 2018–2019) project for Kiribati, an Integrated Meteorological and Climatological Information and Decision Support System at the Maldives Meteorological Service (2018–2020) and the Sustainable Energy Services for Rural Democratic Republic of the Congo (2019–2021) project. These projects have been described as success stories in relation to technology transfer in its NC8, in particular measures taken to promote, facilitate and finance the transfer and deployment of climate-friendly technologies. Italy reported in its NC8 that there were no failure stories in relation to technology transfer for 2019–2020.

90. Italy highlights in its NC8 and BR5 that it considers all technology transfer activities or projects together with corresponding knowledge transfer and capacity-building activities.

(d) Capacity-building

91. Italy reported on its capacity-building support for mitigation, adaptation and technology that responds to the existing and emerging needs identified by non-Annex I

Parties. It described individual measures and activities related to capacity-building support in textual and tabular format in the BR5 and CTF table 9.

92. Italy has supported climate-related capacity development activities relating to adaptation, mitigation and multiple targeted areas. Since the BR4, the focus of support has remained the same. Italy's support has responded to the existing and emerging capacity-building needs of non-Annex I Parties by following the principles of national ownership, stakeholder participation, country-driven demand, cooperation between donors and across programmes, and impact assessment and monitoring.

2. Assessment of adherence to the reporting guidelines

93. The ERT assessed the information reported in the NC8 and BR5 of Italy and identified issues relating to completeness and transparency, and thus adherence to the UNFCCC reporting guidelines on NCs and the UNFCCC reporting guidelines on BRs. The findings are described in tables I.4 and II.4.

3. Reporting on finance, capacity-building and technology transfer information related to the Kyoto Protocol

(a) Technical assessment of the reported information

94. In its NC8 Italy reported its activities, actions and programmes undertaken in fulfilment of its commitments under Article 10 of the Kyoto Protocol. Italy provided information on steps taken to promote, facilitate and finance the transfer of technology to developing countries and to build their capacity in order to facilitate implementation of Article 10 of the Kyoto Protocol. Italy reported that it is undertaking continuous efforts to scale up its international climate finance and would continue to do so. Total climate finance for 2017–2020 amounted to more than EUR 2.1 billion (corresponding to around USD 2.4 billion), which was more than double (a 107 per cent increase) the support provided and mobilized for climate action in non-Annex I countries for 2013–2016 (USD 1.16 billion). Italy reported in its NC8 (section 7.9) information on technology development and transfer to developing countries, including cooperation in the transfer of and access to environmentally sound technologies according to the needs and specific circumstances of the developing countries that receive the support.

95. Italy provided information on its implementation of Article 11 of the Kyoto Protocol, including a list of its public financial resources for assisting developing countries to develop and implement actions in the field of climate change for 2017–2020, the adequacy of which is assessed through feedback mechanisms and continuous dialogue with the beneficiaries of the support. The Party described how its contributions are “new and additional” (see para. 74 above).

96. Italy reported on its financial contributions to the Adaptation Fund, which consisted of EUR 51 million (USD 61.2 million) since 2015. Italy also reported in its NC8 that MASE is working with the secretariat of the Adaptation Fund and national implementing agencies in order to scale up projects of the Adaptation Fund through its bilateral cooperation programmes and activities.

(b) Assessment of adherence to the reporting guidelines

97. The ERT assessed the information reported in the NC8 of Italy and recognized that the reporting is complete and transparent, and thus adheres to the reporting guidelines for supplementary information. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

H. Vulnerability assessment, climate change impacts and adaptation measures

1. Technical assessment of the reported information

98. In its NC8 Italy provided information on the expected impacts of climate change in the country; the adaptation policies covering regional, sectoral and cross-sectoral vulnerabilities and considerations; and an outline of the action taken to implement Article 4, paragraph 1(b) and (e), of the Convention with regard to adaptation. Italy provided a description of climate change vulnerability and impacts on the most important areas, including coastal zones, biodiversity, urban areas and hydrogeology. The Party also reported how these are exacerbated by its geographical location in the Mediterranean basin. Several vulnerable sectors were reported, including water supply, tourism, cultural heritage, agriculture, forestry, infrastructure and transport. Adaptation response actions planned and taken at different levels of government aimed at reducing the impacts include diversification of crops and use of effective irrigation and water management systems, development of drought management plans, development of coastal basin management systems, recovery of degraded lands, reforestation, implementation of early warning and environmental monitoring systems, development of urban adaptation plans and strategies, maintenance of public transport networks and the application of instruments for integrated water management in terrestrial zones.

99. Italy has addressed adaptation matters through the adoption of the NRRP, which has six areas of strategic focus, including green revolution and ecological transition, and aligns with EU priorities. Reinforcing this is the development of the NAP, which, at the time of the review, was approaching finalization and undergoing stakeholder consultation. Funding towards implementation of climate adaptation actions is provided under the Recovery and Resilience Facility, which is managed by the European Commission. Robust institutional arrangements exist, characterized by ongoing strengthening of capacities at the individual and administrative level. Updated information on climate modelling, climate projections and scenarios relevant to the assessment of climate change impacts and vulnerability is provided. For example, Italy is a member of EURO-CORDEX, which generates data for the Party from the regional simulations performed by several modelling groups in different research centres. These provide the “basic patterns of the European climate for the period 1989–2008 against the E-OBS data set high-resolution simulations with COSMO-CLM over Italy (0.0715°)”. Furthermore, plans are under way within the NAP framework to establish an adaptation monitoring, reporting and evaluation system. These, in addition to the extensive research efforts outlined below (see table 13), provide direction to government agencies on enhancing preparedness for climate change. Table 13 summarizes the information on vulnerability and adaptation to climate change presented in the NC8 of Italy.

Table 13

Summary of information on vulnerability and adaptation to climate change reported by Italy

<i>Vulnerable area</i>	<i>Examples/comments/adaptation measures reported</i>
Agriculture and food security	<p>Vulnerability: Prolonged periods of drought and extreme weather events as well as changes in rainfall patterns, most evident in the summer months and in semi-arid areas. Reduced crop yields and nutritional quality affecting corn, soybean, wheat and various fruits and vegetables owing to water scarcity. Increases in pathogen species and soil degradation. Negative effects on livestock production, including quality, due to heat stress.</p> <p>Adaptation: Adoption of the NRRP with links to EU priorities and funding from the Recovery and Resilience Facility. The NRRP has six strategic focus areas, including green revolution and ecological transition, that address water and waste as well as hydrogeological risk management. The NAP, which is being finalized, is in alignment with the NRRP. There is also the National Research Programme (2021–2027) for research and innovation in the agriculture, food and forestry sectors which will introduce more evidence-based practices.</p>
Biodiversity and natural ecosystems	<p>Vulnerability: Impacts on species and habitats in terrestrial, marine, freshwater and inland ecosystems. In terrestrial ecosystems these include changes in life cycle phenology, physiology, behaviour, geographical distribution, composition and</p>

<i>Vulnerable area</i>	<i>Examples/comments/adaptation measures reported</i>
	<p>interactions of species, as well as the spread of pathogenic bacteria and invasive species and the mass mortality of invertebrates. In freshwater ecosystems impacts include loss of habitats, biotic components and processes, accompanied by excessive growth of algae and cyanobacteria in lakes.</p> <p>Adaptation: Maintaining and expanding gene banks for plant and animal species and for traditional crops; reframing current policies on forest fire prevention based on bioengineering, taking into account climate-related risks; and extending the network of green corridors between national protected areas (with a specific focus on Alpine areas and the Apennine mountains).</p>
Coastal zones	<p>Vulnerability: Increase in coastal erosion and instability. Loss of coastal land to related economic activities, infrastructure, urban settlements, recreational areas and natural heritage sites. Reduction and loss of biodiversity and ecosystems (especially wetlands), and a decrease of marine life caused by the combined effect of climate change and anthropogenic stress. Damage to the coastal rural economy due to saltwater intrusion. Negative impacts on tourism and possible displacement of tourist flows. Possible threat to human health posed by flood events.</p> <p>Adaptation: Conservation of coastal vegetation to prevent erosion and the reduction of pollution in marine environments towards achieving the conditions of Good Environmental Status as per the EU marine strategy framework directive (2008/56/EC).</p>
Forests	<p>Vulnerability: Fire risks increasing by more than 20 per cent compared with the current level, with the fire season expected to lengthen by between 20 and 40 days in the coming years and a consequential increase in the areas of forest burned, ranging from 21 to 43 per cent depending on the emission scenario being considered.</p> <p>Adaptation: The National System for Environmental Protection has set up a national working group on impacts, vulnerability and adaptation to climate change. Indicators have been defined for tracking climate change, including long-term data series, which are expected to better inform related adaptive actions among other measures under the NRRP and NAP.</p>
Infrastructure and economy	<p>Vulnerability: Over the past 20 years at least 20 Natech events (i.e. an event in which a natural hazard impacts industrial installations, releasing hazardous materials) were triggered by natural disasters, including at refineries, chemical and petrochemical sites, and gas pipelines.</p> <p>Adaptation: In 2021, a funding programme for urban adaptation was launched, aimed at increasing the resilience of cities to the risks of climate change, such as heatwaves, extreme rainfall and drought, which is in addition to the NRRP- and NAP-related measures.</p>
Water resources	<p>Vulnerability: Strong competition for water resources between sectors (e.g. households, agriculture, industry, energy and tourism), exacerbated by droughts and overexploitation of water resources, make watercourses and coastal land reserves more exposed to the action of sea level rise, with consequential saltwater intrusion and increased salinity in the freshwater reserve.</p> <p>Adaptation: The NRRP will contribute to addressing these challenges through its green revolution and ecological transition component, which includes water and waste and hydrogeological risk management as well as NAP measures, reinforced by climate change tracking indicators.</p>

100. In its NC8 Italy reported that it contributes to international and national climate change related projects through its institutions. Italy also provided during the review information on bilateral cooperation with developing countries on adaptation. This included a detailed description of the activities, including support provided on early warning climate systems, strengthening capacities and risk management for Argentina, Belize, Cuba, Eswatini and Maldives. Other support was provided to Peru and Rwanda on land restoration; to Grenada, Micronesia, Palau and Vanuatu on water and food security; to the State of Palestine on biodiversity protection; and to Palau, Tonga and Vanuatu on marine protection and the ocean-based economy.

2. Assessment of adherence to the reporting guidelines

101. The ERT assessed the information reported in the NC8 of Italy and identified issues relating to completeness and transparency, and thus adherence to the UNFCCC reporting guidelines on NCs. The findings are described in table I.5.

I. Research and systematic observation

1. Technical assessment of the reported information

102. In its NC8 Italy provided information on its general policy and funding relating to research and systematic observation, for both domestic and international activities, including contributions to the World Climate Programme, the International Geosphere–Biosphere Programme, the Global Climate Observing System and the IPCC. Italy also provided information on the identification of opportunities for and barriers to free and open international exchange of data and information and on action taken to overcome such barriers.

103. Italy has implemented and planned international and domestic policies and programmes on climate change research, systematic observation and climate modelling that aim to advance capabilities to predict and observe the physical, chemical, biological and human components of the Earth's system over space and time. They include the National Research Programme (2021–2027), the Strategic Plan for Research and Innovation in the Agricultural, Food and Forestry Sectors and the national Smart Specialization Strategy, which align with the European Horizon 2020 programme. Among other extensive research initiatives are Italy's membership of EURO-CORDEX and contributions to the Integrated Carbon Observation System research infrastructure. Italy's experts are leading authors under Working Group I of the latest IPCC Assessment Report (AR6), while others have contributed to the review and/or the drafting of specific sections.

104. In terms of activities related to systematic observation, Italy reported on national plans, programmes and support for ground- and space-based climate observing systems, including satellite and non-satellite climate observation. Such activities and climate observing systems include the Foundation's new Earth System Model for seasonal-to-decadal forecasting, the Oceanographic Observatory of Lampedusa, and work under the United Nations Decade of Ocean Science for Sustainable Development (2021–2030) and the Global Climate Observing System.

105. Furthermore, the Party reported on its nationwide climate observation network, which spans the atmosphere, land, the ocean and space, and reported that it contributes to related international programmes. This work is managed by the Italian Air Force Meteorological Service, the European Nuclear Energy Agency, CNR, ISPRA, several universities, the Civil Protection Agency and regional environmental agencies. There are also polar stations in the Arctic and Antarctic.

106. Ocean observation further provides data from in situ and satellite monitoring systems to European and Mediterranean networks under the Global Ocean Observing System initiative and the EU Copernicus programme. Monitoring and measurement of vegetation moisture content for fire risk assessment is conducted in Sardinia by the CNR Institute of Bioeconomy. Monitoring and measurement of underground water resources (aquifers) is conducted by the CNR Institute of Geosciences and Earth Resources in collaboration with private and public local water management institutions. Ecosystem monitoring is performed by CNR under the frameworks of the national Long-Term Ecological Research Network and various European projects and programmes.

107. Italy contributes to funding for free and open data exchange through its participation in the Intergovernmental Oceanographic Commission of UNESCO. Many Italian institutions, universities and agencies are active participants in EU-funded international projects on climate change related topics and in national projects funded through bilateral agreements, with a special emphasis on research capacity-building in developing countries.

108. The NC8 reflects actions taken to support capacity-building and the establishment and maintenance of observation systems and related data and monitoring systems in developing

countries. Italy provided funding for scientists from developing countries working on global climate change research. Furthermore, it reported that it has national policies and various projects in place relating to support provided to developing countries, including on early warning climate systems, biodiversity protection, marine protection and ocean-based economy capacities and risk management.

2. Assessment of adherence to the reporting guidelines

109. The ERT assessed the information reported in the NC8 of Italy and identified an issue relating to completeness and thus adherence to the UNFCCC reporting guidelines on NCs. The finding is described in table I.6.

J. Education, training and public awareness

1. Technical assessment of the reported information

110. In its NC8 Italy provided information on its actions relating to education, training and public awareness at the domestic and international level. The Party provided information on the general policy on education, training and public awareness; primary, secondary and higher education; public information campaigns; training programmes; education materials; resource or information centres; the involvement of the public and non-governmental organizations; and its participation in international activities.

111. Italy reported that these efforts are spearheaded by MASE, the Ministry of Universities and Research, regions and autonomous provinces, the National System for Environmental Protection, ISPRA, the regional environmental agencies, the regional environmental education centres, the Information and Education National System, associations, foundations and non-governmental organizations.

112. Several communication campaigns aimed at creating and enhancing environmental awareness and education, in alignment with European environmental policies, were organized targeting the public, including youth. In 2021 Italy co-organized COP 26 and hosted a ministerial event in Milan that included the Youth4Climate initiative. A permanent section specifically dedicated to environmental education and sustainable development has been created by MASE on its website. Social media messaging towards public awareness and education on climate change was reinforced for the period under review.

113. Moreover, the Party reported that there are continuous efforts to scale up its international climate finance related to public awareness and education. In particular, the law on development cooperation, which was reformed in 2014 (law 125/2014), aims at making this more effective.

2. Assessment of adherence to the reporting guidelines

114. The ERT assessed the information reported in the NC8 of Italy and identified an issue relating to completeness and transparency, and thus adherence to the UNFCCC reporting guidelines on NCs. The finding is described in table I.7.

III. Conclusions and recommendations

115. The ERT conducted a technical review of the information reported in the NC8 of Italy in accordance with the UNFCCC reporting guidelines on NCs. The ERT concluded that the reported information mostly adheres to the UNFCCC reporting guidelines on NCs and that the NC8 provides an overview of the national climate policy of Italy.

116. The information provided in the NC8 includes all of the elements of the supplementary information under Article 7, paragraph 2, of the Kyoto Protocol. Italy reported on the national system, the national registry, PaMs in accordance with Article 2 of the Kyoto Protocol, domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures, information under Article 10 of the Kyoto Protocol, and financial resources provided to developing country Parties. Italy did not report

on complementarity relating to the mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol because it did not use international market-based mechanisms to achieve its commitment under the Kyoto Protocol, and the requirement to report on complementarity is therefore neither applicable nor relevant for Italy. Supplementary information under Article 7, paragraph 1, of the Kyoto Protocol on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol was provided by Italy in its 2022 annual submission.

117. The ERT conducted a technical review of the information reported in the BR5 and BR5 CTF tables of Italy in accordance with the UNFCCC reporting guidelines on BRs. The ERT concluded that the reported information mostly adheres to the UNFCCC reporting guidelines on BRs and that the BR5 and its CTF tables provide an overview of emissions and removals related to the Party's quantified economy-wide emission reduction target; assumptions, conditions and methodologies related to the attainment of the target; the progress of Italy towards achieving its target; and the Party's provision of support to developing country Parties.

118. In its NC8 Italy reported on its key national circumstances related to GHG emissions and removals, including its demographic, social and economic trends, and on the impact of the pandemic and the recovery of the economy. In this context the NRRP is highlighted, which is a package of investments and reforms that is part of Next Generation EU, a plan and fund established at the European level to respond to the pandemic crisis and to transform the economies of the EU member States in view of future challenges, including ecological transition.

119. Italy's total GHG emissions excluding LULUCF and including indirect CO₂ for 2020 were estimated to be 26.2 per cent below its 1990 level, using GWP values from the AR5. Emissions peaked in 2005 and decreased thereafter. The changes in total emissions were driven mainly by factors such as economic recession, policies adopted at the European and national level to increase the production of energy from renewable sources, the shift from petrol products to lower-carbon fuels (natural gas) in producing energy, and the pandemic.

120. As reported in the BR5, under the Convention Italy committed to contributing to the achievement of the joint EU quantified economy-wide target of a 20 per cent reduction in emissions below the 1990 level by 2020. The target covers all sectors and CO₂, CH₄, N₂O, HFCs, PFCs and SF₆, expressed using GWP values from the AR4. Emissions and removals from the LULUCF sector are not included. Under the ESD Italy has a target of reducing its emissions to 13 per cent below the 2005 level by 2020.

121. The EU has a joint 2030 emission reduction target of at least 55 per cent below the 1990 level. This will be primarily implemented through the EU ETS and ESR, which have targets to reduce emissions by 2030 by 62 and 40 per cent respectively compared with the 2005 level. Under the ESR, Italy has a national target of reducing emissions from covered sectors to 33 per cent below the 2005 level by 2030.

122. The ERT noted that the total GHG emissions of the EU excluding LULUCF do not exceed the emission level corresponding to the target in 2020, and thus that the EU has achieved its joint target. The ERT therefore concluded that Italy has met its 2020 commitment under the Convention through its contribution to achieving the joint target of the EU. See the report on the technical review of the BR5 of the EU for further details. The ERT noted that the Party met its 2020 ESD target because its ESD emissions in 2020 do not exceed its AEA for 2020.

123. The GHG emission projections provided by Italy in its NC8 and BR5 correspond to the WEM and WAM scenarios. Under the WEM scenario, emissions in 2030 are projected to be 29.6 per cent below the 1990 level and 3.9 per cent below the 2020 level. Under the WAM scenario, emissions in 2030 are projected to be 41.7 per cent below the 1990 level and 20.4 per cent below the 2020 level.

124. Italy's main policy framework relating to energy and climate change is the EU 2020 climate and energy package. The Party described the mitigation actions that it has implemented to help it achieve its 2020 and longer-term targets, which include the revised EU ETS and the ESD. These PaMs are supplemented by renewable energy and energy

efficiency legislation and legislative proposals on the 2020 targets for CO₂ emissions from cars and vans, the carbon capture and storage directive, and the general programmes for environmental conservation, namely the 7th Environment Action Programme and the clean air policy package. Italy highlighted the domestic mitigation actions that are under development, such as those being revised to align with the more ambitious 2030 target of the EU to reduce domestic emissions by at least 55 per cent compared with the 1990 level. The key PaMs reported are promoting and supporting the use of renewable energy sources in energy production and transformation; increasing energy end-use efficiency, supporting the use of biofuels and other fuels with low environmental impact, and supporting intermodality and emission reduction in transport; increasing energy efficiency and renewable energy production and emission reductions in the public sector; and increasing energy efficiency and renewable energy production in the industry sector. The mitigation effect of promoting and supporting the use of renewable energy sources in energy production and transformation is the most significant.

125. Italy continued to provide climate financing to developing countries in line with its climate finance obligations under the Paris Agreement. The level of its financial support since the BR4 has reduced by 9.0 per cent, because private finance has not been reflected in the contributions for 2019–2020; its public financial support in 2019–2020 totalled USD 1.13 billion. For those years, Italy provided slightly more support for adaptation than mitigation (52.4 per cent of the total public climate finance, with 56 per cent in 2020). The biggest share of support went to cross-cutting projects, combining multiple sectors. An example of this support is the project Set up and Implementation of a Geoinformation System for Climate Change Vulnerability, Risk Assessment and Environment Monitoring for Viet Nam, which has a total budget of EUR 3.5 million and is aimed at implementing a geoinformation system in Viet Nam for monitoring and assessing the impacts of and vulnerability to climate change in the country using remote sensing technology.

126. Italy continued to provide support for technology development and transfer and capacity-building. Priority for technological support was given to projects and programmes on energy, water and sanitation, and disaster risk reduction, with a slight prevalence for mitigation projects. The recipient countries include Angola, Bolivia (Plurinational State of), Brazil, Cameroon, Democratic Republic of the Congo, Ethiopia, India, Lebanon, Libya, Somalia and Zambia. Priority for capacity-building support was given to multisectoral projects and the countries include countries in Africa, Asia, and Latin America and the Caribbean. Over time, the focus has remained the same.

127. In its NC8 Italy provided information on the expected impacts of climate change in the country; the adaptation policies covering regional, sectoral and cross-sectoral vulnerabilities and considerations; and an outline of the action taken to implement Article 4, paragraph 1(b), of the Convention with regard to adaptation. Among key achievements for the period under review was the adoption of the NRRP, which is aligned with EU priorities and has a component on green revolution and ecological transition and on funding for the implementation of climate adaptation actions earmarked under the Recovery and Resilience Facility. Finalization of the NAP is under way, which will include plans to establish a monitoring, reporting and evaluation system.

128. In its NC8 Italy provided information on its activities relating to research and systematic observation. The National Research Programme (2021–2027), for the agricultural, food and forestry sectors, is under implementation and has a funding allocation. Reinforcing this is the national Smart Specialization Strategy, which aligns with the European Horizon 2020 programme.

129. In its NC8 Italy provided information on its actions relating to education, training and public awareness. Several communication campaigns aimed at creating and enhancing environmental awareness and education, in alignment with European environmental policies, were organized targeting the public, including youth. In 2021 Italy co-organized COP 26 and hosted a ministerial event in Milan that included the Youth4Climate initiative. A permanent section specifically dedicated to environmental education and sustainable development has been created by MASE on its website.

130. In the course of the review, the ERT formulated the following recommendations for Italy to improve its adherence to the UNFCCC reporting guidelines on NCs in its next NC:

- (a) To improve the completeness of its reporting by:
 - (i) Providing estimates for individual PaMs or, if this is not possible, for groups of PaMs for the IPPU, agriculture and waste sectors and providing an explanation of why mitigation impacts could be estimated only for a group of mitigation actions and not for each individual mitigation action (see issue 3 in table I.2);
 - (ii) Providing WAM scenario projections disaggregated by gas for 2020, 2025, 2030 and 2035 (see issue 3 in table I.3);
 - (iii) Providing information on the estimated and expected total effects of implemented and adopted PaMs (see issue 4 in table I.3);
 - (iv) Including information on the indicators used for tracking the provision of financial, technological and capacity-building support to non-Annex I Parties (see issue 1 in table I.4);
 - (v) Including information on the support provided and steps taken towards developing and enhancing the endogenous capacities and technologies of non-Annex I Parties or adapting other (external) technologies to local needs and conditions (see issue 2 in table I.5);
 - (vi) Providing specific information on actions taken to implement Article 4, paragraph 1(e), of the Convention with regard to cooperation in preparing for the impacts of climate change;
- (b) To improve the transparency of its reporting by:
 - (i) Providing summary information required by tables 6–8 of the UNFCCC reporting guidelines on NCs for each of the previous two reporting years or including a reference in the NC to the corresponding CTF tables (see issue 2 in table I.4);
 - (ii) Further investigating and adjusting the information on types of financial support provided to non-Annex I Parties and assessing them in accordance with their sectoral allocation, to the extent possible (see issue 3 in table I.4);
 - (iii) Stating the specific timeline for finalization of the NAP (see issue 1 in table I.5).

131. In the course of the review of Italy's NC8, the ERT formulated the following recommendation relating to adherence to the reporting guidelines for supplementary information: to improve the transparency of its reporting by providing an explanation about the evaluation process under the EU directive on strategic environmental assessment (directive 2001/42/EC) in the section on PaMs and how this promotes sustainable development (see issue 1 in table I.8).

132. In the course of the review of Italy's BR5, the ERT formulated the following recommendations relating to adherence to the UNFCCC reporting guidelines on BRs:

- (a) To improve the completeness of its reporting by using the identified set of indicators for tracking the financial, technological and capacity-building support provided to non-Annex I Parties (see issue 1 in table II.4);
- (b) To improve the transparency of its reporting by:
 - (i) Ensuring consistency between information reported in the textual part of the BR and the BR CTF tables (see issue 1 in table II.1);
 - (ii) Including the missing estimates of the impacts of its mitigation actions or providing adequate justification for reporting "0" and "NE" in the textual part of the BR and/or in the custom footnote in CTF table 3; including corresponding explanations in the custom footnote in CTF table 3 and/or in the textual part of the BR on the use of "IE"; and ensuring consistency between the textual part of the BR and CTF table 3 by presenting the correct information on sectors affected in the textual part of the BR (see issue 2 in table II.2);

- (iii) Enhancing the process of identifying indicators for monitoring and evaluation of the results and proceeding to a results-based management approach for tracking the effectiveness of financial and other (technical, capacity-building and technological) provisions in the future (see issue 2 in table II.4).

Annex I

Assessment of adherence to the reporting guidelines for the eighth national communication of Italy

Tables I.1–I.8 summarize the ERT assessment of adherence to the UNFCCC reporting guidelines on NCs for Italy's NC8.

Table I.1

Findings on greenhouse gas inventory information from the review of the eighth national communication of Italy

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
1	Reporting requirement specified in paragraph 7 Issue type: transparency Assessment: encouragement	In its NC8 Italy did not provide transparent information on categories included in non-industrial combustion emissions. During the review, Italy provided an explanation on non-industrial combustion emissions, which include categories 1.A.4.a Commercial/institutional, 1.A.4.b Residential, 1.A.4.c Agriculture/forestry/fisheries and 1.A.5 Other (military) and displayed detailed information on emissions and their shares in the total. The ERT encourages Italy to include detailed information on categories included in non-industrial combustion emissions in accordance with the information provided during the review in its next NC.

Note: Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on NCs. The reporting on the requirements not included in this table is considered to be complete and transparent, and thus adheres to the UNFCCC reporting guidelines on NCs.

Table I.2

Findings on policies and measures from the review of the eighth national communication of Italy

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
1	Reporting requirement specified in paragraph 12 Issue type: completeness Assessment: encouragement	The Party did not report in its NC8 on actions taken to implement commitments under Article 4, paragraph 2(e)(ii), of the Convention, which requires Parties to identify and periodically update their own policies and practices that encourage activities that lead to greater levels of anthropogenic GHG emissions than would otherwise occur. During the review, Italy explained that the Interministerial Committee for Ecological Transition (established in 2021 and to which decisions on environmentally harmful subsidies have been delegated) agreed that the gradual removal of subsidies should be defined by 2025 in accordance with the goals of the National Sustainable Development Strategy and the principle of 'do no significant harm', the European Green Deal and the "Fit for 55" package. Owing to the pandemic, release of the edition of the Party's <i>Catalogue of environmentally harmful subsidies and environmentally favourable subsidies</i> was delayed, and it was not possible to take it into consideration in the NC8. The ERT reiterates the encouragement from the previous review report for Italy to provide information on actions taken to implement commitments under Article 4, paragraph 2(e)(ii), of the Convention in its next NC.
2	Reporting requirement specified in paragraph 13 Issue type: completeness Assessment: encouragement	The Party did not report detailed information in its NC8 on the assessment of the economic and social consequences of response measures. The ERT noted that, although the Party has added information to its BR5 (section 4.12), which is about the minimization of adverse effects in accordance with Article 2, paragraph 3, of the Kyoto Protocol, this addition is relevant to, but does not provide, detailed information on the assessment of the economic and social consequences of response measures as encouraged by paragraph 8 of the UNFCCC reporting guidelines on NCs. During the review, Italy explained that the information in the BR5 (section 4.12) had been introduced to address the encouragements from previous ERTs. Italy also explained that there is no other section or paragraph in its BR5 that provides information on the assessment of the economic and social consequences of response measures because the information is not yet available. In addition, Italy explained that the National Energy and Climate Plan is currently being updated, and more information should be available once the update has been completed in June 2024.

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
		The ERT encourages Italy to provide detailed information on the assessment of the economic and social consequences of response measures in its next NC, on the basis of the information gained from the update of its National Energy and Climate Plan.
3	Reporting requirement specified in paragraph 19 Issue type: completeness Assessment: recommendation	The Party did not provide information on estimated mitigation impacts for all of its individual PaMs in its NC8. Instead, estimates are provided for groups of planned PaMs only in the energy sector. During the review, Italy explained that estimates of mitigation impacts are provided for groups of planned PaMs because of their interactions and cross-sectoral nature, and to avoid double counting. The ERT recommends that the Party provide estimates for individual PaMs or, if this is not possible, for groups of PaMs for the IPPU, agriculture and waste sectors and provide an explanation as to why mitigation impacts could be estimated only for a group of mitigation actions and not for each individual mitigation action.

Note: Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on NCs. The reporting on the requirements not included in this table is considered to be complete and transparent, and thus adheres to the UNFCCC reporting guidelines on NCs.

Table I.3

Findings on projections including aggregate effects of policies and measures reported in the eighth national communication of Italy

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
1	Reporting requirement specified in paragraph 31 Issue type: transparency Assessment: encouragement	The ERT noted that the sectoral categories used for the projections in the NC8 are not fully consistent with the GHG inventory, in that different approaches to aggregation have been used for the industry, transport, residential and commercial buildings, agriculture and other sectors, and other sources. During the review, Italy explained that the categorization used for the projections has been used since its NC3 to ensure comparability, and that Italy plans to use the same categorization and tables in the next submission. The ERT encourages Italy to report projections in its next NC using the same sectoral categories as in the GHG inventories, to the extent possible.
2	Reporting requirement specified in paragraph 32 Issue type: transparency Assessment: encouragement	The ERT noted that Italy reported indirect CO ₂ emissions from solvent use under the IPPU sector and not separately in its GHG inventory. However, Italy did not explain whether or not the indirect CO ₂ emissions are included under the IPPU sector in the projections. During the review, Italy explained that indirect CO ₂ emissions from solvent use are included in the IPPU sector of the projections for consistency. The ERT encourages Italy to provide in its next NC an explanation, in accordance with the information provided during the review, that the projections of indirect CO ₂ emissions from solvent use are included in the IPPU sector.
3	Reporting requirement specified in paragraph 34 Issue type: completeness Assessment: recommendation	Italy did not report in its NC8 the WAM scenario projections disaggregated by gas for 2020, 2025, 2030 and 2035. During the review, Italy provided the GHG projections under the WAM scenario disaggregated by gas. The ERT recommends that Italy provide in its next NC the WAM scenario projections disaggregated by gas for 2020, 2025, 2030 and 2035.
4	Reporting requirement specified in paragraph 36 Issue type: completeness Assessment: recommendation	Italy did not report the total estimated and expected effects of implemented and adopted PaMs. During the review, Italy explained that it is difficult to separate the changes in emissions caused by changes in macroeconomic parameters from those induced by PaMs and make a meaningful estimation of the estimated and expected effects of implemented and adopted PaMs. The ERT recommends that Italy include in its next NC the estimated and expected total effects of implemented and adopted PaMs.

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
5	Reporting requirement specified in paragraph 36 Issue type: completeness Assessment: encouragement	Italy reported the individual effects of planned PaMs on energy production and transformation, energy efficiency, renewables and electrification in the industry sector, energy efficiency, renewables and electrification in the public sector and energy efficiency, renewables and electrification in the transport sector, but did not report the total expected effect of planned PaMs. During the review, Italy provided the total effect of planned PaMs and explained that the total effect is the sum of the individual effects reported and amounts to 62,900 kt CO ₂ eq in 2030. The ERT encourages Italy to include in its next NC, in the section on projections and the total effect of PaMs, the estimated and expected total effect of planned PaMs.

Note: Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on NCs. The reporting on the requirements not included in this table is considered to be complete and transparent, and thus adheres to the UNFCCC reporting guidelines on NCs.

Table I.4

Findings on financial, technological and capacity-building support from the review of the eighth national communication of Italy

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
1	Reporting requirement specified in paragraph 49 Issue type: completeness Assessment: recommendation	The ERT noted that the Party did not report information on the indicators used for tracking the provision of financial, technological and capacity-building support to non-Annex I Parties. During the review, Italy clarified that information on indicators was not provided because, during the reporting period, the tracking of support provided to non-Annex I Parties conducted by the former Italian Ministry of Environment and Energy Security (which was replaced by MASE) did not follow a stringent results-based management approach and the progress of projects was tracked through the realization of activities rather than through result indicators. Following an agreement signed between MASE and ISPRA in 2020 a new set of indicators for ex ante, intermediary and ex post monitoring of MASE projects has been developed, based on OECD DAC criteria and adjusted to MASE's specific needs, while in 2021 MASE started a process of reviewing its templates for the entire project life cycle and revising them according to a results-based management approach. The ERT recommends that the Party include in the next NC information on the indicators used for tracking the provision of financial, technological and capacity-building support to non-Annex I Parties.
2	Reporting requirement specified in paragraph 52 Issue type: transparency Assessment: recommendation	The Party reported in its NC8 information on the financial support that it has disbursed and committed for the purpose of assisting non-Annex I Parties to mitigate GHG emissions and adapt to the adverse effects of climate change and any economic and social consequences of response measures, and for capacity-building and technology transfer in the areas of mitigation and adaptation. However, the ERT noted that NC8 table 7.1 does not correspond to the tabular format recommended for the summary information (tables 6–8 of the UNFCCC reporting guidelines on NCs), although this information was correctly reflected in CTF tables 7, 7(a) and 7(b) for financial support for each of the last two reporting years. The ERT recommends that Italy provide in its next NC the summary information required by tables 6–8 of the UNFCCC reporting guidelines on NCs for each of the previous four reporting years or include a reference in the NC to the corresponding CTF tables.
3	Reporting requirement specified in paragraph 53 Issue type: transparency Assessment: recommendation	The Party reported summary information on financial support provided to non-Annex I Parties in textual format in its NC8 and in tabular format in CTF tables 7(a) and 7(b) of its BR5. However, the ERT noted that in CTF table 7(a) the Party reported “not applicable” for sectoral allocations for each of its contributions through multilateral channels, and “cross-cutting” for type of support for most of its contributions through multilateral and bilateral channels in CTF tables 7(a) and 7(b). During the review, the Party clarified that for multilateral channels, where “not applicable” was reported, the specification of the target sector is challenging, and

<i>No.</i>	<i>Reporting requirement, issue type and assessment</i>	<i>Description of the finding with recommendation or encouragement</i>
		explained its definition of cross-cutting types of financial support. The ERT noted that at least mitigation or adaptation support might be allocated to some sectors.
		The ERT recommends that Italy further investigate and adjust the information in its next NC on types of financial support provided to non-Annex I Parties and assess them in accordance with their sectoral allocation, to the extent possible.
4	Reporting requirement specified in paragraph 55 Issue type: completeness Assessment: encouragement	<p>The Party reported information on private financial flows leveraged by bilateral climate finance for mitigation and adaptation activities in non-Annex I Parties. However, the ERT noted that this information was reported for 2015–2018 and not for 2019–2020, and that there is no information on private financial resources mobilized since 2017.</p> <p>During the review, Italy explained that, following changes to the data-collection system for these figures, which has been integrated into the wider OECD CRS data-collection system since 2019, there are challenges in collecting data that are climate change specific.</p> <p>The ERT reiterates the encouragement from the previous review report for Italy to include in its next NC information on private financial flows leveraged by bilateral climate finance for mitigation and adaptation activities.</p>
5	Reporting requirement specified in paragraph 55 Issue type: completeness Assessment: encouragement	<p>The ERT noted that Italy did not report information on how it promotes the scaling up of private investment in mitigation and adaptation activities in developing countries.</p> <p>During the review, Italy explained that it has no programme or policy aimed at scaling up private investment in mitigation and adaptation activities in developing countries. In addition, Italy is facing challenges in identifying climate-related private finance because its data-collection system is undergoing improvements.</p> <p>The ERT encourages Italy to include in its next NC information on PaMs put in place that promote the scaling up of private investment in mitigation and adaptation activities in developing countries.</p>
6	Reporting requirement specified in paragraph 57 Issue type: completeness Assessment: recommendation	<p>The Party stated in its NC8 (section 7.7) that its cooperation with non-Annex I Parties, including on technology transfer, is based on strong dialogue with them and their needs, particularly the priorities of their nationally determined contributions. The ERT noted that there are no particular measures taken to promote, facilitate and finance the transfer of, access to and deployment of climate-friendly technologies for the benefit of non-Annex I Parties, or to support the development and enhancement of endogenous capacities and technologies of non-Annex I Parties.</p> <p>During the review, Italy explained that it has no information about endogenous capacities and technology needs of developing countries but expressed its readiness to focus on this in the future, including by using the information on endogenous technologies and needs that is to be reported by non-Annex I Parties in their biennial transparency reports.</p> <p>The ERT recommends that Italy include in its next NC information on the support provided and steps taken towards developing and enhancing the endogenous capacities and technologies of non-Annex I Parties or adapting other (external) technologies to local needs and conditions.</p>

Note: Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on NCs. The reporting on the requirements not included in this table is considered to be complete and transparent, and thus adheres to the UNFCCC reporting guidelines on NCs.

Table I.5

Findings on vulnerability assessment, climate change impacts and adaptation measures from the review of the eighth national communication of Italy

<i>No.</i>	<i>Reporting requirement, issue type and assessment</i>	<i>Description of the finding with recommendation or encouragement</i>
1	Reporting requirement specified in paragraph 46 Issue type: transparency Assessment:	<p>Italy did not clearly report in its NC8 whether it had finalized its NAP in 2018, as it had projected in the NC7.</p> <p>During the review, Italy clarified that after the draft NAP was shared with the Italian regional governments, it was deemed necessary for it to be subject to further consultative processes, including a strategic environmental assessment, and reported that the NAP will now be finalized by the end of 2023.</p>

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
	recommendation	The ERT recommends that Italy include in its next NC information on the timeline for the finalization of its NAP.
2	Reporting requirement specified in paragraph 46 Issue type: completeness Assessment: recommendation	<p>Italy reported that it contributes to international and national climate change related projects in developing countries through its institutions. However, it did not report specific information (including where such projects are located) on what these actions are and how they relate to climate adaptation in these countries. Notably, there is a lack of information on implementing Article 4, paragraph 1(e), of the Convention, including on how it is cooperating with developing countries in preparing for adaptation to the impacts of climate change; developing and elaborating appropriate and integrated plans for coastal zone management, water resources and agriculture; and the protection and rehabilitation of areas, particularly in Africa, affected by drought, desertification and floods.</p> <p>During the review, the Party provided comprehensive information on support provided to other countries.</p> <p>The ERT recommends that Italy include in its next NC specific information on actions taken to implement Article 4, paragraph 1(e), of the Convention with regard to cooperation in preparing for the impacts of climate change. The Party may refer, inter alia, to integrated plans for coastal zone management, water resources and agriculture, and for the protection and rehabilitation of areas, particularly in Africa, affected by drought, desertification and floods.</p>

Note: Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on NCs. The reporting on the requirements not included in this table is considered to be complete and transparent, and thus adheres to the UNFCCC reporting guidelines on NCs.

Table I.6

Findings on research and systematic observation from the review of the eighth national communication of Italy

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
1	Reporting requirement specified in paragraph 65 Issue type: completeness Assessment: encouragement	<p>Italy identified opportunities for free and open international exchange of data and information. However, it did not report on the barriers to free and open international exchange of data and information and on action taken to overcome such barriers.</p> <p>During the review, Italy explained that such barriers are overcome through institutional, financial and scientific cooperation agreements. These include EURO-CORDEX, the Intergovernmental Oceanographic Commission of UNESCO, the Global Ocean Observing System initiative, funding schemes such as the NRRP and EU directive 2019/1024 on the reuse of public sector data and information.</p> <p>The ERT reiterates the encouragement from the previous review report for Italy to include in its next NC information on identified barriers to free and open international exchange of data and on action taken to overcome such barriers.</p>

Note: Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on NCs. The reporting on the requirements not included in this table is considered to be complete and transparent, and thus adheres to the UNFCCC reporting guidelines on NCs.

Table I.7

Findings on education, training and public awareness from the review of the eighth national communication of Italy

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
1	Reporting requirement specified in paragraph 68 Issue type: transparency Assessment: encouragement	<p>Italy did not report specific information on public participation in the preparation or domestic review of the NC8. Rather, Italy explained in its NC8 that it involved mainly key institutional stakeholders at the national and regional level.</p> <p>During the review, the Party explained that the public had been involved in the process of drafting the climate change policy but not in the preparation of the NC8. The Party also explained that the NC8 is publicly available via the ministry's website.</p>

No.	<i>Reporting requirement, issue type and assessment</i>	<i>Description of the finding with recommendation or encouragement</i>
		The ERT reiterates the encouragement from the previous review report for Italy to include in its next NC information on the extent of public participation in the preparation and domestic review of the NC.

Note: Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on NCs. The reporting on the requirements not included in this table is considered to be complete and transparent, and thus adheres to the UNFCCC reporting guidelines on NCs.

Table I.8

Findings on minimization of adverse impacts and supplementary information related to the Kyoto Protocol reported in the eighth national communication of Italy

No.	<i>Reporting requirement, issue type and assessment</i>	<i>Description of the finding with recommendation</i>
1	Reporting requirement specified in paragraph 34 Issue type: transparency Assessment: recommendation	<p>The Party did not clearly report in its NC8 information on PaMs implemented to achieve its quantified emission limitation and reduction commitment and to promote sustainable development. The ERT noted that an explanation of the promotion of sustainable development is provided in another context (e.g. in chap. 7, on financial, technological and capacity-building support) but noted that there is no explanation in the section on PaMs.</p> <p>During the review, Italy explained that the PaMs included in the NC8 and the BR5 are consistent with those presented in the National Energy and Climate Plan, which was subject to an evaluation process in accordance with the EU directive on strategic environmental assessment (directive 2001/42/EC). One of the objectives of this evaluation is to ensure a high level of protection of the environment and to contribute to integrating environmental considerations in the preparation, adoption and implementation of plans and programmes to promote sustainable development.</p> <p>The ERT recommends that Italy provide the explanation about the evaluation process of its National Energy and Climate Plan under the EU directive on strategic environmental assessment and how this promotes sustainable development in the section on PaMs. The ERT concludes that this potential problem of a mandatory nature does not influence the Party's ability to fulfil its commitments for the second commitment period of the Kyoto Protocol.</p>

Note: Item listed under reporting requirement refers to the relevant paragraph of the reporting guidelines for supplementary information. The reporting on the requirements not included in this table is considered to be complete and transparent, and thus adheres to the reporting guidelines for supplementary information.

Annex II

Assessment of adherence to the reporting guidelines for the fifth biennial report of Italy

The BR5 of Italy is the final BR under the measurement, reporting and verification system established under the Convention.¹ Nevertheless, ERTs continue to provide recommendations and encouragements to the Parties on completeness, transparency and adherence to the UNFCCC reporting guidelines on BRs. Parties may find these recommendations and encouragements relevant, as appropriate, when preparing their initial biennial transparency report under the enhanced transparency framework of the Paris Agreement. Tables II.1–II.4 summarize the ERT assessment of adherence to the UNFCCC reporting guidelines on BRs for Italy's BR5.

Table II.1

Findings on the quantified economy-wide emission reduction target from the review of the fifth biennial report of Italy

No.	Reporting requirement and issue type	Description of the finding with recommendation or encouragement
1	Reporting requirement specified in paragraph 5 Issue type: transparency Assessment: recommendation	<p>The Party reported on the elements of its quantified economy-wide emission reduction target in its BR5 (section 3) and in its CTF tables 2(a)–2(e)II. However, the ERT found some inconsistencies between the text of the BR5 and the CTF tables. For example, “NA” is reported in BR5 table 2(e)II while the cells are left blank in CTF table 2(e)II. The ERT considers it better to use notation keys consistently between the text of the BR and CTF table 2 in order to improve transparency when reporting the elements specified in paragraph 5 of the UNFCCC biennial reporting guidelines on BRs.</p> <p>During the review, Italy agreed with the ERT and stated that it would enhance the consistency of its use of notation keys in future submissions.</p> <p>The ERT recommends that Italy ensure consistency between information reported in the textual part of the BR and the BR CTF tables.</p>

Note: Item listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on BRs. The reporting on the requirements not included in this table is considered to be complete and transparent, and thus adheres to the UNFCCC reporting guidelines on BRs.

Table II.2

Findings on mitigation actions and their effects from the review of the fifth biennial report of Italy

No.	Reporting requirement and issue type	Description of the finding with recommendation or encouragement
1	Reporting requirement specified in paragraph 8 Issue type: completeness Assessment: encouragement	<p>The Party did not report detailed information on the assessment of the economic and social consequences of response measures in its BR5. The ERT noted that, although the Party has added information to its BR5 (section 4.12), which is about the minimization of adverse effects in accordance with Article 2, paragraph 3, of the Kyoto Protocol, this addition is relevant to, but does not provide, detailed information on the assessment of the economic and social consequences of response measures as encouraged by paragraph 8 of the UNFCCC reporting guidelines on BRs.</p> <p>During the review, Italy explained that the information in the BR5 (section 4.12) had been introduced to address encouragements from previous ERTs. Italy also explained that there is no other section or paragraph in its BR5 that provides information on the assessment of the economic and social consequences of response measures because the information is not yet available. In addition, Italy explained that the National Energy and Climate Plan is currently being updated, and more information should be available once the update has been completed in June 2024.</p>

¹ The COP, by decision 1/CP.24, decided that the final BRs shall be those submitted to the secretariat no later than 31 December 2022 and reaffirmed that, for Parties to the Paris Agreement, following the submission of the final BR, the modalities, procedures and guidelines contained in the annex to decision 18/CMA.1 will supersede the measurement, reporting and verification system established under decision 1/CP.16, paras. 40–47 and 60–64, and decision 2/CP.17, paras. 12–62.

No.	Reporting requirement and issue type	Description of the finding with recommendation or encouragement
2	Reporting requirement specified in CTF table 3 Issue type: transparency Assessment: recommendation	<p>The ERT encourages Italy to provide detailed information on the assessment of the economic and social consequences of response measures in its next submission, on the basis of the information gained from the update of its National Energy and Climate Plan.</p> <p>The Party did not provide information on estimated emission reduction impacts for most of its PaMs, including for some measures that were reported in the BR4. The Party reported “NE” for 2030 and “0” for 2020 for all implemented PaMs, and “IE” (without indicating where the impact is included in the custom footnote) for most planned PaMs in CTF table 3. In the textual part of the BR5 some information is presented for planned PaMs reported as “IE”. The impact assessment of planned PaMs has not been conducted at the individual level for each measure, but for a group of measures (calculated using TIMES).</p> <p>Furthermore, the ERT noted some discrepancy between the sectors affected as indicated in the BR5 and in CTF table 3 (e.g. White certificates – Cogeneration, White certificates – Industry, National Industry 4.0 Plan (Impresa 4.0), “Ecobonus” and “Bonus casa”, Energy audits in companies – row 13, Minimum energy performance requirements for buildings, Thermal account, Efficient public lighting system – row 16, Energy programme for the Central Public Administration, Kyoto Fund Review, Energy efficiency, renewables and electrification in the industrial sector, White certificates mechanism with upgrading, Energy audits in companies – row 36, National Industry 4.0 Plan, Energy efficiency, renewables and electrification in the civil sector, White certificates mechanism with upgrading, Thermal account (<i>Conto termico</i>) mechanism with upgrading, Renewables in existing and new buildings, Efficient public lighting system – row 42, Energy upgrading programme for the Central Public Administration, Superbonus 110 per cent).</p> <p>During the review, Italy explained that in its BR5, 2020 was considered in the historical time series of the inventory, but that it was no longer part of the projections, so the Party reported “0” for 2020 for all implemented PaMs. Italy also explained that CTF table 3 has prefilled wording for columns and sectors affected so it is only possible to choose aggregated sector headings (e.g. energy, industry, transport) rather than the necessary level of disaggregation. The ERT considers that the information on sectors affected presented in CTF table 3 is correct and that this corresponds to the sectors used for the GHG emission projections, but that this does not correspond to the information presented in the textual part of the BR5.</p> <p>The ERT recommends that the Party (1) include the missing estimates of the impacts of its mitigation actions or provide adequate justification for reporting “0” and “NE” in the textual part of the BR and/or in the custom footnote in CTF table 3; (2) include corresponding explanations in the custom footnote in CTF table 3 and/or in the textual part of the BR on the use of “IE”; and (3) ensure consistency between the textual part of the BR and CTF table 3 by presenting the correct information on sectors affected in the textual part of the BR.</p>

Note: Item listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on BRs or to the CTF table number from the UNFCCC reporting guidelines on CTF tables. The reporting on the requirements not included in this table is considered to be complete and transparent, and thus adheres to the UNFCCC reporting guidelines on BRs.

Table II.3

Findings on projections reported in the fifth biennial report of Italy

No.	Reporting requirement and issue type	Description of the finding with recommendation or encouragement
1	Reporting requirement ^a specified in paragraph 31 Issue type: transparency Assessment: encouragement	<p>The ERT noted that the sectoral categories used for the projections in the NC8 are not fully consistent with the GHG inventory, in that different approaches to aggregation have been used for the industry, transport, residential and commercial buildings, agriculture and other sectors, and other sources.</p> <p>During the review, Italy explained that the categorization used for the projections has been used since its NC3 to ensure comparability, and that Italy plans to use the same categorization and tables in the next submission.</p> <p>The ERT encourages Italy to report projections using the same sectoral categories as in the GHG inventories, to the extent possible.</p>

No.	Reporting requirement and issue type	Description of the finding with recommendation or encouragement
2	Reporting requirement ^b specified in paragraph 32 Issue type: transparency Assessment: encouragement	The ERT noted that Italy reported indirect CO ₂ emissions from solvent use under the IPPU sector and not separately in its GHG inventory. However, Italy did not explain whether or not the indirect CO ₂ emissions are included under the IPPU sector in the projections. During the review, Italy explained that indirect CO ₂ emissions from solvent use are included in the IPPU sector of the projections for consistency. The ERT encourages Italy to provide an explanation, in accordance with the information provided during the review, that the projections of indirect CO ₂ emissions from solvent use are included in the IPPU sector.

Note: The reporting on the requirements not included in this table is considered to be complete and transparent, and thus adheres to the UNFCCC reporting guidelines on NCs and on BRs.

^a Item listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on NCs, as per para. 11 of the UNFCCC reporting guidelines on BRs.

^b Item listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on BRs.

Table II.4

Findings on provision of financial, technological and capacity-building support to developing country Parties from the review of the fifth biennial report of Italy

No.	Reporting requirement and issue type	Description of the finding with recommendation or encouragement
1	Reporting requirement specified in paragraph 14 Issue type: completeness Assessment: recommendation	Italy did not provide in its BR5 information on indicators and delivery mechanisms used and allocation channels tracked. During the review, the Party explained that the work on indicators is ongoing, and the set of indicators will be identified by the end of 2024. The ERT recommends that Italy use the forthcoming set of indicators for tracking the financial, technological and capacity-building support provided to non-Annex I Parties.
2	Reporting requirement specified in paragraph 16 Issue type: transparency Assessment: recommendation	The BR5 does not report transparent information on how Italy seeks to ensure that the resources it provides for non-Annex I Parties effectively address their needs for climate change adaptation and mitigation. During the review, the Party explained that the effectiveness of the resources it provides is ensured through a joint committee, which is the body overseeing, guiding and monitoring the implementation of bilateral cooperation activities. The ERT recommends that Italy enhance the process of identifying indicators for monitoring and evaluation of the results and proceed to a results-based management approach for tracking the effectiveness of financial and other (technical, capacity-building and technological) provisions in the future.
3	Reporting requirement specified in paragraph 19 Issue type: completeness Assessment: encouragement	The BR5 does not contain information on PaMs that promote the scaling up of private investment in mitigation and adaptation activities in developing country Parties. During the review, Italy explained that it has no programme or policy aimed at scaling up private investment in mitigation and adaptation activities in developing countries. In addition, Italy is facing challenges in identifying climate-related private finance because its data-collection system is undergoing improvements. The ERT encourages Italy to provide information on the PaMs that it has in place for promoting the scaling up of private investment in mitigation and adaptation activities in developing country Parties.

Note: Item listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on BRs. The reporting on the requirements not included in this table is considered to be complete and transparent, and thus adheres to the UNFCCC reporting guidelines on BRs.

Annex III

Documents and information used during the review

A. Reference documents

2022 GHG inventory submission of Italy. Available at <https://unfccc.int/ghg-inventories-annex-i-parties/2022>.

2023 GHG inventory submission of Italy. Available at <https://unfccc.int/ghg-inventories-annex-i-parties/2023>.

BR4 of Italy. Available at <https://unfccc.int/BR4>.

BR5 CTF tables of Italy. Available at <https://unfccc.int/BR5>.

BR5 of Italy. Available at <https://unfccc.int/BR5>.

BR5 of the EU. Available at <https://unfccc.int/BR5>.

“Common tabular format for ‘UNFCCC biennial reporting guidelines for developed country Parties’”. Annex to decision 19/CP.18. Available at <https://unfccc.int/resource/docs/2012/cop18/eng/08a03.pdf>.

“Compilation of economy-wide emission reduction targets to be implemented by Parties included in Annex I to the Convention”. FCCC/SBSTA/2014/INF.6. Available at <http://unfccc.int/resource/docs/2014/sbsta/eng/inf06.pdf>.

European Green Deal. European Commission document COM(2019) 640 final. Available at https://ec.europa.eu/info/files/communication-european-green-deal_en.

“Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications”. FCCC/CP/2019/13/Add.1. Available at <https://unfccc.int/documents/210471>.

“Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol”. Annex to 15/CMP.1. Available at <https://unfccc.int/documents/4253>.

“Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol”. Annex III to decision 3/CMP.11. Available at <https://unfccc.int/documents/9101>.

“Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention”. Annex to decision 13/CP.20. Available at <http://unfccc.int/resource/docs/2014/cop20/eng/10a03.pdf>.

National Energy and Climate Plan of Italy. Available at https://commission.europa.eu/publications/italy-draft-updated-necp-2021-2030_en.

NC8 of Italy. Available at <https://unfccc.int/NC8>.

NC8 of the EU. Available at <https://unfccc.int/NC8>.

Report on the technical review of the BR4 of Italy. FCCC/TRR.4/ITA. Available at <https://unfccc.int/fourth-biennial-reports>.

Report on the technical review of the NC8 and the technical review of the BR5 of the EU. FCCC/IDR.8/EU–FCCC/TRR.5/EU. Available at <https://unfccc.int/documents/630393>.

“UNFCCC biennial reporting guidelines for developed country Parties”. Annex I to decision 2/CP.17. Available at <http://unfccc.int/resource/docs/2011/cop17/eng/09a01.pdf>.

B. Additional information provided by the Party

Responses to questions during the review were received from Vanessa Leonardi (MASE), including additional material. The following reference was provided by Italy and may not conform to UNFCCC editorial style as it has been reproduced as received:

ISPRA. 2018. *National Greenhouse Gas Inventory System in Italy, Year 2018*. Available at <http://emissioni.sina.isprambiente.it/serie-storiche-emissioni/>.
