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Report on the technical review of the third biennial report of Italy

Developed country Parties were requested by decision 2/CP.17 to submit their third biennial report to the secretariat by 1 January 2018. This report presents the results of the technical review of the third 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”.

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Abbreviations and acronyms

AEA	annual emission allocation
AR4	Fourth Assessment Report of the Intergovernmental Panel on Climate Change
BR	biennial report
CH ₄	methane
CO ₂	carbon dioxide
CO ₂ eq	carbon dioxide equivalent
CTF	common tabular format
ERT	expert review team
ESD	effort-sharing decision
EU	European Union
EU ETS	European Union Emissions Trading System
F-gas	fluorinated gas
GDP	gross domestic product
GHG	greenhouse gas
HFC	hydrofluorocarbon
IMELS	Italian Ministry for the Environment, Land and Sea
IPPU	industrial processes and product use
ISPRA	Italian National Institute for Environmental Protection and Research
LDCs	least developed countries
LULUCF	land use, land-use change and forestry
MOU	memorandum of understanding
Mtoe	million tonnes of oil equivalent
NA	not applicable
NC	national communication
NE	not estimated
NF ₃	nitrogen trifluoride
NIR	national inventory report
NO	not occurring
non-Annex I Party	Party not included in Annex I to the Convention
non-ETS sectors	sectors not covered by the European Union Emissions Trading System
N ₂ O	nitrous oxide
OECD	Organisation for Economic Co-operation and Development
PaMs	policies and measures
PFC	perfluorocarbon
RES	renewable energy sources
SF ₆	sulfur hexafluoride
SIDS	small island developing States
UNFCCC reporting guidelines on BRs	“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 BR3¹ 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” (annex to decision 13/CP.20).

2. In accordance with the same decision, a draft version of this report was transmitted to the Government of Italy, which provided comments that were considered and incorporated, as appropriate, with revisions into this final version of the report.

3. The review was conducted from 21 to 26 May 2018 in Rome by the following team of nominated experts from the UNFCCC roster of experts: Ms. Gamze Çelikyılmaz (Turkey), Ms. Hoy Yen Chan (Malaysia), Ms. Ann Gordon (Belize), Mr. Nicolo Macaluso (Canada) and Mr. David Muscat (Malta). Ms. Chan and Mr. Macaluso were the lead reviewers. The review was coordinated by Mr. Nalin Srivastava (UNFCCC secretariat).

B. Summary

4. The ERT conducted a technical review of the information reported in the BR3 of Italy in accordance with the UNFCCC reporting guidelines on BRs (annex I to decision 2/CP.17).

1. Timeliness

5. The BR3 was submitted on 24 December 2017, before the deadline of 1 January 2018 mandated by decision 2/CP.17. The CTF tables were submitted on 24 December 2017.

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

6. Issues and gaps identified by the ERT related to the reported information are presented in table 1. The information reported by Italy in its BR3 mostly adheres to the UNFCCC reporting guidelines on BRs.

Table 1

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

<i>Section of BR</i>	<i>Completeness</i>	<i>Transparency</i>	<i>Reference to description of recommendations</i>
GHG emissions and trends	Complete	Transparent	–
Assumptions, conditions and methodologies related to the attainment of the quantified economy-wide emission reduction target	Complete	Mostly transparent	Issue 1 in table 3
Progress in achievement of targets	Complete	Mostly transparent	Issue 1 in table 5 and issue 1 in table 7
Provision of support to developing country Parties	Complete	Mostly transparent	Issues 1 and 2 in table 15

Note: A list of recommendations pertaining to the completeness and transparency issues identified in this table is included in chapter III below.

¹ The BR submission comprises the text of the report and the CTF tables, which are both subject to the technical review.

II. Technical review of the information reported in the third biennial report

A. Information on greenhouse gas emissions and removals related to the quantified economy-wide emission reduction target

1. Technical assessment of the reported information

7. Total GHG emissions² excluding emissions and removals from LULUCF increased 17.5 per cent between 1990 and 2016, whereas total GHG emissions including net emissions or removals from LULUCF decreased by 22.8 per cent over the same period. Table 2 illustrates the emission trends by sector and by gas for Italy.

Table 2

Greenhouse gas emissions by sector and by gas for Italy for the period 1990–2016

	GHG emissions (kt CO ₂ eq)					Change (%)		Share (%)	
	1990	2000	2010	2015	2016	1990–2016	2015–2016	1990	2016
	<i>Sector</i>								
1. Energy	425 498.80	459 129.94	417 157.42	352 536.34	347 080.21	–18.4	–1.6	82.1	81.1
A1. Energy industries	137 158.26	149 461.31	134 012.09	105 800.48	104 357.94	–23.9	–1.4	26.5	24.4
A2. Manufacturing industries and construction	93 234.98	92 195.38	62 580.55	50 919.71	47 944.66	–48.6	–6.2	18.0	11.2
A3. Transport	102 100.09	123 261.53	115 158.69	105 987.65	104 505.49	2.4	–1.4	19.7	24.4
A4. and A5. Other	80 128.19	83 393.35	96 565.04	82 277.78	83 051.56	3.6	0.9	15.5	19.4
B. Fugitive emissions from fuels	12 877.28	10 818.37	8 841.06	7 550.73	7 220.56	–43.9	–4.6	2.5	1.7
C. CO ₂ transport and storage	NO	NO	NO	NO	NO	NA	NA	NO	NO
2. IPPU	40 473.12	39 161.08	36 357.04	32 281.58	32 097.69	–20.7	–0.6	7.8	7.5
3. Agriculture	35 078.01	34 259.15	30 064.87	29 434.95	30 393.98	–13.4	3.2	6.8	7.1
4. LULUCF	–3 042.83	–15 654.60	–30 640.29	–35 325.97	–29 926.87	883.5	–18.0	–0.6	–7.0
5. Waste	17 313.44	21 913.92	20 410.14	18 625.21	18 290.11	5.6	–1.8	3.3	4.3
6. Other	NO	NO	NO	NO	NO	NA	NA	NO	NO
<i>Gas^a</i>									
CO ₂	439 944.10	470 767.75	424 873.16	355 483.21	350 323.01	–20.4	–1.5	84.9	81.9
CH ₄	48 235.88	50 736.58	46 769.06	43 133.26	42 869.65	–11.1	–0.6	9.3	10.0
N ₂ O	26 422.80	28 374.46	19 056.72	17 635.57	17 954.17	–32.1	1.8	5.1	4.2
HFCs	444.00	2 478.65	11 356.41	14 468.12	14 681.59	3 206.7	1.5	0.1	3.4
PFCs	2 906.86	1 488.50	1 520.39	1 688.33	1 628.55	–44.0	–3.5	0.6	0.4
SF ₆	409.73	604.90	393.57	441.18	377.17	–7.9	–14.5	0.1	0.1
NF ₃	NO	13.26	20.17	28.42	27.84	NA	–2.0	0.0	0.0
Total GHG emissions	518 363.37	554 464.10	503 989.47	432 878.08	427 861.99	–17.5	–1.2	100.0	100.0

² In this report, the term “total GHG emissions” refers to the aggregated national GHG emissions expressed in terms of CO₂ eq excluding LULUCF, unless otherwise specified. Values in this paragraph are calculated based on the 2018 annual submission, version 1.

	GHG emissions (kt CO ₂ eq)					Change (%)		Share (%)	
	1990	2000	2010	2015	2016	1990– 2016	2015– 2016	1990	2016
	without LULUCF								
Total GHG emissions with LULUCF	515 320.53	538 809.50	473 349.18	397 552.11	397 935.13	-22.8	0.1	NA	NA

Source: GHG emission data: Italy's 2018 annual submission, version 1.

^a Emissions by gas without LULUCF and without indirect CO₂.

8. The decrease in total emissions was driven mainly by factors such as structural changes in the economy, the lingering effects of the economic recession, the declining and ageing population, and the effects of PaMs, including those aimed at promoting the use of energy from RES and less carbon intensive fuels (e.g. switching from coal to gas) and energy efficiency. GHG emissions from most sectors decreased between 1990 and 2016, with the notable exceptions of transport in the energy sector and refrigeration and air conditioning in the IPPU sector. The largest emission reductions stemmed from changes in energy use in manufacturing industries and construction, electricity and heat production, and residential combustion. The largest decrease in emissions in relative terms was in waste management (through reduced landfilling and better control of it).

9. In brief, Italy's national inventory arrangements were established in accordance with Legislative Decree 51/2008, which instituted the national system for the Italian GHG inventory. Since the NC6 and BR2, no changes have occurred in the national inventory arrangements. As per article 14 bis of the Legislative Decree, ISPRA is the sole entity in charge of the compilation and preparation of the national GHG inventory. IMELS is responsible for its endorsement and submission to the UNFCCC secretariat. Italy also submits its GHG inventory to the European Commission in the framework of the EU Greenhouse Gas Monitoring Mechanism. The national inventory arrangements, including updated information on institutional, legal and procedural arrangements for reporting and archiving of inventory information, are described in the publicly available annual reports prepared by ISPRA.³

2. Assessment of adherence to the reporting guidelines

10. The ERT assessed the information reported in the BR3 of Italy and recognized that the reporting is complete, transparent and adhering to 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.

B. Assumptions, conditions and methodologies related to attainment of the quantified economy-wide emission reduction target

1. Technical assessment of the reported information

11. 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. The EU offered to move to a 30 per cent reduction target on the condition that other developed countries commit to a comparable target and developing countries contribute according to their responsibilities and respective capabilities under a new global climate change agreement.

12. 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 global warming potential 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. The EU

³ Available at <http://www.sinanet.isprambiente.it/it/sia-ispra/serie-storiche-emissioni>.

generally allows its member States to use units from the Kyoto Protocol mechanisms as well as new market mechanisms for compliance purposes, subject to a number of restrictions in terms of origin and type of project and up to an established limit. Companies can make use of such units to fulfil their requirements under the EU ETS.

13. The EU 2020 climate and energy package includes the EU ETS and the ESD (see para. 14 below). The EU ETS covers mainly point emissions sources in the energy, industrial and aviation sectors. An EU-wide emissions cap has been put in place for the period 2013–2020 with the goal of reducing emissions by 21 per cent below the 2005 level by 2020. Emissions from non-ETS sectors are regulated through member State specific targets that add up to a reduction at the EU level of 10 per cent below the 2005 level by 2020.

14. Under the ESD, Italy has a target of reducing its total emissions to 13 per cent below the 2005 level by 2020 for non-ETS sectors. National emission targets for non-ETS sectors for 2020 have been translated into binding quantified AEAs for the period 2013–2020. Italy's AEAs change following a linear path from 308,162 kt CO₂ eq in 2013 to 291,006 kt CO₂ eq in 2020.⁴

15. In its BR3, Italy described the national targets for 2020 assigned to it under the EU directives for renewable energy (2009/28/EC), reduction of indirect land-use change for biofuels and bioliquids (EU/2015/1513) and energy efficiency (2012/27/EU), which are part of the EU 2020 climate and energy package. Under the renewable energy directive, Italy's target is to achieve a 17 per cent share of RES in the national final energy consumption. Under the directive to reduce indirect land-use change for biofuels and bioliquids, Italy has committed to a target of 10 per cent use of biofuels in transportation by 2020. The ERT noted that under the EU's proposed effort-sharing regulation presented by the European Commission to achieve the EU's nationally determined contribution of a 40 per cent reduction in emissions by 2030 below the 2005 level under the Paris Agreement (currently being negotiated), Italy has a target of a 33 per cent reduction in emissions by 2030 compared with the 2005 level for non-ETS sectors.

2. Assessment of adherence to the reporting guidelines

16. The ERT assessed the information reported in the BR3 of Italy and identified an issue relating to transparency and adherence to the UNFCCC reporting guidelines on BRs. The finding is described in table 3.

Table 3

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

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation
1	Reporting requirement specified in paragraph 5 Issue type: transparency Assessment: recommendation	In its BR3, Italy reported that it will not use international market-based mechanisms to achieve its emission reduction target under the Convention. However, the ERT noted that Italy reported the possible scale of contributions from market-based mechanisms for achieving its target (i.e. the amounts of certified emission reductions, assigned amount units and carry-over units) in CTF table 2(e)I. During the review, Italy clarified the information on the scale of contributions of market-based mechanisms in CTF table 2(e)I was incorrectly reported owing to a misinterpretation of the reporting requirements for this table. The Party also clarified that while the amounts of assigned amount units and carry-over units reported in CTF table 2(e)I were the total amounts allocated to the Party for the second commitment period of the Kyoto Protocol, the amount of certified emission reductions reported were those purchased by Italy to offset emissions from certain

⁴ European Commission decision 2017/1471 of 10 August 2017 amending decision 2013/162/EU of 26 March 2013 to revise member States' AEAs for the period from 2017 to 2020, and European Commission implementing decision 2013/634/EU of 31 October 2013 on the adjustments to member States' annual emission allocations for the period from 2013 to 2020 pursuant to decision 406/2009/EC of the European Parliament and of the Council.

No.	<i>Reporting requirement, issue type and assessment</i>	<i>Description of the finding with recommendation</i>
		<p>activities. The Party confirmed that it will not use international market-based mechanisms to achieve its emission reduction target under the Convention.</p> <p>The ERT recommends that Italy include in its next BR accurate information on the possible scale of contributions from international market-based mechanisms towards the achievement of its target under the Convention in CTF table 2(e)I, consistent with that reported in the textual part of the BR, and using, for example, footnotes or clearly defined notation keys.</p>

Note: Paragraph number 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, transparent and adhering to the UNFCCC reporting guidelines on BRs.

C. Progress made towards the achievement of the quantified economy-wide emission reduction target

1. Mitigation actions and their effects

(a) Technical assessment of the reported information

17. Italy provided information on its package of PaMs implemented and planned, by sector and by gas, in order to fulfil its commitments under the Convention and its Kyoto Protocol. Italy reported on its policy context and legal and institutional arrangements put in place to implement its commitments and monitor and evaluate the effectiveness of its PaMs. The ERT noted that in its BR3 and CTF table 3, Italy provided information only on implemented and planned PaMs. During the review, the Party clarified that there are no adopted PaMs at present.

18. Italy provided information on a set of PaMs similar to those previously reported, with a few exceptions. Italy also provided information on changes made since the previous submission to its institutional, legal, administrative and procedural arrangements used for domestic compliance, monitoring, reporting, archiving of information and evaluation of the progress made towards its target. In 2017, Italy adopted a new national energy strategy (SEN 2017), which is a package of PaMs planned to enable Italy to achieve its national energy targets by 2030. Italy also adopted Law No. 79/2016 (the ratification of the Doha Amendment to the Kyoto Protocol), which established the national system for PaMs and emission projections, in accordance with article 12 of EU regulation 525/2013/EU (Greenhouse Gas Monitoring Mechanism). Article 1 of the decree of 2016 that implements Law No. 79/2016 aims to improve the statistical data flow for the preparation of information on PaMs and projections by documenting a list of information and data that needs to be reported by the competent ministries to IMELS and ISPRA as per a stipulated timeline.

19. Italy did not report on its self-assessment of compliance with its emission reduction target and national rules for taking action against non-compliance. However, during the review, Italy provided the information that the Ministry of Economic Development's decree of 2012 quantifies mandatory targets for regions in Italy to achieve in order to meet the national target for renewable energy by 2020. All regions are thus required to contribute to the increased use of renewable energy and identify strategies to achieve their targets. IMELS consults with local governments in cases of non-compliance and provides technical support so that targets can be achieved.

20. 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.

21. In operation since 2005, the EU ETS is a cap-and-trade system that covers all significant energy-intensive installations (mainly large point emissions sources such as power plants and industrial facilities) that produce 40–45 per cent of the GHG emissions of the EU. It is expected that the EU ETS will guarantee that the 2020 target (a 21 per cent emission reduction below the 2005 level) will be achieved for sectors under the scheme. The third phase of the EU ETS started in 2013 and the system now includes aircraft operations (since 2012) as well as N₂O emissions from chemical industries, PFC emissions from aluminium production and CO₂ emissions from industrial processes (since 2013).

22. The ESD became operational in 2013 and covers sectors outside the EU ETS, including transport (excluding domestic and international aviation, and international maritime transport), residential and commercial buildings, agriculture and waste, together accounting for 55–60 per cent of the GHG emissions of the EU. The aim of the ESD is to decrease GHG emissions in the EU by 10 per cent below the 2005 level by 2020 and includes binding annual targets for each member State for 2013–2020.

23. Italy introduced national-level policies to achieve its targets under the ESD and domestic emission reduction targets. The key policies are: the white certificates system, which promotes energy efficiency in all the energy end-use sectors; the green certificates system, which promotes RES; the Conto Termico decree, which provides incentives to small plants to improve their energy efficiency and incentives for the production of thermal energy from RES; Legislative Decree 201/07 on energy efficiency; the Conto Energia decree, which provides support for a fixed period for electricity production by solar photovoltaic and thermodynamic systems; Legislative Decree 201/07, transposing the EU directive on eco-design (2005/32/EC), which sets minimum mandatory standards for energy-using products; building regulations setting minimum mandatory standards for new and existing buildings (Legislative Decree 192/05, as amended by Legislative Decree 311/06); an emission standard for new cars (EU regulation 443/2009/EC); the development of high-capacity and high-speed rail networks and the improvement of regional rail networks for commuting; the reduction of N₂O emissions from nitric acid production plants; the rationalization of nitrogen fertilizer use; and the separation of urban waste for collection.

24. The mitigation effect of the emission standard for new cars is the most significant, with an estimated impact of 10,200 kt CO₂ eq by 2020. Other policies that have delivered significant emission reductions are: the white certificates system; infrastructure measures for urban transport; Legislative Decree 201/07; the green certificates system; the promotion of energy saving in buildings; and the separation of urban waste. The ERT noted that, although they are being implemented, Italy did not report EU-wide measures for specific gases and sectors (e.g. the EU directive on the reduction of HFCs in transport (2006/40/EC)) because it focused on domestic measures.

25. Italy highlighted the domestic mitigation actions that are under development, such as: further extension of the energy saving targets of the white certificates system; the promotion of energy efficiency in residential buildings via tax deductions; the promotion of a modal transport shift from private cars to public buses and walking; and the promotion of and support for the renewal of the car fleet of the country with electric vehicles and vehicles using low carbon fuels as well as the use of liquefied natural gas in transport. Among the mitigation actions that provide a foundation for significant additional actions, further extension of the white certificates system is critical for Italy to attain its 2020 emission reduction target because it is a measure aimed at promoting energy efficiency in all the energy end-use sectors. Table 4 provides a summary of the reported information on the PaMs of Italy.

Table 4
Summary of information on policies and measures reported by Italy

<i>Sector</i>	<i>Key PaMs</i>	<i>Estimate of mitigation impact by 2020 (kt CO₂ eq)</i>
Policy framework and cross-sectoral measures	EU ETS	NE ^a
Energy	Conto Termico decree	NE

<i>Sector</i>	<i>Key PaMs</i>	<i>Estimate of mitigation impact by 2020 (kt CO₂ eq)</i>
Transport	Emission standard for new cars (EU regulation 443/2009/EC)	10 200
	Infrastructure measures (the development of high-capacity and high-speed rail networks and the improvement of regional rail networks for commuting)	5 700
	Mandatory use of biofuels (legislative decrees 128/05 and 28/2011 transposing EU directives 2003/30/EC and 2009/28/EC, respectively)	3 070
Renewable energy	Green certificates system	4 000
	Conto Energia decree	3 200
	European Regional Development Fund/National Strategic Framework 2008–2013 (increase of RES in electricity production)	1 400
Energy efficiency	White certificates system	6 110
	Legislative Decree 201/07 on energy efficiency (transposing EU directive 2005/32/EC)	4 520
	Building regulations (Legislative Decree 192/05, as amended by Legislative Decree 311/06)	3 610
	Promotion of energy saving in buildings	4 080
	Legislative Decree 102/2014 on energy efficiency (transposing EU directive 2012/27/EC)	NE
IPPU	Reduction of N ₂ O emissions from nitric acid production plants	740
Agriculture	Rationalization of nitrogen fertilizer use	790
	Recovery of biogas from animal manure management systems	400
LULUCF	Not reported	NE
Waste	Separation of urban waste for collection	3 700

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

^a The specific effects of this cross-cutting measure are reflected in the sectoral PaMs listed in the table.

26. As an EU member State, Italy has put in place institutional arrangements for the assessment and monitoring of progress in the implementation of mitigation actions and their impacts. The ERT noted that CTF table 3 lists seven planned PaMs with 2017 as the start year of implementation, which indicates a delay in their implementation; that is, they should have already been listed as implemented PaMs. The total mitigation impact of these PaMs (excluding those whose mitigation effects have not been reported) is 7,964 kt CO₂ eq, which is about 1.9 per cent of the total projected emissions in 2020. The ERT notes that Italy should consider bringing forward the implementation of these PaMs while also noting that they are not included in the WEM scenario and the delay in their implementation will therefore not likely have a significant effect on Italy's achievement of its emission reduction target.

(b) Policies and measures in the energy sector

27. **Energy supply.** The shares of oil, coal, natural gas and RES in Italy's primary energy supply in 2015 were 35.1, 8.1, 36.2 and 18.0 per cent, respectively. The shares of oil, coal, natural gas and RES in the primary energy supply in 1990 were 56.8, 10.0, 26.6 and 4.5 per

cent, respectively. The increase in the contribution of natural gas and RES to the primary energy supply indicates a shift towards a cleaner energy supply mix in Italy.

28. The PaMs that contributed to this shift include: Legislative Decree 4/1999, which mandated the conversion of fuel oil steam plants to new combined cycle gas turbine plants using natural gas; Law No. 239/2004, which facilitated the construction of new combined cycle gas turbine plants; and the white certificates system for combined heat and power generation.

29. **Renewable energy sources.** Italy has a large portfolio of RES in its energy mix, comprising solar photovoltaic, solar thermal, wind, hydro, geothermal, ocean, biofuel, biomass and biogas power systems. The National Renewable Energy Action Plan 2010 encompasses measures to achieve Italy's national target of 17 per cent use of renewable energy in final energy consumption by 2020, as mandated by EU directive 2009/28/EC, which forms part of the EU 2020 climate and energy package. This directive has been transposed into Legislative Decree 28/2011, which defines the mechanisms, the incentives and the institutional, financial and legal tools necessary to achieve the 2020 renewable energy target for Italy. In 2015, Italy achieved a share of 17.5 per cent of renewable energy in its final energy consumption against its national target of 17 per cent by 2020.

30. Italy has used a combination of market-based mechanisms and financial incentives to achieve its renewable energy target. The use of RES in electricity generation is governed by Legislative Decree 28/2011, which requires power producers and importers of electricity generated from non-renewable sources to inject a minimum quota of renewable energy annually into the grid. Policy instruments that supported this legislation until 2012 were the green certificates system and the all-inclusive feed-in tariff for all types of renewable energy. Following the ministerial decree of 6 July 2012, these two instruments were replaced for all types of renewable energy except photovoltaic systems with a new instrument for accessing the incentives on the basis of the type and capacity of the power plant. Photovoltaic systems continued to be supported by the Conto Energia decree incentive mechanism until mid-2013. While there are no specific PaMs promoting renewable energy in heat generation, the integration of efficient renewable energy in the thermal sector is incentivized through the energy efficiency tax deductions and the white certificates system. The implemented PaMs promoting renewable energy are expected to have a total mitigation impact of 8,600 kt CO₂ eq by 2020.

31. **Energy efficiency.** Italy has an indicative national target of final energy consumption of 124 Mtoe in accordance with the EU energy efficiency target of a 20 per cent reduction in energy use by 2020. EU directive 2012/27/EU, which establishes a common framework for the promotion of energy efficiency, has been transposed into Legislative Decree 102/2014, which established a new fund to provide loans to public and private entities for implementing energy efficiency measures. First approved by the government in 2014 and revised in 2017, the Italian Energy Efficiency Action Plan sets out the national energy efficiency objectives and the measures to achieve them, including targets for the residential, service, industrial and transport sectors for 2020. Of the implemented PaMs, the white certificates system is the key measure – it promotes energy efficiency in all end-uses, including combined heat and power and the industrial and commercial sectors, accounting for a total energy saving of more than 4.75 Mtoe per year of primary energy, which is equivalent to more than 4.38 Mtoe per year of final energy from 2005 to 2015.

32. The ERT noted that alongside the improvements in energy efficiency, the reduction in energy consumption partly stems from the decline in production caused by the economic recession following the global financial crisis in 2008. The ERT also noted that despite being below its indicative national 2020 target for final energy consumption in 2015, given the upward trend in final energy consumption in recent years, Italy would need to make greater efforts to achieve its 2020 energy efficiency target.

33. **Residential and commercial sectors.** The PaMs deployed in these sectors comprise regulations and fiscal measures that aim to improve energy efficiency through specific actions targeted at both existing and new buildings and appliances. Legislative Decree 102/2005 (subsequently amended by Legislative Decree 311/2006) transposes the EU directive on energy efficiency (2002/91/CE) and mandates stricter energy demand

requirements and the adoption of RES in the buildings sector. Of the implemented PaMs, the most effective ones are: the minimum mandatory standards for new and existing buildings for energy efficiency; the regulation on mandatory energy efficiency standards for energy-using products; and the white certificates system. The ERT noted that these implemented PaMs, together with a number of planned PaMs to promote energy efficiency in residential buildings, will contribute significantly to helping Italy achieve its goal of making all new buildings nearly zero-energy by 2020.

34. **Transport sector.** Italy has implemented, including by transposing EU directives, PaMs relating to the transport sector addressing the use of biofuels, emission standards and transport infrastructure. However, unlike other sectors, emissions from the transport sector in Italy have not shown a significant decreasing trend since 1990. Pursuant to the EU 2020 climate and energy package, legislative decrees 128/05 and 28/2011 set mandatory targets for the use of biofuels in the transport sector. These PaMs are estimated to have a total mitigation effect of 3,017 kt CO₂ eq by 2020, and have contributed to Italy already achieving a 7.2 per cent share of biofuels in the transport sector. The EU regulation mandating a minimum average emission standard for new passenger cars of 120 g CO₂ per km (EC/443/2009) has been the most effective measure in the transport sector, and has an estimated mitigation impact of 10,200 kt CO₂ eq by 2020. The development of high-capacity and high-speed rail networks and public transport in urban areas are infrastructure PaMs with significant mitigation effects by 2020.

35. The ERT noted that the downward trend in emissions from the transport sector in the past decade demonstrates the impact of the implemented PaMs. The ERT also noted the range of planned PaMs in this sector that will further contribute to modifying the longer-term trend in anthropogenic GHG emissions. These PaMs include the development of infrastructure for recharging points for electric vehicles and refuelling points for natural gas and hydrogen, the renewal of the country's car fleet with low carbon fuel vehicles and a modal shift in transport from private cars to public transport and walking.

36. **Industrial sector.** In 2015, 63.5 per cent of Italy's emissions from this sector was subject to the EU ETS while the remainder was addressed under the ESD. Emissions from energy consumption in the industrial sector have been decreasing since 2004 owing to the economic recession following the global financial crisis in 2008 as well as the impact of the implemented PaMs. Of the implemented PaMs, the white certificates system, which promotes energy efficiency in the industrial sector, is the most effective. Other significant PaMs include the EU eco-design directive (2009/125/EC), which imposes a minimum mandatory standard of high efficiency electric motors and inverters.

(c) **Policies and measures in other sectors**

37. **Industrial processes.** Of the main gases emitted in this sector (N₂O, HFCs, PFCs and SF₆), only HFCs, particularly from refrigeration and air conditioning, showed an increasing trend in the period 1990–2016, mainly owing to the substitution of chlorofluorocarbon and hydrochlorofluorocarbon refrigerants by HFCs pursuant to the Montreal Protocol. Italy follows the relevant EU regulations for this sector but has only a few domestic PaMs specifically addressing it. The EU regulation on F-gases (517/2014) mandates a reduction in the supply of HFCs by 27 and 79 per cent below the 2015 level by 2020 and 2030, respectively. The other measure reported for this sector aims at a reduction in N₂O emissions from nitric acid production through the application of the best available technology and has resulted in a nearly 93 per cent decrease in N₂O emissions (27.7 to 2.1 kt CO₂ eq) over the period 2005–2015.

38. **Agriculture.** Between 1990 and 2016, GHG emissions from the agriculture sector decreased by 13.4 per cent (4,684.03 kt CO₂ eq), owing mainly to the decreases in livestock population, cultivated area, crop production and the amount of nitrogen fertilizers applied, all of which are changes resulting from the implementation of the EU Common Agricultural Policy. The PaMs implemented in this sector at the national level address N₂O emissions from agricultural soils through rationalization of nitrogen fertilizers and recovery of biogas from animal manure management systems.

39. **LULUCF.** The LULUCF sector was a net sink of 29,926.87 kt CO₂ eq in Italy in 2016. Net GHG removals increased by 883.5 per cent (26,884.03 kt CO₂ eq) between 1990 and 2016, driven mainly by an increase in the carbon stocks in forest land. EU decision 529/2013/EU sets out the accounting rules on emissions and removals resulting from LULUCF activities by 2020. While the contribution from the LULUCF sector is not included in the EU target for 2020, the LULUCF regulation for 2021–2030 passed in 2017⁵ includes emissions and removals from LULUCF in the 2030 climate and energy framework. The effort-sharing regulation includes a new ‘flexibility’ that allows for a limited use of net removals from certain LULUCF accounting categories, with a proposed cap for Italy of about 11.5 Mt for the period 2021–2030.

40. **Waste management.** Between 1990 and 2016, GHG emissions from the waste sector increased by 5.6 per cent (976.67 kt CO₂ eq), owing mainly to population growth. However, following steady growth since 1990, emissions from the waste sector decreased since 2001 owing to the implementation of PaMs addressing waste management. The PaMs for the waste sector mainly relate to improved waste management by controlling the composition of waste disposed of in landfills. The key measure in this sector is separated waste collection, which sets binding targets for biodegradable waste disposed of in landfills for the regions. In 2016, though not all regions achieved their targets, Italy already achieved its 2018 target for the average rate of biodegradable waste disposed of in landfills of 74 kg waste per person per year. The total mitigation effect of increased separated collection of urban waste is estimated to be 3,700 kt CO₂ eq by 2020.

(d) Response measures

41. Italy did not report on the assessment of the economic and social consequences of response measures. However, the ERT noted that in its NIR 2018, Italy presented several initiatives aimed at minimizing the adverse impacts of the clean development mechanism projects it has sponsored. These projects involve mandatory and voluntary environmental impact assessments carried out both ex ante and ex post. For example, certified emission reductions from phase one of the Poechos Hydropower Project in Peru will be approved only if the project complies with its social and environmental criteria.

(e) Assessment of adherence to the reporting guidelines

42. The ERT assessed the information reported in the BR3 of Italy and identified issues relating to completeness, transparency and adherence to the UNFCCC reporting guidelines on BRs. The findings are described in table 5.

Table 5

Findings on the mitigation actions and their effects from the review of the third biennial report 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 6 Issue type: transparency Assessment: recommendation	In its BR3, Italy did not report any PaMs addressing HFCs, PFCs and SF ₆ , despite implementing the EU regulation on F-gases (517/2014) and the EU directive on air-conditioning systems used in small motor vehicles (2006/40/EC). Italy also did not provide transparent information on the objectives of all of its PaMs. Specifically, PaMs 19 and 20 reported in table 4.15 of the BR3 both relate to the mandatory use of biofuels, but it is not clear whether the target for PaM 20 (10 per cent) is in addition to or included in the target for PaM 19 (4.5 per cent). Consequently, it is also not

⁵ https://ec.europa.eu/clima/lulucf_en

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
		<p>clear whether the mitigation impact of PaM 20 includes or does not include the mitigation impact of PaM 19.</p> <p>During the review, Italy explained it did not report the PaMs relating to F-gases in the BR3 because it reported only those PaMs that were implemented and measured at the national level, while under the EU regulation, the F-gases are measured at the EU level. The Party provided detailed information on the PaMs addressing F-gases and on the emissions of these gases (see para. 37 above), and also explained it has included the impacts of these PaMs in the WEM scenario. With regard to PaMs 19 and 20, Italy explained that PaM 19 refers to a target of 4.5 per cent biofuel use to 2012, while the actual target for PaM 20 is only 5.5 per cent additional biofuel use to 2020. The ERT considers that the explanation provided by the Party also clarifies that the mitigation impacts of the two PaMs do not overlap.</p> <p>The ERT recommends that Italy include in its next BR transparent information on its mitigation actions to achieve its emission reduction targets, including those targeting F-gases, and the objectives of PaMs 19 and 20.</p>
2	<p>Reporting requirement specified in paragraph 8</p> <p>Issue type: completeness</p> <p>Assessment: encouragement</p>	<p>In its BR3, Italy did not report on the assessment of the economic and social consequences of response measures.</p> <p>During the review, Italy explained it did not report this information because it is not a mandatory reporting requirement. The ERT, however, noted that the Party provided relevant information addressing this topic in its NIR 2018 (see para. 41 above).</p> <p>The ERT encourages Italy to provide, to the extent possible, in its next BR detailed information on the assessment of the economic and social consequences of response measures.</p>
3	<p>Reporting requirement specified in Paragraph 24</p> <p>Issue type: completeness</p> <p>Assessment: encouragement</p>	<p>In its BR3, Italy did not report on its self-assessment of compliance with emission reduction targets and national rules for taking action against non-compliance with emission reduction targets.</p> <p>During the review, Italy provided information (see para. 19 above) on how it sets mandatory targets at the regional level. IMELS consults with local governments in cases of non-compliance and provides technical support so that targets can be achieved.</p> <p>The ERT encourages Italy to report in its next BR, to the extent possible, on the domestic arrangements established for the process of the self-assessment of compliance with emission reduction targets and on the progress made in the establishment of national rules for taking local action against domestic non-compliance with emission reduction targets.</p>

Note: Paragraph number 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, transparent and adhering to the UNFCCC reporting guidelines on BRs.

2. Estimates of emission reductions and removals and the use of units from market-based mechanisms and land use, land-use change and forestry

(a) Technical assessment of the reported information

43. For 2014 Italy reported in CTF table 4 annual total GHG emissions excluding LULUCF of 423,323.99 kt CO₂ eq, which is 18.3 per cent below the 1990 level. In 2014, emissions from non-ETS sectors relating to the target under the ESD amounted to 270,376.60 kt CO₂ eq.

44. For 2015 Italy reported in CTF table 4 annual total GHG emissions excluding LULUCF of 433,024.54 kt CO₂ eq, which is 16.5 per cent below the 1990 level. In 2015, emissions from non-ETS sectors relating to the target under the ESD amounted to 274,476.14 kt CO₂ eq.

45. For 2016, Italy reported in CTF table 4 annual total GHG emissions excluding LULUCF of 434,588.30 kt CO₂ eq, which is 16.2 per cent below the 1990 level. In 2016,

emissions from non-ETS sectors relating to the target under the ESD amounted to 270,685.43 kt CO₂ eq.

46. On its use of units from LULUCF activities, Italy reported in the BR3 that it does not intend to use LULUCF activities to meet its 2020 target under Convention, because emissions and removals from the LULUCF sector are not included in the EU target under the Convention. Italy reported that it does not intend to use units from market-based mechanisms under the Kyoto Protocol towards the achievement of its 2020 target under the Convention. In the BR3, Italy did not provide information on emissions from non-ETS sectors relating to the target under the ESD. This information, for the period 2013–2016, was provided during the review. The ERT noted this information enhanced the transparency of reporting. Table 6 illustrates Italy's total GHG emissions, the contribution of LULUCF and the use of units from market-based mechanisms to achieve its target.

Table 6

Summary of information on the use of units from market-based mechanisms and land use, land-use change and forestry by Italy to achieve its target

<i>Year</i>	<i>Emissions excluding LULUCF (kt CO₂ eq)</i>	<i>Contribution of LULUCF (kt CO₂ eq)^a</i>	<i>Emissions including contribution of LULUCF (kt CO₂ eq)</i>	<i>Use of units from market-based mechanisms (kt CO₂ eq)^b</i>
1990	519 917.39	NA	NA	NA
2010	505 046.99	NA	NA	NA
2011	491 141.56	NA	NA	NA
2012	470 142.33	NA	NA	NA
2013	440 470.22	NA	NA	NA
2014	423 323.99	NA	NA	NA
2015	433 024.54	NA	NA	NA
2016	434 588.30	NA	NA	NA

Sources: Italy's BR3 and CTF tables 1, 4, 4(a)I, 4(a)II and 4(b).

^a Italy, in CTF table 4, reported the contribution of the LULUCF sector for 2015. The ERT did not include the values in this table as the Party is an EU member State, bound by the EU-wide unconditional commitment to reduce GHG emissions by 20 per cent below the 1990 level by 2020, which does not include emissions/removals from LULUCF.

^b Units from market-based mechanisms are used by operators in the EU ETS and by the Government of Italy to achieve the target under the ESD.

47. In assessing the progress towards the achievement of the 2020 target, the ERT noted that Italy's emission reduction target for non-ETS sectors is 13 per cent below the 2005 level by 2020 (see para. 14 above). As discussed above, in 2016 Italy's emissions from non-ETS sectors were 10.4 per cent (31,583.17 kt CO₂ eq) below the 2016 AEA under the ESD. In addition, the ERT noted that in 2016, Italy does not intend to make use of the contributions of LULUCF or units from market-based mechanisms.

48. The ERT noted that Italy is making progress towards its emission reduction target by implementing and planning mitigation actions that are delivering significant emission reductions without using units from the market-based mechanisms under the Convention or through the contribution of LULUCF. On the basis of the results of the projections (see table 8 below), the ERT also noted that the Party is making progress towards achieving its target under the Convention.

(b) Assessment of adherence to the reporting guidelines

49. The ERT assessed the information reported in the BR3 of Italy and identified an issue relating to transparency and adherence to the UNFCCC reporting guidelines on BRs. The finding is described in table 7.

Table 7

Findings on estimates of emission reductions and removals and the use of units from the market-based mechanisms and land use, land-use change and forestry from the review of the third biennial report 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 10 Issue type: transparency Assessment: recommendation	In CTF table 4, Italy reported information on the contribution of LULUCF for 2015 and on the use of units from the market-based mechanisms for all years from 2010 to 2016. Italy also reported information relevant to the accounting of emissions and removals from LULUCF activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol in CTF table 4(a)II. The ERT noted that, as reported in the BR3 and further clarified during the review, Italy does not intend to use units from the market-based mechanisms for achieving its target under the Convention. The ERT also noted that the EU target under the Convention does not include the contribution of LULUCF. During the review, Italy explained that the above-mentioned information was incorrectly reported owing to a misinterpretation of the reporting requirements. The ERT recommends that Italy include in its next BR accurate information on the contribution of LULUCF and the use of units from the market-based mechanisms in CTF tables 4 and 4(a)II, consistent with that reported in the textual part of the BR.

Note: Paragraph number 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, transparent and adhering to the UNFCCC reporting guidelines on BRs.

3. Projections overview, methodology and results

(a) Technical assessment of the reported information

50. Italy reported updated projections for 2020 and 2030 relative to actual inventory data for 2015 under the WEM scenario. The WEM scenario reported by Italy includes implemented and adopted PaMs until 2030. The WEM scenario takes into account the evolution of Italy's national energy system and considers only the PaMs in force on 31 December 2014 as well as the minimum standards for building efficiency measure adopted in June 2015. The WEM scenario uses the same assumptions as those used by the European Commission for the Reference Scenario 2016 using the PRIMES model.⁶ The base year for the WEM scenario is 2015. The definition of the WEM scenario indicates that it was prepared in accordance with the UNFCCC reporting guidelines on NCs.

51. Italy did not report a WAM or WOM scenario. During the review week, Italy provided estimates for the WOM scenario developed by interpolating the estimated impacts of implemented PaMs up to 2030 and adding their impacts to the WEM projections.

52. 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 1990–2030. The projections are also provided in an aggregated format for each sector as well as for a Party total using global warming potential values from the AR4.

53. Italy did not report emission projections for indirect GHGs such as carbon monoxide, nitrogen oxides, non-methane volatile organic compounds or sulfur oxides.

54. Emission projections related to fuel sold to ships and aircraft engaged in international transport were reported separately and were not included in the totals. Italy reported on factors and activities affecting emissions for each sector.

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

55. The methodology used for the preparation of the projections is identical to that used for the preparation of the emission projections for the BR2. The energy sector projections

⁶ The Price-Induced Market Equilibrium System energy system model.

were developed using a partial equilibrium TIMES model.⁷ 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 conditioned to the effective demand by the end-user. The projections for other sectors, except LULUCF, were developed by means of accounting spreadsheet models using emissions and fuel-specific coefficients that are projected forward using sector- and gas-specific parameters. IPPU sector projections were developed using sector-specific economic parameters, while projections for the waste sector were developed on the basis of population, PaMs addressing recycling, and other relevant variables. Projections for the LULUCF sector (the forest management reference level) were developed using two EU models, namely G4M⁸ developed by the International Institute for Applied Systems Analysis and EFISCEN⁹ developed by the European Forest Institute.

56. To prepare its projections, Italy relied on the following key underlying assumptions: GDP, population, international coal, oil and natural gas prices, carbon price, gross value added for industry and services, passenger person-kilometres, freight tonne-kilometres, livestock population (i.e. dairy cattle, non-dairy cattle, swine, sheep, poultry), nitrogen input (e.g. synthetic fertilizers, manure), the area of cultivated organic soils, municipal solid waste generation, the amount of waste in landfills, the share of CH₄ recovery in total CH₄ generation from landfills, and final energy consumption. These variables and assumptions were reported in CTF table 5.

57. The assumptions were updated on the basis of the most recent economic developments known at the time of the preparation of the projections. The key assumptions relate to: rate of growth of the economy as measured by GDP (0.71 per cent per year between 2015 and 2020, and 1.19 per cent per year between 2020 and 2030); rate of population change (growth of 0.4 per cent per year between 2015 and 2020, and a reduction of 0.3 per cent per year between 2020 and 2030); rates of growth of gross value added for services (1.5 per cent per year between 2015 and 2020, and 1.3 per cent per year between 2020 and 2030) and industry (0.6 per cent per year between 2015 and 2020, and 0.8 per cent per year between 2020 and 2030); rates of growth of international oil, coal and natural gas prices (9.3, 4.5 and 4.5 per cent per year, respectively, between 2015 and 2020, and 2.3, 3.7 and 1.5 per cent per year, respectively, between 2020 and 2030); rates of growth of passenger person-kilometres (2.5 per cent per year) and freight tonne-kilometres (5.2 per cent per year); and rate of growth of carbon price (14.9 per cent per year between 2015 and 2020, and 8.4 per cent per year between 2020 and 2030).

58. Italy provided information in CTF table 5 on assumptions, methodologies, models and approaches used and on the key variables and assumptions used in the preparation of the projection scenarios. To explain the changes, Italy provided supporting documentation. Italy also provided information on sensitivity analyses.

59. Sensitivity analyses were conducted for a number of important assumptions, such as population trends, energy prices, economic development indicators and carbon price. During the review, Italy explained that it performed a sensitivity analysis considering only a single scenario ('sensitivity scenario'), which was developed using a different set of assumptions than those used for the WEM scenario projections, which are based on the EU Reference Scenario 2016. The sensitivity scenario was developed using the most recent national statistics for population and the actual GDP for 2016, together with GDP growth rates that were lower than and international carbon and fuel prices that were the same as those used in the EU Reference Scenario 2016 for the periods up to 2020 and between 2020 and 2030.

60. The sensitivity scenario projections were higher than the WEM projections in 2020 (435.3 Mt CO₂ eq compared with 425.8 Mt CO₂ eq) and lower than the WEM projections in 2030 (380.2 Mt CO₂ eq compared with 392.0 Mt CO₂ eq). The projections for 2020 in the sensitivity scenario are higher than the WEM projections owing to lower fossil fuel and carbon prices, while the lower 2030 projections in the sensitivity scenario are driven by lower

⁷ The Integrated Markal-Energy Flow Optimization Model System model.

⁸ The Global Forest Model. For information, see <http://www.iiasa.ac.at/web/home/research/modelsData/G4M.en.html>.

⁹ The European Forest Information Scenario Model. For information, see <https://www.efi.int/knowledge/models/efiscen>.

commodity demand due to lower GDP and population. The transport and civil sectors in the sensitivity scenario had lower projected emissions compared with the WEM scenario. The ERT noted that the sensitivity analysis provided by Italy, although useful in helping to explain the differences between the country-specific drivers and assumptions and those used at the EU level in the EU Reference Scenario 2016, does not follow the more traditional approach for sensitivity analyses. To explore how specific assumptions impact Italy's emission projections, the Party may consider undertaking a sensitivity analysis for individual or a combination of key assumptions and drivers.

(c) Results of projections

61. The projected emission levels under different scenarios and information on the Kyoto Protocol targets and the quantified economy-wide emission reduction target are presented in table 8 and the figure below.

Table 8

Summary of greenhouse gas emission projections for Italy

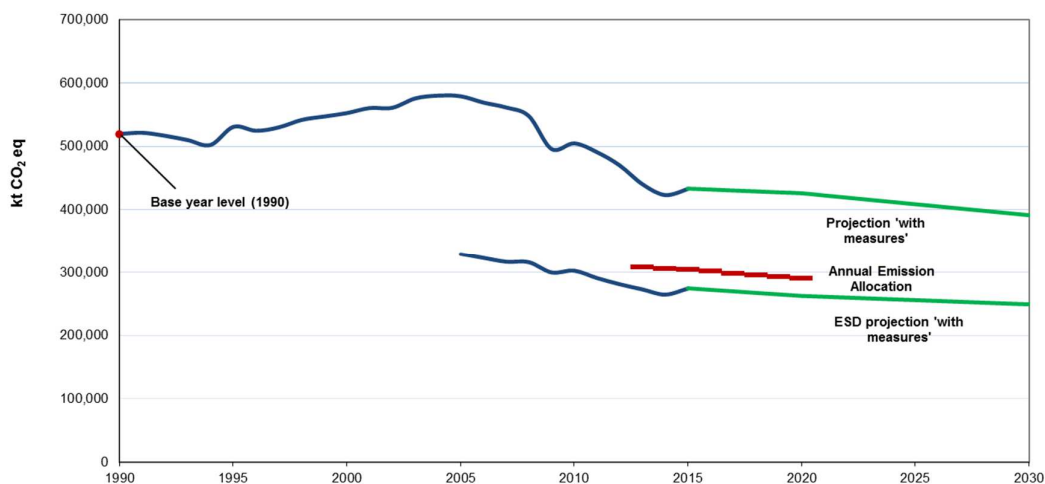
	<i>GHG emissions (kt CO₂ eq per year)</i>	<i>Changes in relation to base-year^a level (%)</i>	<i>Changes in relation to 1990 level (%)</i>
Quantified economy-wide emission reduction target under the Convention ^a	2 399 376.64	NA	NA
Inventory data 1990 ^b	519 917.40	-0.4	0.0
Inventory data 2015 ^b	433 024.55	-17.0	-16.7
WEM projections for 2020 ^c	425 826.51	-18.4	-18.1
WEM projections for 2030 ^c	392 002.75	-24.9	-24.6

^a The quantified economy-wide emission reduction target under the Convention is a joint target of the EU and its 28 member States. The target is to reduce emissions by 20 per cent compared with the base-year (1990) level by 2020.

^b From Italy's BR3 CTF table 6.

^c From Italy's BR3.

Greenhouse gas emission projections reported by Italy



Sources: (1) data for the years 1990–2015: Italy's 2017 annual inventory submission, version 1; total GHG emissions excluding LULUCF; (2) data for the years 2015–2030: Italy's BR3; total GHG emissions excluding LULUCF.

62. Italy's total GHG emissions excluding LULUCF in 2020 and 2030 are projected to be 425,826.51 and 392,002.74 kt CO₂ eq, respectively, under the WEM scenario, which represents a decrease of 18.1 and 24.6 per cent, respectively, below the 1990 level. The 2020 projections suggest that Italy will continue contributing to the achievement of the EU target under the Convention (see para. 11 above).

63. Italy's target for non-ETS sectors is to reduce its total emissions by 13 per cent below the 2005 level by 2020 (see para. 14 above). Italy's AEAs, which correspond to its national emission target for non-ETS sectors, change linearly from 308,161.63 kt CO₂ eq in 2013 to 291,006.01 kt CO₂ eq for 2020. According to the projections under the WEM scenario, emissions from non-ETS sectors are estimated to reach 262,617 kt CO₂ eq by 2020. The projected level of emissions under the WEM scenario is 9.8 per cent below the AEAs for 2020. The ERT notes that this suggests that Italy expects to meet its target under the WEM scenario.

64. Italy presented the WEM scenario by sector for 2020 and 2030, as summarized in table 9.

Table 9

Summary of greenhouse gas emission projections for Italy presented by sector

Sector	GHG emissions and removals (kt CO ₂ eq)			Change (%)	
	1990	2020	2030	1990–2020	1990–2030
		WEM	WEM	WEM	WEM
Energy (not including transport)	231 855.05	190 070.04	163 408.17	–18.0	–29.5
Transport	102 702.31	104 386.27	103 465.09	1.6	0.7
Industry/industrial processes	126 493.77	85 675.97	82 552.78	–32.3	–34.7
Agriculture	35 600.99	30 536.03	30 617.05	–14.2	–14.0
LULUCF	–3 255.59	–24 380.58	–41 535.25	648.9	1 175.8
Waste	23 265.28	15 158.20	11 959.66	–34.9	–48.6
Other (specify)	0.00	0.00	0.00	NA	NA
Total GHG emissions without LULUCF	519 917.40	425 826.51	392 002.75	–18.1	–24.6

Source: Italy's BR3 CTF table 6.

65. According to the projections reported for 2020 under the WEM scenario, the most significant emission reductions are expected to occur in the energy sector, followed by the IPPU sector and the waste sector, amounting to projected reductions of 41,785.01 kt CO₂ eq (18.0 per cent), 40,817.80 kt CO₂ eq (32.3 per cent) and 8,107.08 kt CO₂ eq (34.9 per cent) between 1990 and 2020, respectively. The pattern of projected emissions reported for 2030 under the same scenario is similar to 2020, although the emission reductions from the energy sector are more pronounced. Emission reductions in 2030 for the energy, IPPU and waste sectors are projected to be 68,446.88 kt CO₂ eq (29.5 per cent), 43,940.99 kt CO₂ eq (34.7 per cent) and 11,305.62 kt CO₂ eq (48.6 per cent), respectively, below the 1990 levels. The greater emission reductions in the energy sector in the period 2020–2030 are driven by a range of planned PaMs that target energy sector activities together with the assumption of a gradual increase in the EU ETS carbon price.

66. Italy presented the WEM scenario by gas for 2020 and 2030, as summarized in table 10.

Table 10

Summary of greenhouse gas emission projections for Italy presented by gas

Gas	GHG emissions and removals (kt CO ₂ eq)			Change (%)	
	1990	2020	2030	1990–2020	1990–2030
		WEM	WEM	WEM	WEM
CO ₂	434 967.84	352 865.54	327 886.58	–18.9	–24.6
CH ₄	54 241.73	40 475.01	36 628.71	–25.4	–32.5
N ₂ O	26 949.36	18 747.72	18 565.05	–30.4	–31.1
HFCs	444.00	11 751.57	6 934.50	2 546.8	1 461.8

PFCs	2 906.86	1 638.24	1 638.24	-43.6	-43.6
SF ₆	407.61	320.26	321.49	-21.4	-21.1
NF ₃	0.00	28.17	28.17	NA	NA
Total GHG emissions without LULUCF	519 917.40	425 826.51	392 002.74	-18.1	-24.6

Source: Italy's BR3 CTF table 6.

67. For 2020 the most significant reductions are projected for CO₂, CH₄ and N₂O emissions: 82,102.30 kt CO₂ eq (18.9 per cent), 13,766.72 kt CO₂ eq (25.4 per cent) and 8,201.64 kt CO₂ eq (30.4 per cent) between 1990 and 2020, respectively.

68. While the pattern of projected emissions of gases reported for 2030 is similar to that of 2020, the emission reductions for CO₂ are more pronounced in the period 2020–2030 owing to the planned PaMs, which target energy use in the IPPU sector, together with the assumption of an increase in the EU ETS carbon price. Between 1990 and 2030, emission reductions for CO₂, CH₄ and N₂O are projected to be 107,081.26 kt CO₂ eq (24.6 per cent), 17,613.02 kt CO₂ eq (32.5 per cent) and 8,384.31 kt CO₂ eq (31.1 per cent), respectively, below their 1990 levels.

(d) Assessment of adherence to the reporting guidelines

69. The ERT assessed the information reported in the BR3 of Italy and identified issues relating to completeness, transparency and adherence to the UNFCCC reporting guidelines on BRs. The findings are described in table 11.

Table 11

Findings on greenhouse gas emission projections reported in the third biennial report of Italy

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
1	Reporting requirement ^a specified in paragraph 28 Issue type: completeness Assessment: encouragement	In its BR3, Italy did not report WOM or WAM projections. During the review, Italy provided the WOM projections, which were calculated by adding the mitigation impacts of the implemented and adopted PaMs to the WEM projections. The Party acknowledged that this approach leads to an overestimation of the WOM projections because it does not fully account for overlap and interactions among PaMs. Italy explained that it has also developed a WAM scenario taking into account the new national energy strategy, even though all major drivers are still under review. The ERT encourages Italy to provide in its next BR projections for the WOM and WAM scenarios.
2	Reporting requirement ^a specified in paragraph 35 Issue type: completeness Assessment: encouragement	In its BR3, Italy did not report projections for the indirect GHGs carbon monoxide, nitrogen oxides, non-methane volatile organic compounds and sulfur oxides. During the review, Italy explained that projections of these indirect gases as well as of ammonia and PM _{2.5} , consistent with the WEM scenario, can be found in the 2018 annual communication of the national emission inventory of transboundary substances in the framework of the United Nations Economic Commission for Europe Convention on Long-range Transboundary Air Pollution and relevant protocols (http://www.isprambiente.gov.it/en/publications/reports/italian-emission-inventory-1990-2016.-informative-inventory-report-2018). The ERT encourages Italy to provide in its next BR projections of the indirect GHGs carbon monoxide, nitrogen oxides, non-methane volatile organic compounds and sulfur oxides.
3	Reporting requirement ^a specified in paragraph 43	In the information on models or approaches used to assess the impact of PaMs and to develop the emission projections reported in its BR3, Italy did not include a summary of the strengths and weaknesses of the models or approaches used or an explanation

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
Issue type: transparency	Assessment: encouragement	<p>of how the models or approaches used account for any overlap or synergies that may exist among PaMs.</p> <p>During the review, Italy provided information on the strengths and weaknesses of the TIMES model and how the model accounts for any overlap or synergies that may exist among PaMs.</p> <p>The ERT encourages Italy to provide in its next BR a summary of the strengths and weaknesses of all the models or approaches used to estimate the effect of PaMs and to develop emission projections, and an explanation for how the models or approaches used account for any overlap or synergies that may exist among PaMs.</p>

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

^a Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on NCs as referred to in the UNFCCC reporting guidelines on BRs.

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

1. Approach and methodologies used to track support provided to non-Annex I Parties

(a) Technical assessment of the reported information

70. In the BR3, Italy reported information on the provision of financial, technological and capacity-building support required under the Convention.

71. Italy provided details on what “new and additional” support it has provided and clarified how this support is “new and additional” (see para. 82 below for further information on “new and additional” financial resources). Italy’s definition of “new and additional” climate finance is restricted to climate finance committed or disbursed during the period 2013–2016 and is specifically related to an increase in the budget for development cooperation dedicated to climate change, financial contributions to the Green Climate Fund and revenues from the auctioning of GHG emission allowances.

72. Italy reported the financial support that it has provided to non-Annex I Parties, distinguishing between support for mitigation and adaptation activities and recognizing the capacity-building elements of such support. It explained how it tracks finance for adaptation and mitigation using a combination of all the Rio Markers and an aid to environment marker for bilateral figures and imputing a climate-specific share to multilateral contributions. Only committed funds for bilateral flows and disbursed funds for multilateral flows are considered, so as to avoid double counting across years. Climate-specific and core (general) amounts, if reported, are treated as mutually exclusive. Rio Markers are used to assess the climate-specific share of multilateral and bilateral projects, classifying the projects as “significant” and “principal”. If 40 per cent of the total value of a project is reported as climate-specific, then the marker is reported as “significant”, whereas if 100 per cent of the total value of a project is reported as climate-specific, the marker is reported as “principal”.

73. The BR3 includes information on the national approach to tracking the provision of support, indicators, delivery mechanisms used, and allocation channels tracked. Italy included information on how it has refined its approach to tracking climate support and methodologies. Italy explained that IMELS and the Ministry of Foreign Affairs and International Cooperation lead its efforts to track implementation of activities by using different sources such as bilateral channels, multilateral channels, implementing agencies, and calls for tender for non-governmental organizations and project developers. A results-based management system for support provided has been achieved through an evaluation process developed in accordance with OECD Development Assistance Committee methodology.

74. Italy described the methodology and underlying assumptions used for collecting and reporting information on financial support, including underlying assumptions and/or indicators.

(b) Assessment of adherence to the reporting guidelines

75. The ERT assessed the information reported in the BR3 of Italy and recognized that the reporting is complete, transparent and adhering to 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.

2. Financial resources

(a) Technical assessment of the reported information

76. Italy reported information on the provision of financial support required under the Convention and its Kyoto Protocol, including on financial support provided, committed and pledged, allocation channels and annual contributions.

77. Italy indicated what “new and additional” financial resources it has provided and clarified how it has determined such resources as being “new and additional”.

78. Italy described how its resources address the adaptation and mitigation needs of non-Annex I Parties. It also described how those resources assist non-Annex I Parties to mitigate and adapt to the adverse effects of climate change, facilitate economic and social response measures, and contribute to technology development and transfer and capacity-building related to mitigation and adaptation. Italy reported information on the assistance that it has provided to developing country Parties that are particularly vulnerable to the adverse effects of climate change to help them to meet the costs of adaptation to those adverse effects. The Party reported that IMELS has signed 31 new bilateral agreements with developing countries including regional groups to: support mitigation and adaptation actions; facilitate access to climate finance; and provide capacity-building and technology transfer. In order to ensure that the activities envisaged under the bilateral cooperation address the needs of developing countries and enhance country ownership, each MOU establishes a joint committee composed of representatives of both governments to provide general direction and oversight over the work, which is complemented by periodic site visits by national experts to monitor and assess the activities.

79. In its BR3, Italy reported it had expanded its support to new countries and regions that are particularly vulnerable, such as SIDS and African countries. Italy supports adaptation activities, including disaster risk reduction, protection and conservation of marine and terrestrial ecosystems and biodiversity, and climate-smart agriculture, to increase resilience in SIDS in the Pacific region. In SIDS in the Caribbean Community, the activities supported by Italy are related to sustainable energy, vulnerability assessment, and adaptation to climate change and climate variability (e.g. protection from sea level rise).

80. The ERT noted that Italy has strengthened its support to the Least Developed Countries Fund to help the LDCs in their efforts to adapt to the effects of climate change. During the review, Italy provided the information that in the biennium 2015–2016, it allocated 47 per cent of its bilateral and multilateral support to the LDCs, particularly those in Africa and Asia, allocating to them 80 and 12 per cent, respectively, of its total support to the LDCs. The projects financed through this support include those addressing water, agriculture, disaster risk management and prevention, and health. Italy also allocated 7.5 per cent of its bilateral and multilateral support to SIDS in Africa and in the Caribbean, Indian Ocean, Mediterranean, Pacific Ocean and South China Sea regions. As reported in its BR3, Italy provided EUR 7 million to the Adaptation Fund in the period 2015–2018, comprising disbursed funds amounting to EUR 2 and 5 million in 2015 and 2017, respectively. It also committed EUR 7 million to the Adaptation Fund for 2018.

81. With regard to the most recent financial contributions aimed at enhancing the implementation of the Convention by developing countries, Italy reported that its climate finance has been allocated on the basis of priority areas, strategies and programmes that

reflect its commitment to achieving the objectives of the Paris Agreement and the Sustainable Development Goals by supporting the implementation of nationally determined contributions by Parties as well as related mitigation and adaptation actions. Legislative Decree 30/2013 strongly expresses Italy's commitment to combating climate change and to providing support to developing countries in their efforts to combat climate change. The financial support provided by Italy focuses on the following priority areas: management of extreme events, promotion of renewable energy and energy efficiency, water resource management, waste management, air quality, prevention of forest degradation, land rehabilitation, soil improvement and sustainable mobility. The priority regions are: Asia (China, and SIDS in the Pacific), the Mediterranean, Central and Eastern Europe, the Caribbean and Africa. Table 12 includes some of the information reported by Italy on its provision of financial support.

Table 12

Summary of information on provision of financial support by Italy in 2015–2016

(Millions of United States dollars)

<i>Allocation channel of public financial support</i>	<i>Year of disbursement</i>	
	<i>2015</i>	<i>2016</i>
Official development assistance ^a	4 385.52	5 262.35
Climate-specific contributions through multilateral channels, including:	241.67	154.40
Global Environment Facility	17.05	24.63
Least Developed Countries Fund	0.00	1.98
Special Climate Change Fund	0.00	0.00
Adaptation Fund	2.22	0.00
Green Climate Fund	55.46	0.00
Trust Fund for Supplementary Activities	0.00	0.00
Financial institutions, including regional development banks	106.37	85.24
United Nations bodies	46.18	34.33
Other	14.38	8.23
Climate-specific contributions through bilateral, regional and other channels	197.27	136.42
Other	NA	NA

^a Sources: (1) Query Wizard for International Development Statistics, available at <http://stats.oecd.org/qwids/>; (2) BR3 CTF tables.

82. Italy reported on its climate-specific public financial support, totalling USD 438.93 million in 2015 and USD 290.82 million in 2016. Total climate-specific public financial support decreased by 33.7 percent in 2016 relative to 2015. In 2016, total climate-specific contributions through multilateral channels decreased by 36.1 percent compared with 2015, while climate-specific contributions through bilateral, regional and other channels decreased by 30.8 per cent. In both 2015 and 2016, all climate-specific contributions through multilateral channels comprised disbursed funds in the form of grants. Climate-specific contributions through bilateral, regional and other channels consisted in 2015 mostly of committed funds (with a small component of concessional loans) and in 2016 entirely of grants. Information on financial support from the public sector provided through multilateral and bilateral channels and the allocation of that support by priority is presented in table 13.

Table 13
Summary of information on channels of financial support used in 2015–2016 by Italy
(Millions of United States dollars)

<i>Allocation channel of public financial support</i>	<i>Year of disbursement</i>			<i>Change (%)</i>	<i>Share (%)</i>	
	<i>2015</i>	<i>2016</i>	<i>Difference</i>		<i>2015</i>	<i>2016</i>
Support through bilateral and multilateral channels allocated for:						
Mitigation	69.88	29.59	-40.29	-57.7	15.9	10.2
Adaptation	50.40	65.25	14.85	29.5	11.5	22.4
Cross-cutting	318.65	195.98	-122.67	-38.5	72.6	67.4
Other	0.00	0.00	0.00	–	0.0	0.0
Total	438.93	290.82	-148.11	-33.7	100.0	100.0
Detailed information by type of channel						
Multilateral channels						
Mitigation	36.54	17.21	-19.33	-52.9	15.1	11.1
Adaptation	21.97	19.48	-2.50	-11.4	9.1	12.6
Cross-cutting	183.15	117.71	-65.43	-35.7	75.8	76.2
Other	0.00	0.00	0.00	–	0.0	0.0
Total	241.67	154.40	-87.26	-36.1	100.0	100.0
Bilateral channels						
Mitigation	33.33	12.38	-20.96	-62.9	16.9	9.1
Adaptation	28.43	45.78	17.34	61.0	14.4	33.6
Cross-cutting	135.50	78.27	-57.23	-42.2	68.7	57.4
Other	0.00	0.00	0.00	–	0.0	0.0
Total	197.27	136.42	-60.85	-30.8	100.0	100.0
Multilateral compared with bilateral channels						
Multilateral	241.67	154.40	-87.26	-36.1	55.1	53.1
Bilateral	197.27	136.42	-60.85	-30.8	44.9	46.9
Total	438.93	290.82	-148.11	-33.7	100.0	100.0

Source: CTF tables 7, 7(a) and 7(b) of the BR3 of Italy.

83. The BR3 includes detailed information on the financial support provided through multilateral, bilateral and regional channels in 2015 and 2016. More specifically, Italy contributed through multilateral channels, as reported in the BR3 and in CTF table 7(a), USD 241.67 million and USD 154.40 million for 2015 and 2016, respectively. The contributions were made to specialized multilateral climate change funds, such as the Global Environment Facility, Least Developed Countries Fund, Special Climate Change Fund, Adaptation Fund, Green Climate Fund, UNFCCC Trust Fund for Supplementary Activities, and specialized United Nations bodies. Multilateral funding was provided through multilateral financial institutions, including the World Bank, International Finance Corporation, African Development Bank, Asian Development Bank, European Bank for Reconstruction and Development, and Inter-American Development Bank.

84. The BR3 and CTF table 7(b) also include detailed information on the total financial support provided through bilateral channels, amounting to USD 197.7 million and USD 136.42 million in 2015 and 2016, respectively. Most of the climate-specific support through bilateral channels is through MOUs with individual recipient countries or groups of countries. The major regional channels include the African Development Bank, International Finance Corporation, and Regional Environmental Center for Central and Eastern Europe.

85. The BR3 provides information on the types of support provided. In terms of the focus of public financial support, as reported in CTF table 7 for 2015, the shares of the total public financial support allocated for mitigation, adaptation and cross-cutting projects were 15.9, 11.5 and 72.6 per cent, respectively. In addition, 55.1 percent of the total public financial support was allocated through multilateral channels and 44.9 percent through bilateral channels. In 2016, the shares of total public financial support allocated for mitigation, adaptation and cross-cutting projects were 11.1, 12.6 and 76.2 per cent, respectively. Furthermore, 53.1 per cent of the total public financial support was allocated through multilateral channels and 46.9 per cent through bilateral channels.

86. The ERT noted that in both 2015 and 2016, a majority of financial contributions made through multilateral channels were allocated to energy, agriculture and other areas (e.g. environmental policy and administrative management, biosphere protection, and disaster prevention and preparedness). Some funds were allocated for activities that are cross-cutting across mitigation and adaptation, as reported in CTF table 7(a).

87. CTF tables 7(a) and 7(b) include information on the types of financial instrument used in the provision of assistance to developing countries, which include grants and concessional loans. The ERT noted that the grants and loans provided in 2015 accounted for 90.4 and 9.6 per cent, respectively, of the total public financial support, while in 2016, climate-specific public financial support comprised grants only.

88. Italy reported on the difficulty in collecting information and reporting on private financial flows leveraged by bilateral climate finance for mitigation and adaptation activities in non-Annex I Parties, which is due to the lack of information on initiatives undertaken by the private sector. During the review, Italy explained that it is in the process of undertaking a pilot study for tracking private finance mobilized through public interventions with a view to progressively including information on private financial flows leveraged by bilateral climate finance in future submissions. The pilot study will be conducted in the context of the OECD Research Collaborative on Tracking Private Climate Finance,¹⁰ which is an open network of governments, research institutions and international finance institutions coordinated and hosted by OECD.

(b) Assessment of adherence to the reporting guidelines

89. The ERT assessed the information reported in the BR3 of Italy and identified an issue relating to transparency and adherence to the UNFCCC reporting guidelines on BRs. The finding is described in table 14.

Table 14

Findings on financial resources from the review of the third biennial report 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 19 Issue type: transparency Assessment: encouragement	In its BR3, Italy did not report on private financial resources leveraged by bilateral climate finance towards mitigation and adaptation activities in non-Annex I Parties or 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 while it currently does not have a system in place to track private financial sources, it is in the process of undertaking a pilot study for tracking private finance mobilized through public interventions with a view to progressively including this information in future submissions. Regarding the scaling up of private investment in mitigation and adaptation in developing countries, the Party explained that all bilateral and multilateral cooperation agreements signed by IMELS include private sector participation and activities to promote public-private partnerships. These activities include seminars, workshops, events and technical visits to recipient countries to present best available technologies. The ERT reiterates the encouragement made in the previous review report for Italy to include in its next BR, to the extent possible, information on private financial

¹⁰ <https://www.oecd.org/env/researchcollaborative/>.

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
		resources leveraged by bilateral climate finance towards mitigation and adaptation activities in non-Annex I Parties and on PaMs that promote the scaling up of private investment in mitigation and adaptation activities in developing country Parties.

Note: Paragraph number 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, transparent and adhering to the UNFCCC reporting guidelines on BRs.

3. Technology development and transfer, including information under Article 10 of the Kyoto Protocol

(a) Technical assessment of the reported information

90. Italy provided information on steps, measures and activities related to technology transfer, access and deployment benefiting developing countries, including information on activities undertaken by the public sector, but not by the private sector. Italy provided examples of support provided for the deployment and enhancement of the endogenous capacities and technologies of non-Annex I Parties, which include the installation and operation of start-up plants through tailored training to ensure proper control, functioning and routine maintenance of the technologies.

91. The ERT took note of the information provided in CTF table 8 on recipient countries, target areas, measures and focus sectors of technology transfer programmes. In its BR3 and CTF table 8, Italy provided information on both implemented and planned activities related to its support for technology development and transfer. The majority of these activities targeted both mitigation and adaptation, a few targeted only mitigation and one activity targeted only adaptation. Most of the activities were focused on the energy sector, with early warning systems, health, industry, water and sanitation, reconstruction relief and rehabilitation, and environmental policy being the other targeted areas. Recipients are countries in Africa (Algeria, Burundi, Democratic Republic of the Congo, Jordan and Senegal), Asia (Afghanistan), the Caribbean Community (Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, and Trinidad and Tobago), Latin America (Bolivia and Peru) and the Middle East (Egypt, Ethiopia, Iran (Islamic Republic of) and Lebanon), as well as SIDS in the Indian and Pacific oceans.

92. The ERT noted that Italy reported on its PaMs as well as success (but not failure) stories in relation to technology transfer, and in particular on measures taken to promote, facilitate and finance the transfer and deployment of climate-friendly technologies. These measures, implemented over the period 2015–2017, relate, for example, to vulnerability and adaptation, the promotion of renewable energy (e.g. photovoltaic systems) and energy efficiency, the upgrade of early warning systems with RES, the installation of hydropower plants, the improvement of resilient water infrastructure, and the promotion of investment and technology transfer to small and medium-sized enterprises.

93. Among the notable success stories, the first phase of a heat pump project under a technical agreement on sustainable development, a cooperation between IMELS and the Lebanese Center for Energy Conservation, ongoing since 2016, aims to support the Lebanese Government in addressing the climate change mitigation challenges in the implementation of Lebanon's nationally determined contribution. The project is introducing heat pump technologies in the heating, domestic hot water and cooling sectors through transfer of know-how and technology, and is phasing out refrigerant gases with high global warming potential (i.e. HFCs). In the Solomon Islands, a sustainable programme of widespread rural electrification for water and energy security is being implemented, aiming to promote the sustainability of renewable energy technologies in rural areas by deploying energy services, creating awareness and providing training and employment opportunities at the community level.

94. 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. In its NC7 and BR3, Italy provided relevant information on the support provided in technology transfer and capacity-building to other Parties.

95. Italy provided information on activities for financing access by developing countries to ‘hard’ and ‘soft’ technologies for mitigation and adaptation. Soft technologies comprise knowledge transfer and specific training for the installation and maintenance of equipment, while hard technologies relate to the essential transfer of specific technologies, including vapour compression, and renewable energy and energy efficiency systems (e.g. solar water heaters, solar photovoltaic systems, compact fluorescent lamps and photovoltaic cells).

(b) Assessment of adherence to the reporting guidelines

96. The ERT assessed the information reported in the BR3 of Italy and identified issues relating to completeness, transparency and adherence to the UNFCCC reporting guidelines on BRs. The findings are described in table 15.

Table 15

Findings on technology development and transfer from the review of the third biennial report of Italy

No.	<i>Reporting requirement, issue type and assessment</i>	<i>Description of the finding with recommendation or encouragement</i>
1	Reporting requirement specified in paragraph 22 Issue type: transparency Assessment: recommendation	In both its BR2 and BR3, Italy erroneously reported the status of four activities related to technology transfer as “planned”. These activities are: an integrated system for the management of the Jouz River sources in Lebanon; managers’ training and maintenance and upgrading of sun and wind power plants for health care in Algeria; installation of wind blades in the district of Pomamba, Algeria; and installation of a photovoltaic power station at Limamoulaye secondary school in Senegal. During the review, Italy confirmed that these activities are currently being implemented. The ERT recommends that Italy report, in both BR text and CTF tables of its next submission, accurate information on the status of activities related to technology transfer that were previously reported as planned but are currently being implemented.
2	Reporting requirement specified in paragraph 22 Issue type: transparency Assessment: recommendation	In its BR3, Italy did not clearly distinguish between activities undertaken by the public sector and those undertaken by the private sector in the information reported on measures and activities related to technology transfer implemented and planned since its previous BR. During the review, Italy explained that it was not able to distinguish between activities undertaken by the public and private sectors because there is no monitoring system in place to track activities by the private sector. The Party informed the ERT that a planned pilot study on private financial resources would enable the reporting of this information in future submissions. The ERT reiterates the recommendation made in the previous review report that Italy include in its next BR information on measures and activities related to technology transfer implemented and planned since its previous BR, clearly distinguishing between activities undertaken by the public and private sectors.
3	Reporting requirement specified in paragraph 21 Issue type: completeness Assessment: encouragement	In its BR3, Italy did not report on failure stories related to technology transfer activities. During the review, Italy provided information on the experience and lessons learned from failures in previous projects related to the sustainable programme on widespread rural electrification for water and energy security in the Pacific region, which has been implemented in the Solomon Islands since 2016. The ERT encourages Italy to include in its next BR failure stories related to technology transfer activities.

Note: Paragraph number 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, transparent and adhering to the UNFCCC reporting guidelines on BRs.

4. Capacity-building

(a) Technical assessment of the reported information

97. In the BR3 and CTF table 9 Italy supplied information on how it has provided capacity-building support for mitigation, adaptation and technology that responds to the existing and emerging needs identified by non-Annex I Parties. Italy described individual measures and activities related to capacity-building support in textual and tabular format. Since the Paris Agreement, Italy has signed 30 MOUs on climate change aimed at carrying out actions for mitigation and adaptation in emerging and developing countries to strengthen and coordinate efforts to combat global climate change, including by: promoting clean and efficient energy, ensuring energy security; facilitating the transition towards a sustainable low-carbon economy through technology development and transfer; supporting vulnerability and risk assessment; and implementing adaptation actions. Capacity-building towards the implementation of these actions is an important component of these MOUs. Recipients are countries in Africa, Asia, the Caribbean Community, Latin America and the Mediterranean, as well as SIDS in the Pacific Ocean.

98. An advanced training programme on environmental management and sustainable development, carried out since 2003 by IMELS as part of a MOU between the Italian and Chinese governments, is aimed at providing training in various aspects of environmental management and sustainable development to technicians, academics, young professionals and decision makers in Chinese administrations, universities and enterprises. In the Middle East, IMELS cooperates with Iran (Islamic Republic of), Qatar and the State of Palestine on RES, biomass, water purification and transfer of environmental technologies by providing technical assistance. In Africa, IMELS has a 10-year cooperation programme with Egypt, Morocco and Tunisia to promote RES and a more efficient use of water resources. IMELS is also launching a wide cooperation programme with the Caribbean Community countries (Antigua and Bermuda, Bahamas, Barbados, Belize, Cuba, Dominica, Grenada, Guyana, Haiti, Jamaica, Dominican Republic, Saint Kitts and Nevis, Saint Vincent and the Grenadines, Saint Lucia, Suriname, and Trinidad and Tobago) to implement projects on weather alert systems and to promote RES, with the participation of the Caribbean Community Climate Change Centre in Belize.

99. Italy reported that it has supported climate-related capacity development activities relating to adaptation, mitigation, climate financing and technology transfer sectors. Italy also reported that it 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. Italy reported that, to address the needs of developing countries and enhance country ownership, in all its MOUs, a joint committee comprising representatives from both donor and recipient governments supervises the activities by assessing the implementation of approved projects and making financial decisions regarding work programmes. This process is aimed at institutional strengthening and transfer of knowledge in the areas of sustainable development and at enhancing capacities for the implementation of mechanisms under the Convention and its related instruments.

(b) Assessment of adherence to the reporting guidelines

100. The ERT assessed the information reported in the BR3 of Italy and recognized that the reporting is complete, transparent and adhering to 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.

III. Conclusions and recommendations

101. The ERT conducted a technical review of the information reported in the BR3 and CTF tables of Italy in accordance with the UNFCCC reporting guidelines on BRs. The ERT concludes that the reported information mostly adheres to the UNFCCC reporting guidelines

on BRs and provides 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; progress made by Italy in achieving its target; and the Party's provision of support to developing country Parties.

102. Italy's total GHG emissions excluding LULUCF covered by its quantified economy-wide emission reduction target were estimated to be 17.5 per cent below its 1990 level, whereas total GHG emissions including LULUCF were 22.8 per cent below its 1990 level in 2016. Emission decreases were driven by factors such as structural changes in the economy, the lingering effects of the economic recession, the declining and ageing population, and the effects of PaMs, including those aimed at promoting the use of energy from RES and less carbon intensive fuels (e.g. switching from coal to gas) and energy efficiency. Those factors outweighed the increase in emissions from transport and refrigeration and air conditioning.

103. Under the Convention, Italy committed to contributing to the achievement of the joint EU quantified economy-wide emission reduction 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 global warming potential values from the AR4. Emissions and removals from the LULUCF sector are not included. The EU generally allows its member States to use units from the Kyoto Protocol mechanisms and new market mechanisms for compliance purposes up to an established limit and subject to a number of restrictions on the origin and the type of project. Companies can make use of such units to fulfil their requirements under the EU ETS.

104. Under the ESD, Italy has a target of reducing its emissions by 13 per cent below the 2005 level by 2020 for non-ETS sectors. National emission targets for non-ETS sectors for 2020 have been translated into binding quantified AEAs for the period 2013–2020. Italy's AEAs change following a linear path from 308,162 kt CO₂ eq in 2013 to 291,006 kt CO₂ eq in 2020.

105. Italy has introduced national-level policies to achieve its targets under the ESD and domestic emission reduction targets. The key policies are: the white certificates system for the promotion of energy efficiency; the green certificates system for the promotion of RES; the Conto Termico decree to support improvements in energy efficiency and the production of thermal energy from RES; Legislative Decree 201/07 on energy efficiency; the Conto Energia decree to support electricity production by solar photovoltaic and thermodynamic systems; Legislative Decree 201/07, transposing the EU eco-design directive (2005/32/EC), which sets minimum mandatory standards for energy-using products; building regulations setting minimum mandatory standards for new and existing buildings (Legislative Decree 192/05, as amended by Legislative Decree 311/06); an emission standard for new cars (EU regulation 443/2009/EC); the development of high-capacity and high-speed rail networks and the improvement of regional rail networks for commuting; the reduction of N₂O emissions in nitric acid production plants; the rationalization of nitrogen fertilizer use; and the separation of urban waste for collection. The mitigation action with the most significant mitigation impact is the emission standard for new cars, with an estimated impact of 10,200 kt CO₂ eq by 2020. Other policies that have delivered significant emission reductions are: the white certificates system; the infrastructure measures for urban transport; Legislative Decree 201/07; the green certificates system; the promotion of energy saving in buildings; and the separation of urban waste.

106. For 2016, Italy reported in CTF table 4 annual total GHG emissions excluding LULUCF of 434,588.30 kt CO₂ eq. Italy reported that it did not use units from market-based mechanisms to achieve its target.

107. The GHG emission projections provided by Italy in the BR3 correspond to the WEM scenario. Under this scenario, emissions are projected to be 18.1 per cent below the 1990 level by 2020. On the basis of the reported information, the ERT concludes that Italy expects to meet its 2020 target under the WEM scenario. Under the WEM scenario, the projected level of emissions is 9.8 per cent below the AEAs for 2020. In addition, the cumulative ESD emissions over the 2015–2020 period are projected to be 12.3 per cent below the aggregate AEAs for the same period. On the basis of the reported information, the ERT concludes that Italy expects to meet its target for non-ETS sectors.

108. The ERT noted that Italy is making progress towards its emission reduction target by implementing mitigation actions that deliver significant emission reductions.

109. On the basis of the results of the projections for 2020 under the WEM scenario, the ERT noted that Italy may achieve or overachieve its emission reduction target by 2020.

110. Italy continues to provide climate financing to developing countries in line with its climate finance programmes such as Legislative Decree 30/2013, which addresses climate change and the provision of related support to developing country Parties for implementing the Convention. It has reduced the level of its financial support since the BR3; its public financial support in 2015 and 2016 totalled USD 438.94 and 290.82 million per year, respectively. In 2015, Italy's support provided for mitigation action was higher than its support provided for adaptation, while in 2016, the support provided for adaptation was higher compared with that provided for mitigation. For those years, Italy's support provided for cross-cutting projects related to climate change was higher than the support provided for stand-alone mitigation and adaptation actions. The biggest share of financial support went to cross-cutting projects, followed by projects related to environmental policies and those in the energy sector. In recent years, Italy has significantly intensified bilateral cooperation on technology transfer with a number of MOUs with developing countries for implementing projects related to mitigation and adaptation and based on the needs and circumstances of the beneficiary countries. These projects include the dissemination of soft (e.g. training for the installation and maintenance of the equipment) and hard technologies aimed at enhancing national capacities for the implementation of the Convention and its related instruments by institutional strengthening and knowledge transfer in the area of sustainable development.

111. In the course of the review, the ERT formulated the following recommendations for Italy to improve its adherence to the UNFCCC reporting guidelines on BRs in its next BR:¹¹

To improve the transparency of its reporting by:

- (i) Providing accurate information on the possible scale of contributions from international market-based mechanisms towards the achievement of its target under the Convention in CTF table 2(e)I, consistent with that reported in the textual part of the BR, and using, for example, footnotes or clearly defined notation keys (see issue 1 in table 3);
- (ii) Providing transparent information on the mitigation actions to achieve its emission reduction targets, including those targeting F-gases, and the objectives of PaMs 19 and 20 (see issue 1 in table 5);
- (iii) Providing accurate information on the contribution of LULUCF and the use of units from the market-based mechanisms in CTF tables 4 and 4(a)II, consistent with that reported in the textual part of the BR (see issue 1 in table 7);
- (iv) Providing in both BR text and CTF tables accurate information on the status of activities related to technology transfer that were previously reported as planned but are currently being implemented (see issue 1 in table 15);
- (v) Providing information on measures and activities related to technology transfer implemented and planned since its previous BR, clearly distinguishing between activities undertaken by the public and private sectors (see issue 2 in table 15).

¹¹ The recommendations are given in full in the relevant chapters of this report.

Annex

Documents and information used during the review

A. Reference documents

2017 GHG inventory submission of Italy. Available at

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“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 Mr. Riccardo de Laurentis (ISPRA), including additional material. The following documents¹² were provided by Italy:

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¹ Reproduced as received from the Party.