United Nations FCCC/IDR.5/ITA

Framework Convention on Climate Change

Distr.: General
5 August 2011

English only

Report of the in-depth review of the fifth national communication of Italy

Parties included in Annex I to the Convention are requested, in accordance with decision 10/CP.13, to submit a fifth national communication to the secretariat by 1 January 2010. In accordance with decision 8/CMP.3, Parties included in Annex I to the Convention that are also Parties to the Kyoto Protocol shall include in their fifth national communications supplementary information under Article 7, paragraph 2, of the Kyoto Protocol. In accordance with decision 15/CMP.1, these Parties shall start reporting the information under Article 7, paragraph 1, of the Kyoto Protocol with the inventory submission due under the Convention for the first year of the commitment period. This includes supplementary information on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol. This report presents the results of the in-depth review of the fifth national communication of Italy conducted by an expert review team in accordance with the relevant provisions of the Convention and Article 8 of the Kyoto Protocol.

Contents

		Paragraphs	*Page*
I.	Introduction and summary	1–10	3
	A. Introduction	1–4	3
	B. Summary	5–9	3
II.	Technical assessment of the reviewed elements	10–110	4
	A. National circumstances relevant to greenhouse gas emissions and removals, including legislative arrangements and administrative procedures	10–25	4
	B. Policies and measures, including those in accordance with Article 2 of the Kyoto Protocol	26–67	9
	C. Projections and the total effect of policies and measures, and supplementarity relating to the Kyoto Protocol mechanisms	68–85	18
	D. Vulnerability assessment, climate change impacts and adaptation measures	86–89	24
	E. Financial resources and transfer of technology, including information under Articles 10 and 11 of the Kyoto Protocol	90–98	26
	F. Research and systematic observation	99–102	28
	G. Education, training and public awareness	103–106	29
	H. Evaluation of supplementary information under Article 7, paragraph 2, of the Kyoto Protocol	107	30
	I. Minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol	108–110	30
III.	Conclusions and recommendations	111–122	31
IV.	Questions of implementation	123	34
Annex			
	Documents and information used during the review		35

I. Introduction and summary

A. Introduction

1. For Italy, the Convention entered into force on 14 July 1994 and the Kyoto Protocol on 16 February 2005. Within the burden-sharing agreement of the European Union (EU) for meeting commitments under the Kyoto Protocol, Italy committed itself to reducing its greenhouse gas (GHG) emissions by 6.5 per cent compared with the base year[1] level during the first commitment period from 2008 to 2012.

2. This report covers the in-country in-depth review (IDR) of the fifth national communication (NC5) of Italy, coordinated by the UNFCCC secretariat, in accordance with the guidelines for review under Article 8 of the Kyoto Protocol (decision 22/CMP.1). The review took place from 28 March to 2 April 2011 in Rome, Italy, and was conducted by the following team of nominated experts from the UNFCCC roster of experts: Mr. Gebru Jember Endalew (Ethiopia), Mr. Soo-Il Kim (Republic of Korea) and Mr. Bhawan Singh (Trinidad and Tobago). Mr. Singh and Mr. Kim were the lead reviewers. The review was coordinated by Ms. Xuehong Wang and Ms. Inkar Kadyrzhanova (UNFCCC secretariat).

3. During the IDR, the expert review team (ERT) examined each section of the NC5. The ERT also evaluated the supplementary information provided by Italy as a part of the NC5 in accordance with Article 7, paragraph 2, of the Kyoto Protocol. In addition, the ERT reviewed the information on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol, which was provided by Italy in its 2009 annual submission and elaborated further in its 2010 annual submission under Article 7, paragraph 1, of the Kyoto Protocol.

4. In accordance with decision 22/CMP.1, a draft version of this report was communicated to the Government of Italy, which provided comments that were considered and incorporated, as appropriate, into this final version of the report.

B. Summary

5. The ERT noted that Italy's NC5 complies in general with the "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications" (hereinafter referred to as the UNFCCC reporting guidelines). As required by decision 15/CMP.1, supplementary information required under Article 7, paragraph 2, of the Kyoto Protocol[2] is provided in the NC5. Italy considered some of the recommendations provided in the report on the in-depth review of the fourth national communication of Italy.[3] The ERT commended Italy for its improved reporting.

6. The supplementary information on the minimization of adverse impacts referred to in paragraph 3 above is mostly complete and transparent and was provided on time. During the review, Italy provided further relevant information.

[1] "Base year" refers to the base year under the Kyoto Protocol, which is 1990 for all gases. The base year emissions include emissions from sectors/source categories listed in Annex A to the Kyoto Protocol.

[2] Decision 15/CMP.1, annex, chapter II.

[3] FCCC/IDR.4/ITA.

1. Completeness

7. The NC5 covers all sections required by the UNFCCC reporting guidelines and all supplementary information under Article 7, paragraph 2, of the Kyoto Protocol. However, the NC5 does not include the following information required by the UNFCCC reporting guidelines: summary tables on policies and measures (PaMs) by sector for some sectors, such as agriculture and industrial processes (see para. 27 below); how Italy believes its PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals (see para. 27 below); the total effect of implemented and adopted PaMs (see paras. 79–82 below); emissions projections related to fuel sold to ships and aircraft engaged in international transport (see para. 70 below); the distinction between activities related to technology transfer undertaken by the public sector and those undertaken by the private sector (see para. 96 below); and activities for financing access by developing countries to 'hard' and 'soft' environmentally sound technologies (see para. 96 below). The ERT recommends that Italy enhance the completeness of its reporting by providing this information in its next national communication.

2. Transparency

8. The ERT acknowledged that Italy's NC5, including supplementary information provided under Article 7, paragraph 2, of the Kyoto Protocol is broadly transparent. The NC5 provides clear information on all aspects of implementation of the Convention and its Kyoto Protocol. The NC5 is structured following the outline contained in the annex to the UNFCCC reporting guidelines and supplementary information submitted under Article 7, paragraph 2, of the Kyoto Protocol is identifiable. In the course of the review, the ERT formulated a number of recommendations that could help Italy to further increase the transparency of its reporting with regard to: national circumstances (see para. 11 below); PaMs (see paras. 27 and 28 below); projections and the total effect of PaMs (see paras. 70–74, 78 and 82 below); vulnerability, climate change impacts and adaptation measures (see paras. 87 and 89 below); financial resources and transfer of technology (see paras. 90 and 96 below); research and systematic observation (see para. 99 below); education, training and public awareness (see paras. 104 and 106 below); the description of the national system (see para. 20 below); the description of the national registry (see paras. 22 and 24 below); and information on supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17 (see para. 85 below).

3. Timeliness

9. The NC5 was submitted on 17 March 2010, after the deadline of 1 January 2010 mandated by decision 10/CP.13. As the national communication was not submitted within six weeks after the due date (15 February 2010), the delay was brought to the attention of the Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol (CMP) and the Compliance Committee, and made public. The ERT noted with great concern the delay in the submission of the NC5.

II. Technical assessment of the reviewed elements

A. National circumstances relevant to greenhouse gas emissions and removals, including legislative arrangements and administrative procedures

10. In its NC5, Italy has provided a description of the national circumstances and elaborated on the framework legislations and key policy documents on climate change. The

NC5 also refers to the description of the national system provided in the national inventory report (NIR) of the 2009 annual submission. Further technical assessment of the institutional and legislative arrangements for the coordination and implementation of PaMs is provided in chapter II.B.1 of this report.

2. National circumstances

11. In its NC5, Italy has provided a description of its national circumstances, and information on how these national circumstances affect GHG emissions and removals in Italy and how changes in national circumstances affect GHG emissions and removals over time. Information was provided on the government structure, population, economy and relevant economic sectors. The ERT noted that the main drivers of emission trends in Italy include population growth, the restructuring of economic activity, the restructuring of primary energy use and the adoption of energy efficiency measures. The ERT encourages Italy to report in further detail on the geography and climate for the next national communication. Table 1 illustrates the national circumstances of the country by providing some indicators relevant to GHG emissions and removals.

Table 1
Indicators relevant to greenhouse gas emissions and removals for Italy

	1990	*1995*	*2000*	*2005*	*2008*	*Change 1990–2000 (%)*	*Change 2000–2008 (%)*	*Change 1990–2008 (%)*
Population (million)	56.7	56.8	56.9	58.6	59.9	0.4	5.2	5.6
GDP (2000 USD billion using PPP)	1 245.4	1 326.6	1 457.6	1 523.3	1 562.2	17.0	7.2	25.4
TPES (Mtoe)	146.6	159.1	171.5	183.9	176.0	17.0	2.6	20.1
GDP per capita (2000 USD thousand using PPP)	22.0	23.3	25.6	26.0	26.1	16.6	1.9	18.8
TPES per capita (toe)	2.6	2.8	3.0	3.1	2.9	16.6	–2.4	13.8
GHG emissions without LULUCF (Tg CO_2 eq)	517.0	529.4	549.8	572.6	541.5	6.3	–1.5	4.7
GHG emissions with LULUCF (Tg CO_2 eq)	452.3	447.0	473.9	480.7	454.2	4.8	–4.2	0.4
CO_2 emissions per capita (Mg)	7.7	7.8	8.1	8.4	7.8	6.0	–4.0	1.7
CO_2 emissions per GDP unit (kg per 2000 USD using PPP)	0.3	0.3	0.3	0.3	0.3	–9.1	1.2	–8.0
GHG emissions per capita (Mg CO_2 eq)	9.1	9.3	9.7	9.8	9.0	5.9	–6.4	–0.8
GHG emissions per GDP unit (kg CO_2 eq per 2000 USD using PPP)	0.4	0.4	0.4	0.4	0.3	–9.1	–8.1	–16.5

Sources: (1) GHG emissions data: Italy's 2010 greenhouse gas inventory submission; (2) Population, GDP and TPES data: International Energy Agency.

Note: The ratios per capita and per GDP unit are calculated relative to GHG emissions without LULUCF; the ratios are calculated using the exact (not rounded) values and may therefore differ from a ratio calculated with the rounded numbers provided in the table.

Abbreviations: GDP = gross domestic product, GHG = greenhouse gas, LULUCF = land use, land-use change and forestry, PPP = purchasing power parity, TPES = total primary energy supply.

12. The Constitutional Law of 2001 has greatly modified the distribution of power between the central and local governments, with the aim of establishing a system of administrative federalism. Italy is a bicameral parliamentary republic, consisting of 20 regions which are part of the constitutional structure of the State. Overall responsibility for climate change policymaking lies with the Inter-ministerial Committee for Economic Planning (CIPE), chaired by the Ministry for Economic Development, and a number of national institutions are involved in the implementation of this policy. Implementation of the Kyoto Protocol is underpinned by the national climate change strategy (CIPE deliberation 123/2002), with some PaMs being deferred to the regional level. Further legislative arrangements and administrative procedures, including those for the national system and the national registry, are presented in chapters II.A.2, II.A.3 and II.B below.

13. Italy has provided a summary of information on GHG emission trends for the period 1990–2007. This information is broadly consistent with the 2009 national GHG inventory submission. Summary tables, including trend tables for emissions in carbon dioxide equivalent (CO_2 eq) (given in the common reporting format (CRF)), are also provided in an annex to the NC5. During the review, the ERT assessed the 2010 annual submission and 2011 national GHG inventory data, which includes GHG data for 2009, and reflected the findings in this report.

14. Total GHG emissions excluding emissions and removals from land use, land-use change and forestry (LULUCF) increased by 4.7 per cent between the base year and 2008, whereas total GHG emissions including net emissions or removals from LULUCF increased by 0.4 per cent. This increase was mainly attributed to CO_2 emissions, which increased by 7.4 per cent over this period excluding LULUCF. Emissions of nitrous oxide (N_2O) and methane (CH_4) decreased by 20.9 and 13.4 per cent, respectively. Emissions of fluorinated gases (F-gases) accounted for about 0.5 per cent of total GHG emissions in the base year and 1.5 per cent in 2008. A major part of this increase was experienced from 1995 to 2008. The overall GHG emissions excluding LULUCF increased by 2.3 per cent during this period. Among these, emissions of CO_2 increased by 5.0 per cent, while N_2O and CH_4 emissions decreased by 22.6 and 17.8 per cent, respectively. Trends of total GHG emissions were mostly underpinned by GHG emission trends in the energy sector, driven by the overall economic activity, transportation flows and associated fuel consumption. An analysis of the key drivers of GHG emission trends in each sector is provided in section II.B below. Table 2 provides an overview of GHG emissions by sector from the base year to 2008.

15. In 2008, the main GHG in Italy was CO_2, accounting for 86.4 per cent of total GHG emissions (excluding LULUCF) expressed in CO_2 eq, followed by CH_4 (6.6 per cent) and N_2O (5.4 per cent). Hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6) collectively accounted for 1.5 per cent of the overall GHG emissions in the country. The energy sector accounted for 83.6 per cent of total GHG emissions, followed by agriculture (6.6 per cent), industrial processes (6.3 per cent), waste (3.1 per cent) and solvent and other product use (0.4 per cent). Total GHG emissions excluding LULUCF amounted to 541.5 Tg CO_2 eq in 2008 and increased by 4.7 per cent between the base year and 2008. Between 2007 and 2008, total GHG emissions excluding LULUCF decreased by 2.0 per cent.

Table 2
Greenhouse gas emissions by sector in Italy, 1990–2008

	GHG emissions (Tg CO_2 eq)						*Change (%)*		*Shares[a] by sector (%)*	
Sector	*1990*	*1995*	*2000*	*2005*	*2007*	*2008*	*1990–2008*	*2007–2008*	*1990*	*2008*
1. Energy	418.6	431.4	450.8	473.9	459.1	452.9	8.2	–1.3	81.0	83.6
A1. Energy industries	137.2	140.5	152.6	161.1	162.3	159.8	16.5	–1.5	26.5	29.5
A2. Manufacturing industries and construction	88.2	87.6	85.3	82.2	77.5	74.4	–15.7	–4.1	17.1	13.7
A3. Transport	102.9	113.7	122.4	127.4	128.8	123.9	20.4	–3.8	19.9	22.9
A4.–A5. Other	79.5	79.5	81.5	95.4	83.3	87.4	10.0	5.0	15.4	16.1
B. Fugitive emissions	10.8	10.1	9.0	7.8	7.2	7.4	–31.5	2.5	2.1	1.4
2. Industrial processes	37.5	34.9	35.2	40.9	36.9	34.1	–9.1	–7.7	7.3	6.3
3. Solvent and other product use	2.5	2.2	2.3	2.1	2.1	2.0	–18.6	–5.0	0.5	0.4
4. Agriculture	40.6	40.3	39.9	37.2	37.2	35.9	–11.6	–3.6	7.8	6.6
5. LULUCF	–64.8	–82.4	–75.9	–92.0	–52.3	–87.3	34.8	67.0	–12.5	–16.1
6. Waste	17.9	20.5	21.6	18.4	17.3	16.6	–7.4	–4.0	3.5	3.1
7. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
GHG total with LULUCF	**452.3**	**447.0**	**473.9**	**480.7**	**500.4**	**454.2**	**0.4**	**–9.2**	**NA**	**NA**
GHG total without LULUCF	**517.0**	**529.4**	**549.8**	**572.6**	**552.6**	**541.5**	**4.7**	**–2.0**	**100.0**	**100.0**

Note: The changes in emissions and the shares by sector are calculated using the exact (not rounded) values and may therefore differ from values calculated with the rounded numbers provided in the table.

Abbreviations: GHG = greenhouse gas, LULUCF = land use, land-use change and forestry, NA = not applicable.

[a] The shares of sectors are calculated relative to GHG emissions without LULUCF; for the LULUCF sector, the negative values indicate the share of GHG emissions that was offset by GHG removals through LULUCF.

16. During the review, Italy provided the ERT with the most recent GHG inventory report, which includes updated GHG data for the year 2009. The report showed that total GHG emissions amounted to 491.1 Tg CO_2 eq in 2009 and decreased by 5.4 per cent between the base year and 2009. Between 2008 and 2009, total GHG emissions decreased by 9.3 per cent. The main reason for this decreasing trend in 2009 was the global economic recession that also affected Italy.

3. National system

17. In accordance with decision 15/CMP.1, Italy provided in its NC5 a description of how its national system is performing the general and specific functions defined in the guidelines for national systems under Article 5, paragraph 1, of the Kyoto Protocol (decision 19/CMP.1). The description includes all of the elements as required by decision

15/CMP.1. Further details on the national system are provided in the Party's 2009 and 2010 NIRs.

18. Italy provided a description of national legislative arrangements and administrative procedures that seek to ensure that the implementation of activities under Article 3, paragraph 3, and elected activities under Article 3, paragraph 4, of the Kyoto Protocol also contribute to the conservation of biodiversity and the sustainable use of natural resources. A Scientific Committee (Comitato di Consultazione Scientifica del Registro dei Serbatoi di Carbonio Forestali) has been set up in order to support the design and implementation of the activities related to the national registry for forest carbon sinks. The Committee involves all major national, regional and local institutions in charge of carbon cycle studies, inventories and monitoring. However, the ERT noted that the national registry for forest carbon sinks has not yet been implemented due to a lack of financial resources. During the review, Italy explained that progress has recently been made in securing the necessary funding to support the inventory for activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol (KP-LULUCF activities).

19. During the review, Italy provided additional information on the national system, elaborating on the capacity of the national system, the institutional and legislative arrangements and administrative procedures for GHG inventory planning, preparation and management as well as quality control/quality assurance procedures.

20. The ERT took note of the recommendations of the report of the individual review of the 2009 annual submission of Italy.[4] The ERT reiterates the recommendation of the previous ERT that Italy improve the capacity of its national system and seek to obtain the required financial resources to plan, prepare and manage the inventory for LULUCF activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol. The ERT concluded that the national system continues to perform its required functions as set out in decision 19/CMP.1.

4. National registry

21. In its NC5, Italy has provided information on the national registry, including a description of how its national registry performs the functions defined in the annex to decision 13/CMP.1 and the annex to decision 15/CMP.1 and how it complies with the requirements of the technical standards for data exchange between registry systems. The Party also provided a reference to the 2009 annual submission, which contains a more detailed description of the national system.

22. During the review, Italy provided the ERT with additional information on the measures put in place to safeguard, maintain and recover registry data, the security measures employed in the registry to prevent unauthorized manipulations and protect the registry against security compromises, the test procedures related to the performance of the current version of the national registry, and the recording of any changes and discrepancies related to the national registry. During the review week, Italy provided the ERT with documentation of the security plan for the national registry, which does not include the log files demonstrating the implementation of the security plan, such as logs of any security incidents, monitoring of the server and firewall, and virus protection updates. The ERT encourages Italy to include in its next annual submission these missing elements, revise the security plan and submit updated documentation to account for updated documentation detailing the two-factor user authentication process and the security measures put in place by the new hosting provider. The ERT also encourages Italy to ensure that its registry software is the latest and most up-to-date available in order to address the identified security vulnerabilities of the national registry.

[4] FCCC/ARR/2009/ITA.

23. During the review week, documentation of the performance test for the period prior to January 2011 was provided by Italy. During the review, the Party explained that new hardware infrastructure, as well as new procedures, plans and security measures are being planned and will be included in the new Readiness Questionnaire. This is due to the change in hosting provider of Italy's national registry from the Institute for Environmental Protection and Research (ISPRA) (2006–2010) to Innofactor Oyj (Finland). In addition, this documentation will be made available only until the EU establishes its centralized system in Belgium, which should take place soon.

24. The ERT took note of the conclusion of the standard independent assessment report (SIAR) that the information on Kyoto Protocol units has been reported in accordance with section I.E of the annex to decision 15/CMP.1 and is accurate. The national registry continues to fulfil its requirements related to the reporting and accounting of information on Kyoto Protocol units and transaction procedures, continues to conform to the technical standards for data exchange between registry systems, and has adequate security, data integrity and recovery measures in place. The ERT also took note of the recommendations of the ARR 2009. During the review, the ERT learned that the Party has addressed these recommendations and made some efforts to enhance public access to the information on holdings and transactions. The ERT encourages Italy to note the change in hosting provider and submit relevant documentation on the national registry as part of its next annual submission for consideration during the SIAR process and to report this information in its next national communication.

25. The ERT concluded that Italy's national registry continues to perform the functions set out in the annex to decision 13/CMP.1 and the annex to decision 15/CMP.1, and continues to adhere to the technical standards for data exchange between registry systems in accordance with decisions 16/CP.10 and 12/CMP.1.

B. Policies and measures, including those in accordance with Article 2 of the Kyoto Protocol

26. As required by the UNFCCC reporting guidelines, Italy has provided in its NC5 well-organized information on its package of PaMs implemented, adopted and planned in order to fulfil its commitments under the Convention and its Kyoto Protocol. Most of the sectors have their own textual description of the principal PaMs, supplemented by summary tables on PaMs by sector. The ERT noted that, in its NC5, Italy has improved the transparency of its reporting on the energy sector in comparison to the NC4. The NC5 contains a similar set of PaMs to those in the NC4.

27. However, the ERT noted that, in its NC5, Italy did not provide the following reporting elements required by the UNFCCC reporting guidelines: summary tables on PaMs by sector for some of the sectors (e.g. the agriculture and industrial processes sectors) and information on how Italy believes its PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals, consistent with the objective of the Convention. Some of the recommendations from the previous review report were taken into consideration to improve the reporting in the NC5, including the distinction between implemented, adopted and planned PaMs and information on the monitoring and evaluation of progress made in reducing GHG emissions. However, several recommendations from the previous review report have not yet been addressed by Italy, such as the reporting of comprehensive, transparent and well-organized information on individual PaMs, including the GHG mitigation impact of each implemented PaM as well as that of adopted and planned ones especially for the transport sector. During the review, Italy provided the missing information to the ERT. The ERT reiterates the recommendation that the Party enhance the transparency of its reporting on PaMs in its next national communication.

28. The ERT recommends that the Party include information on the PaMs implemented, adopted and planned, their implementation status and estimated mitigation impact, by gas, for a particular year in the form of a summary table by sector following the UNFCCC reporting guidelines. In addition, the ERT recommends that Italy report on how it believes its PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals consistent with the objective of the Convention. The ERT encourages Italy to report in more detail on the PaMs implemented, adopted and planned at the local level, and the quantitative estimates of the mitigation impact of individual PaMs together with a brief description of the estimation methods used, and provide information about the costs of PaMs, the non-GHG mitigation benefits of PaMs, and how PaMs interact with each other at the national level in its next national communication. Further, the ERT encourages Italy to strengthen the monitoring framework for the assessment of progress and the evaluation of the emission reduction impacts of its PaMs.

29. In its NC5, Italy reported that its national climate change policy has been shaped by the National Programme for the Containment of Carbon Dioxide Emissions adopted in 1994. The implementation of this programme was followed by the law on the ratification of the Kyoto Protocol, adopted in 2002. In its NC5, Italy reported on the Inter-ministerial Committee for Economic Planning (CIPE), chaired by the Ministry of Economy, that is tasked with, inter alia, approving the national climate change strategy. The CIPE is supported by the Inter-ministerial Technical Committee (CTE), established in 2002 and chaired by the Ministry of the Environment, Land and Sea, comprising representatives of several ministries with the objective of monitoring national emission trends, the implementation status of PaMs and the identification of any additional PaMs required in order to reach the Kyoto Protocol emissions reduction target. According to the NC5, the CTE has been further enhanced through its integration with representatives of the Office of the Prime Minister and the involvement of higher-level government officials as CTE members. In addition, in 2006, Italy established the National Competent Authority (NCA) to implement the European Union emissions trading scheme (EU ETS) and to provide inputs to the Ministry of the Environment, Land and Sea in activities related to the use of the Kyoto Protocol mechanisms.

30. The Ministry for the Environment, Land and Sea (MATTM) is the key Government body responsible for developing the draft national climate change strategy to implement the Convention and its Kyoto Protocol, and it chairs the CTE. The national climate change policy framework is largely based on the national PaMs, although several PaMs have been implemented by local governments. In its NC5, Italy provided comprehensive information on PaMs at the national level but limited information on PaMs at the subnational level.

31. Italy has reported that increasing energy efficiency in the industrial, residential and services sectors, and the EU ETS are the key cross-cutting PaMs that have the largest emissions reduction impact. During the review Italy referred to the white certificates (WhCs) system as the most successful policy in terms of achieved emissions reductions, energy savings and significant progress with regard to implementation. This PaM represents a combination of regulatory and economic policy instruments, as it combines top-down target-setting for annual energy savings and the free trading of WhCs (see para. 38 below).

32. The NC5 provides estimates of the mitigation effects of PaMs by sector and by gas. In its NC5, Italy has reported the effects of PaMs at the individual level for the planned PaMs only, whereas for the implemented and adopted PaMs, the Party has not reported the effects of PaMs at the individual or sectoral level; instead, it has included the effects of these PaMs in the 'without measures' scenario presented in the chapter on projections. During the review, the Party provided the ERT with information about the effects of implemented, adopted and planned PaMs at the individual level and aggregated at the

sectoral level. Further, Italy explained that the effects of PaMs are monitored over time by CIPE and CTE.

33. In its NC5, Italy has provided information about the financing of PaMs in the energy, transport and waste sectors through a variety of funding channels. However, the Party has not reported on the costs of each PaM at the individual level, nor has it provided information about the fiscal incentives related to the implemented PaMs, such as tax reliefs and subsidies. During the review, Italy provided information on a variety of such incentives being introduced as part of the PaMs designed to increase energy efficiency.

34. In its NC5, Italy has not reported on the PaMs that are no longer in place. However, during the review, the Party explained that a number of PaMs have evolved into new regulatory documents and have served as the basis for new PaMs, and the only PaM that has been repealed is the one aimed at scrapping old cars and replacing them with new, low carbon emitting ones. Table 3 provides a summary of the reported information on the PaMs of Italy.

Table 3
Summary of information on policies and measures

Major policies and measures	*Examples/comments*
Policy framework and cross-sectoral measures	
Integrated climate programme	National climate change strategy (2002)
White certificates scheme	Promotion of energy efficiency with an emissions reduction target until 2012, which could be extended until 2020
Emissions trading	European Union emissions trading scheme (Phase I for 2005–2007 and Phase II for 2008–2012)
Other	Budget laws 2007 and 2008 – economic resources to promote renewables, incentives for low carbon emission vehicles, building stock renovation and other energy efficiency measures
Policies and measures by sector	
Energy	
Combined heat and power generation	Cogeneration through the implementation of the white certificates scheme (2020: 0.69 Mt CO_2 eq); new targets for the white certificates scheme in the Action Plan July 2007 (2020: 2.47 Mt CO_2 eq)
Renewable energy sources (RES)	Production of photovoltaic (PV) electricity (2010: 0.58 Mt CO_2 eq; 2020: 1.92 Mt CO_2 eq); support to RES excluding PV (2020: 5.92 Mt CO_2 eq); a new regulatory supporting system for RES (2010: 0.61 Mt CO_2 eq; 2020: 7.44 Mt CO_2 eq); energy efficiency in buildings (2010: 0.65 Mt CO_2 eq; 2020: 2.91 Mt CO_2 eq)
Energy efficiency improvements	Improvements in the energy efficiency of electric power plants; the white certificates scheme for energy savings (2010: 1.48 Mt CO_2 eq; 2020: 3.47 Mt CO_2 eq); improvements in the energy efficiency of buildings through the implementation of the budget law (2010: 0.86 Mt CO_2 eq; 2020: 3.48 Mt CO_2 eq); new targets for the white certificates scheme in the Action Plan July 2017 (2020: 3.61 Mt CO_2 eq)
Transport	
Integrated transport planning	Infrastructural measures for regional networks (2010: 1.80 Mt CO_2 eq; 2020: 5.70 Mt CO_2 eq); enhancement of the road urban public transport network (2010: 0.40 Mt CO_2 eq; 2020: 1.00 Mt

Major policies and measures	*Examples/comments*
	CO_2 eq); intermodal measures in public transport (2010: 0.00 Mt CO_2 eq; 2020: 1.20 Mt CO_2 eq); improvements to private road transportation (2020: 2.30 Mt CO_2 eq)
Biofuels	Promotion of the use of biofuels (2010: 1.18 Mt CO_2 eq; 2020: 4.55 Mt CO_2 eq)
Industrial processes	Installation of advanced technology (selective catalytic reduction) for nitric acid production plants (2010: 0.65 Mt CO_2 eq; 2020: 0.74 Mt CO_2 eq)
Agriculture	Rationalization of the use of nitrogen fertilizers (2010: 0.15 Mt CO_2 eq; 2020: 0.79 Mt CO_2 eq); recovery of biogas from animal storage systems (2010: 0.22 Mt CO_2 eq; 2020: 0.40 Mt CO_2 eq)
Forestry	Forest management (10.2 Mt CO_2 eq)
Waste management	Compliance with targets for separating waste collection and reducing the disposal of biodegradable waste in landfills (2010: 1.20 Mt CO_2 eq; 2020: 3.7 Mt CO_2 eq); treatment of all biodegradable waste prior to landfill (2010: 0.00 Mt CO_2 eq; 2020: 1.70 Mt CO_2 eq)

Note: The greenhouse gas reduction estimates, given for some measures (in parentheses), are reductions in CO_2 eq for the years 2010 and 2020.

1. Policy framework and cross-sectoral measures

35. The NC5 describes the overall climate change policy context well. The policy framework has been shaped by the EU burden-sharing agreement, according to which Italy must reduce its GHG emissions by 6.5 per cent below the 1990 level during the Kyoto Protocol first commitment period. This target stems from the commitment of the group of 15 EU member States (EU-15) reached in 1998 to divide the burden of reaching the target of an 8 per cent reduction during the period 2008–2012 compared with the 1990 level among the EU member States.

36. In its NC5, Italy has reported on its national climate change strategy adopted in 2002 to implement the Kyoto Protocol target, establish the relevant national institutional arrangements and ensure the allocation of funding for the implementation of the national and international activities. The Directorate for Sustainable Development, Climate and Energy of MATTM is responsible for climate change policy development and the provision of technical support to international and EU-level policy negotiations. In 2006, Italy adopted Legislative Decree no. 216/2006 transposing the EU ETS directive[5] and assigning the functioning of NCA to MATTM and the Ministry of Economic Development. During the review, Italy informed the ERT that the ongoing revision of the Accounting and Finance Law will require MATTM to prepare a report on Italy's international climate change commitments with the aim of ensuring the allocation of the corresponding funding support to the implementation of the Convention at the budget planning stage.

37. In its NC5, Italy has reported information on the white certificates (WhCs) scheme, the budget laws of 2007–2010, the use of the EU structural funds and the EU ETS as the key cross-sectoral measures in the energy and industrial processes sectors. The WhCs scheme was introduced in 2001 and started operating in 2005. Based on its high performance and energy-saving results, the operation of the scheme has been extended to 2012 and could be further extended until 2020. The scheme includes three types of certificates related to electricity saving, gas saving and other fuel saving in the energy end-

[5] Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC.

use sectors, such as the industrial, residential and services sectors. The annual targets for the period 2005–2009 have been surpassed throughout the whole period and have resulted in 3.6 million toe of energy saved. The energy efficiency measures included in the scheme vary from the most popular projects on the use of cogeneration for heat production in industry (47 per cent of the total number of projects) to the use of energy-efficient lighting systems in public buildings (3 per cent of the total number of projects). Additional non-GHG related benefits have been achieved through the spill-over effect of this PaM, such as improvements in economic growth, an increased awareness among energy consumers, and an improvement in building stock quality. During the review, Italy provided more detailed information on the institutional framework set up to implement, verify and monitor the performance of energy saving projects and the issuance, exchange and transfer of WhCs.

38. In its NC5, Italy has reported on the mainstreaming of climate change into the regional energy and environment plans introduced by 20 local governments across the country. Most of these plans are aimed at increasing the share of renewables in the energy supply mix and increasing energy savings. The plans introduce regional emission reduction targets in various areas with a corresponding emission reduction potential, including the use of renewables for electricity production, the reduction of energy consumption and the promotion of the use of renewables in transport. During the review, Italy provided the ERT with information on the regional success stories, such as the project implemented in the period 2002–2008 to improve the energy efficiency in around 1,000 new buildings through the introduction of energy labelling and minimum energy efficiency requirements in Bolzano Province. Another example is from Rome, where the city's action plan to reduce emissions was implemented during the period 2004–2008; it included a GHG emissions reduction target, the preparation of a GHG inventory, the monitoring of the gap between actual emissions and the emissions reduction target as well as the implementation of projects that have the climate change mitigation effect and could potentially be replicated elsewhere.

39. As an EU member State, Italy is part of the EU ETS that started operation in 2005 and covers large installations with a net thermal input exceeding 20 MW in the energy and industry sectors. The EU ETS is regulated by the EU ETS directive, which set a trial phase or first trading period from 2005 to 2007, followed by a second trading period from 2008 to 2012, which corresponds to the Kyoto Protocol first commitment period, and a subsequent trading period from 2013 to 2020. According to the National Allocation Plans approved by the EU, Italy allocated allowances equal to 223.7 Mt CO_2 eq/year and 201.6 Mt CO_2 eq/year for the first and second EU ETS trading periods. According to the NC5, Italy has a projected deficit of allowances equal to 24.4 Mt CO_2 eq in 2010 in order to comply with the EU ETS national cap, as the projected emissions from the sectors covered by EU ETS are estimated at 226.0 Mt CO_2 eq in 2010. During the review, Italy provided updated information on the emissions from the sectors covered by the EU ETS that suggested that the Party has a surplus of allowances equal to 12.6 Mt CO_2 eq, as the emissions fell in 2010 below the annual allocation under the EU ETS. For the third trading period, the revised EU ETS directive has introduced new regulations on the scheme's operation and abolished the national caps.

40. With regard to the sectors not covered by the EU ETS, in 2008 an EU effort-sharing decision was taken to regulate emissions from various sectors, such as transport, housing, agriculture and waste, beyond the Kyoto Protocol first commitment period. Under this decision, each member State agreed to a binding national emissions reduction target for 2020 for the sectors not covered by the EU ETS. Italy has a target of a 13 per cent reduction in GHG emissions compared with 2005 by 2020 in the sectors that are not covered by the EU ETS; this is equal to an emissions level of 302.4 Mt CO_2 eq in 2020. According to the NC5, Italy has projected a gap of 6.3 Mt CO_2 eq in 2020 between the projected emissions and the target for the non-EU ETS sectors.

41. The 2009 EU climate and energy package includes complementary components such as: a revised and strengthened EU ETS; the effort-sharing decision regulating emissions from the sectors not covered by the EU ETS; national targets for renewable energy; and a legal framework to promote the development and safe use of carbon capture and storage. In its NC5, Italy has reported that its national target is a 17 per cent share of renewable energy in gross final energy consumption by 2020 and a 9 per cent energy saving by 2016 compared to the average gross energy consumption during the period of 2001–2005 (see paras. 46 and 48 below). The achievement of this target will be ensured by the National Renewable Energy Action Plan adopted in June 2010.

42. During the review, Italy explained that it did not have a comprehensive longer-term national climate change strategy in place, but that the current national climate change strategy was under revision at the time of the review and the possible introduction of a new document could define the future development path for Italy in the area of climate change. Nonetheless, the ERT was informed that a set of additional PaMs had been identified which could be introduced in the near future in order to ensure the achievement of the Kyoto Protocol target and the implementation of the EU climate and energy package of measures.

2. Policies and measures in the energy sector

43. Between 1990 and 2008, GHG emissions from the energy sector increased by 8.2 per cent (34.3 Tg CO_2 eq). The main drivers continue to be growing energy demand, growing fuel consumption in road transportation and the increase in electricity production. GHG emissions levels have been affected recently by the economic crisis and associated drop in energy demand. The trend in GHG emissions from fuel combustion showed notable increases in transport (+20.4 per cent or 21.0 Tg CO_2 eq) and energy industries (+16.5 per cent or 22.6 Tg CO_2 eq).

44. ***Energy supply***. Over the period 2005–2008, Italy's annual total primary energy supply showed a gradual decrease that was mostly attributed to an increase in energy efficiency in the energy supply system. The primary energy intensity and carbon intensity of the economy fell between 2005 and 2008, which suggests that the economy continues to become more energy-efficient and that climate change policies are having an effect. The decrease in energy and carbon intensity of economy may also be due to some structural changes in economy towards services and less energy intensive manufacturing industry. In terms of energy consumption by sector, during the in-country review Italy provided information on a significant reduction in electricity consumption. Also, the changes in the energy mix over the period 2000–2009 showed a reduction in oil share and an increase in the shares of renewable energy and natural gas in primary energy supply. Further, Italy informed the ERT that a public consultation on nuclear power was held on 13 June 2011 resulting in the abrogation of laws regarding the introduction of nuclear power in Italy.

45. ***Renewable energy sources***. The national renewable energy policy of Italy is shaped by its national commitment to bringing the share of renewables to 17 per cent of gross final energy consumption by 2020 (equal to 22.1 Mtoe from renewables), stemming from the EU climate and energy package (see para. 41). The 2010 National Renewable Energy Action Plan is central to this policy as it set objectives related to: strengthening energy security; reducing energy dependency from abroad; reducing energy costs; and developing innovative technology. During the review, Italy informed the ERT that in 2010 the share of renewables in gross final energy consumption was 8.1 per cent. According to the current assessment, the projected share of renewables would increase to 14.2 per cent by 2020, and it is highly likely that the Party would not meet its 17 per cent target unless new, additional PaMs are introduced.

46. In its NC5, Italy has reported that the 1999 White Paper on Renewables set the target of 20.3 Mtoe from renewable energy sources for the period 2008–2012. One of the

measures to reach this objective is the green certificates system approved by Legislative Decree no. 79/99 and introduced in 2005 with the aim of increasing the share of renewables in electricity production and import. The initial target was to reach a minimum quota for renewables of 2 per cent of overall electricity production and import. In 2003, this target was revised to a progressive annual increase of 0.35 per cent/year over the period 2004–2006. In 2008, the quota was further revised and set to an increase of 0.75 per cent/year over the period 2008–2012, and in 2009, the green certificates system was revised in order to become more coherent with the EU renewables target. Additional incentive measures have also been introduced to stimulate the promotion of renewables, mainly from biomass. For the promotion of photovoltaic electricity, Italy adopted the target of installed capacity of 1,000 MW by 2015, which was further increased to 3,000 MW by 2016. This target is supported by the 20-year feed-in tariff for solar energy production. During the review, Italy informed the ERT that in March 2011 the new Law on Renewables was adopted to set a more ambitious renewables target.

47. ***Energy efficiency***. In 2007, Italy developed the National Energy Efficiency Action Plan outlining the path required to achieve the objective of a 9 per cent increase in energy savings by 2016 compared to the average gross energy consumption during the period of 2001–2005 contained in the EU directive on energy end-use efficiency and energy services.

48. The energy efficiency measures in the energy supply system were introduced after the market liberalization reform in 1999. Energy efficiency has been promoted chiefly through the introduction of combined cycle natural gas plants, which in 2009 has reached the level of converted capacity of 9,400 MW out of total capacity of 15,000 MW that was planned for conversion. This measure has been complemented by the policy on the simplification of authorization procedures for the construction and operation of new plants. These energy efficiency measures resulted in an emissions reduction in the electricity sector over the period 1990–2007, from 592 g CO_2/kWh to 459 g CO_2/kWh in total gross production.

49. In 2007, Italy introduced an incentive policy to promote cogeneration in the heat and power sectors through the WhCs scheme. In addition, the incentives for cogeneration include the energy dispatch priority, an exemption from purchasing green certificates, and a right to purchase green certificates for geothermal plants.

50. ***Residential and commercial sectors***. In its NC5, Italy has reported that the most important PaM in these sectors is the WhCs scheme, which has delivered significant emission reductions in the buildings sector. In order to maximize the effect of the WhCs scheme, Italy introduced a number of support measures aimed at developing a methodology for measuring energy performance, energy auditing, certification schemes, and the inspection and assessment of energy saving projects and minimum energy efficiency requirements for household appliances. In addition, the introduction of fiscal incentives (such as tax incentives) has enhanced the emissions reduction effect of these PaMs. In order to expand the coverage of these PaMs, Italy is planning, according to a new European Directive, to strengthen the existing energy efficiency requirements for new and existing buildings.

51. Italy has adopted a law on promotion of energy efficiency measures in new buildings and existing buildings subject to renovations that requires installation of technical blinds for solar protection, better insulation, connection to district heating systems, upgrading of existing heating systems and installation of PV systems. With regard to energy efficient appliances, Italy has reported on the recent measures on introduction of mandatory energy efficiency standards on appliances, replacement of currently installed inefficient domestic electrical appliances, such as air conditioners, use of efficient lighting systems in doors and outdoors, replacement of electric water heaters by heaters powered by renewable sources and reduction of losses in energy transmission networks.

52. ***Transport sector***. Between 1990 and 2008, the share of GHG emissions from transport increased from 19.9 per cent to 22.9 per cent; this is the largest increase in sectoral share in total GHG emissions in Italy. The rise in emissions was steep during the 1990s and early 2000s, which is in contrast to other sectors, where GHG emissions have been stable or have trended downwards. Between 1990 and 2008, the numbers of passenger cars, motorcycles and heavy-duty vehicles increased by 141.7 per cent. The impact of this growth was partly off-set by the high occupancy of vehicles in Italy. Italy has one of the highest car occupancy/vehicle rates in the world, equal to 1.69 persons/car in 2008, according to the research carried out by the European Environmental Agency.

53. In its NC5, Italy has reported on the broad range of its PaMs, such as the promotion of low-carbon fuels, the promotion of modal shift, road infrastructure expansion, and the update of the vehicle fleet, in order to respond to the challenges of the increase in GHG emissions. The Party has reported in its NC5 that significant investment is required in order to fully exploit the potential of passenger transport systems. The promotion of the use of renewables in transport (in petrol, diesel, biofuels and electricity consumed) is undertaken in the context of the broader EU goal to decrease the GHG intensity of transportation fuels by up to 10 per cent by 2020. During the review, Italy provided the ERT with information on the share of biofuels in the transport sector, which was equal to 3 per cent in 2009. The interim 2014 target of a 5 per cent share of biofuels was adopted in March 2011. The data show that Italy may face a significant challenge in meeting this objective at the national level. With regard to the objectives related to increasing the share of biopetrol and biodiesel consumption in the transport sector to 6 per cent by 2020, Italy reported in its NC5 that new PaMs are still being defined.

54. The new EU emission standards for passenger cars require the European car industry to produce new cars with CO_2 emissions below 130 g CO_2/km. This factor, together with the increasing energy prices, is moving the market towards new technologies. The registration of ecological vehicles has risen significantly in the past few years. With regard to the update of the car fleet, Italy has introduced a fiscal incentive scheme aimed at scrapping old cars and replacing them with new electric, hybrid and natural gas fuelled cars.

55. The emissions from the aviation sector will be tackled through the EU ETS, which foresees the inclusion of the aviation sector from 2012 onwards. During the review, Italy explained that, with regard to international maritime navigation, the EU position is that in the event that no international agreement which includes international maritime emissions in its reduction targets through the International Maritime Organisation has been approved by the member States or no such agreement through the UNFCCC has been approved by the EU by 31 December 2011, the European Commission should make a proposal to include international maritime emissions in the EU reduction commitment with the aim of having the proposed act enter into force by 2013.

56. ***Industrial sector***. In its NC5, Italy has reported that the most effective measure in the industrial sector is the WhCs scheme (see para. 32 above). This scheme is further supported by the EU regulations on minimum efficiency requirements for new electric motors and pumps to be introduced between 2011 and 2017. In addition, the EU Integrated Pollution Prevention and Control (IPPC) Directive also plays a key role in achieving emissions reduction in this sector.

3. Policies and measures in other sectors

57. Between 1990 and 2008, GHG emissions from the industrial processes (including solvent and other product use), agriculture and waste sectors decreased by 10.0 per cent (9.9 Tg CO_2 eq), mainly driven by the introduction of new abatement technology in adipic and nitric acid production, the reduction in the animal population and increased methane

recovery from landfills. The trends in GHG emissions from all three sectors showed notable decreases over the period 1990–2008, especially from industrial processes (including solvent and other product use) between 2007 and 2008 (–7.6 per cent or 3.9 Tg CO_2 eq).

58. ***Industrial processes***. Between 1990 and 2008, GHG emissions from the industrial processes sector (including solvent and other product use) decreased by 9.7 per cent (3.4 Tg CO_2 eq), mainly driven by a decrease in the production of nitric acid and adipic acid in the chemical industry and changes in the type of materials used in metal production. The share of the sector decreased from 7.7 per cent of total GHG emissions in 1990 to 6.7 per cent in 2008. Most GHG emissions from industrial processes come from F-gases. Emissions of F-gases (including HFCs, PFCs and SF_6) steadily increased by 221.4 per cent during the period 1990–2008 owing to an increased use of these gases in semiconductor manufacture, refrigeration and air conditioning.

59. The decrease of N_2O emissions from nitric acid production has been mainly driven by the introduction of advanced technology for the treatment of process gases in nitric acid production plants. N_2O emissions will be covered by the EU ETS from 2013 onwards. The ongoing initiatives to reduce emissions from the industrial processes sector include the implementation of the EU Regulation on certain fluorinated greenhouse gases, the EU directive relating to emissions from air-conditioning systems in motor vehicles (the 'MAC directive') and the EU directive on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain activities and installations (directive 1999/13/EC).

60. ***Agriculture***. Between 1990 and 2008, GHG emissions from the agriculture sector decreased by 11.6 per cent (4.7 Tg CO_2 eq), mainly driven by a reduced animal population, changes in crop production patterns, the reduced use of nitrogen (N) fertilizers and the increase in the recovery of biogas from animal manure. The agriculture sector is the second largest GHG-emitting sector after the energy sector.

61. In its NC5, Italy has reported that its package of PaMs is linked directly to the implementation of the EU Common Agricultural Policy (CAP) that has been supported by the Health Check [6] reform aimed at the disengagement of support to farmers from agricultural production and the EU nitrates directive [7] aimed at the reduction of N_2O emissions by reduced fertilizer use. In addition, Italy has reported on the policies to support the use of biogas, biomass and vegetal oil for electricity production which have introduced feed-in tariffs and quota obligations regarding renewable energy for electricity producers and importers. The Party has also reported on biogas recovery from manure.

62. ***LULUCF***. The LULUCF sector was a net sink of 87.3 Tg CO_2 eq in Italy in 2008 and net GHG removals have increased by 34.8 per cent since 1990. This trend was mainly driven by an expansion in the area of forest land and the occurrence of forest fires. The total forest area increased from 7.6 million ha in 1990 to 9.1 million ha in 2010 due to the the cessation of agriculture practices, mostly in mountain zones, and to the natural conversion of cultivated and grazing land into forest.

63. In its NC5, Italy has reported that it intends to establish the national registry for forest carbon sinks, which was approved by MATTM in 2008 but has not yet been established due to problems with the allocation of the funding by the Government. Some of the elements of the national registry (such as the land-use inventory) have already been put in place. Once the national registry for forest carbon sinks is created, Italy will derive great

[6] The Health Check of the Common Agricultural Policy was approved on 20 November 2008 by a political agreement of the EU agriculture ministers.

[7] Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources for the period 2004–2007.

benefit from this instrument when estimating the emissions and removals from the LULUCF sector and issuing removal units.

64. Italy has reported limited information on its PaMs in forest management, which is an elected activity under Article 3, paragraph 4, of the Kyoto Protocol. During the review, Italy provided the ERT with more detailed information on its PaMs in forest management. The Italian forest management system is still largely based on the provisions of the 1923 Forest Law that regulates forest ownership and the use and protection of forest biodiversity. The responsibility for forest management is devolved to the regions, with the central government retaining responsibility for the functions related to forest fire prevention and control.

65. ***Waste management***. Between 1990 and 2008, GHG emissions from the waste sector decreased by 7.4 per cent (1.3 Tg CO_2 eq), mainly driven by a reduction in the waste disposed on solid waste disposal landfills and an increase in methane recovery for energy purposes. In its NC5, Italy has reported that the expected effect of the EU landfill directive, which was adopted into national law in 2003, is not yet visible as the waste composition of landfills has not changed and the amount of biodegradable waste disposed to landfills does not comply with the targets. During the review, Italy explained that there are regional differences in the progress made in practices to separate waste collection.

4. Minimization of adverse effects in accordance with Article 2, paragraph 3, of the Kyoto Protocol

66. In its NC5, Italy reported information on how it strives to implement PaMs under Article 2 of the Kyoto Protocol in such a way as to minimize adverse effects, including the adverse effects of climate change and effects on international trade and social, environmental and economic impacts, on other Parties, especially developing country Parties. Further information on how Italy strives to implement its commitments under Article 3, paragraph 1, in such a way as to minimize adverse social, environmental and economic impacts on developing country Parties, as reported in the 2010 annual submission, is presented in chapter II.I of this report.

67. The NC5 underlines the fact that Italy has assessed the potential adverse effects of its sectoral policies on overall economic activity, the impact on international trade with developing countries and on the liberalization of the energy market. Italy has assessed the impact of the policy of natural gas penetration on energy safety and security. At the international level, using the Kyoto Protocol mechanisms, Italy ensures that its investments maximize the emission reduction effects and minimize the negative economic, social and environmental effects in the host developing countries. The EU CAP encourages environmentally friendly practices in the agriculture sector by introducing provisions for payments to farmers based on environmental, food safety and animal welfare standards and not on the volume of agricultural production.

C. Projections and the total effect of policies and measures, and supplementarity relating to the Kyoto Protocol mechanisms

68. In its NC5, Italy has provided emission projections for the ‘with measures’ scenario prepared in March 2010, with a description of the key assumptions and methodology and a sensitivity analysis. During the review, Italy provided additional information on the most recent projections and the effects of PaMs, prepared in 2011. The emission projections are prepared by a joint working group composed of members of the Ministry for the Environment, Land and Sea, the Ministry for Economic Development, ISPRA and the Italian National Agency for New Technologies, Energy and Sustainable Economic

Development (ENEA) on an annual basis for all sectors of the economy. This institutional arrangement ensures that the Party's projections are consistent and informative for policymakers. The ERT acknowledges that the arrangement for the preparation of updates of GHG emission projections is well set up in Italy owing to the designation of ISPRA as a leading organization in the process. However, the ERT encourages Italy to improve the transparency and presentation of information contained in the projections section of the NC5 (see paras. 71–75, 79 and 83 below).

1. Projections overview, methodology and key assumptions

69. The GHG emission projections provided by Italy in the NC5 include a 'with measures' scenario until 2020, presented relative to actual inventory data for 1990, 1995, 2000, 2005 and 2007. Projections are presented for the years 2010, 2015 and 2020 on a sectoral basis, using the same sectoral categories used in the PaMs section and on a gas-by-gas basis for the following GHGs: CO_2, CH_4, N_2O, PFCs, HFCs and SF_6, treating PFCs and HFCs collectively in each case. Projections are also provided in an aggregated format for each sector as well as for a national total, using global warming potential (GWP) values.

70. However, the ERT noted that, in its NC5, Italy did not provide the following reporting elements required by the UNFCCC reporting guidelines: emission projections related to fuel sold to ships and aircraft engaged in international transport, and the total effect of implemented and adopted PaMs. The ERT also noted inconsistencies in the information on projections presented in the tables and in the text of the NC5. During the review, Italy provided detailed and updated information on the missing reporting elements. The ERT recommends that Italy include all mandatory reporting elements in its next national communication and encourages Italy to enhance the coherence of its next national communication by cross-checking the information presented in the tables and in the text.

71. In its NC5, Italy has defined a 'with measures' scenario as a projection including all PaMs implemented and adopted up to 2008, with the exception of the EU ETS. The 'without measures' scenario is not provided in the NC5. During the review, Italy provided the 'with existing measures' and 'with additional measures' scenarios with recent data updated up to 2010, which were prepared for submission to the EU greenhouse gas monitoring mechanism (decision 280/2004/EC) in 2011. The ERT encourages Italy to include the "with additional measures" scenario in its next national communication.

72. ISPRA compiles the GHG emission projections based on the models, data and forecast scenarios prepared by relevant national institutions. The models are updated and calibrated based on the most recent available data. Italy used a number of models to prepare its projections by sector and its national total emissions. The methodology used for the NC5 is broadly the same as for the NC4. Projections for the energy sector were prepared using a bottom-up model, MARKAL–Italy, for which energy consumption projections were estimated according to the Eurostat methodology. Emissions from the industrial processes sector were projected based on production assumptions in the energy sector model, communications from industry or the extrapolation of recent data. The methodology applied to the agriculture sector follows the method used for the national emissions inventory submitted in 2009. The methodologies applied to the LULUCF and waste sectors are based on the extrapolation of activity data and applying relevant emissions factors. In its NC5, Italy has provided a limited description of the MARKAL–Italy model and the methodologies used for emission projections in other sectors. The ERT encourages Italy, in its next national communication, to provide information on the strengths and weaknesses of each modelling framework, the linkages between the models and the effect of changes, if any, in the methodologies used.

73. Information on key assumptions and parameters, including gross domestic product (GDP), population, international fuel prices and transport growth rate, is presented for

2010, 2015 and 2020 in the NC5. Assumptions were revised and updated following the recent global economic crisis. The ERT noted that detailed information on assumptions regarding projection parameters and approaches for policy appraisal is presented in a number of documents, which are publicly available on a number of different websites. Some of the key assumptions were not provided by Italy in its NC5, including: the industrial value added at subsectors; the number of households; the expected evolution of energy demand; and the increase in the use of a number of appliances. The ERT encourages Italy to include this information in its next national communication and to provide further information on key assumptions. Overall, assumptions used appeared plausible and consistent.

74. In its NC5, as part of its sensitivity analysis, Italy has reported a scenario called the "updated 2009 'with measures' scenario" that takes into account the effects of the ongoing general downturn in the economy following the onset of the global economic crisis. The scenario includes a slower economic recovery from 2010 but no changes in international energy prices. According to the scenario, total GHG emissions are projected to be 5 per cent lower in 2010 compared to the 'with measures' scenario, while emissions projections in 2020 remained broadly the same. Emission projections for the transport, and residential and commercial sectors are much higher in 2020, even with the slower economic recovery factored into the scenario, which is due to updated energy consumption data and a different energy outlook. The ERT encourages Italy to include the key assumptions of the scenario analysis in its next national communication, in order to enable the ERT to have a clear understanding of the differences among the scenarios.

2. Results of projections

75. The Kyoto Protocol target for Italy is, on average, 483.3 Tg CO_2 eq/year over the Kyoto Protocol first commitment period (2008–2012). In the NC5, the projected GHG emissions in Italy amount to 541.8 Tg CO_2 eq in 2010, taken as an average annual emissions for the period 2008-2012. During the review, Italy reported that by taking into account the implications of the EU ETS, Italy's projected national emissions total 514.0 Tg CO_2 eq in 2010. Hence the projected gap between Italy's emissions level and its target for the period 2008-2012 is an average 30.7 Tg CO_2 eq annually. According to the projections presented in the NC5, the contribution from LULUCF activities (10.2 Tg CO_2 eq), planned PaMs in the non-EU ETS sector (0.86 Tg CO_2 eq) and the acquisition of Kyoto units from project-based mechanisms (CERs and ERUs) (14.9 Tg CO_2 eq) are not sufficient to enable Italy to meet its Kyoto Protocol target. Italy expects to fill this gap by purchasing Kyoto units (AAUs) through international emissions trading. However, at the time of the review the planned PaMs and the further purchase of the Kyoto units have not been approved within Italy, and the contribution from LULUCF activities has an uncertain potential. Therefore it remains unclear to the ERT how Italy will meet its Kyoto Protocol target.

76. The contributions of different gases to Italy's total emission projections are as follows: projected emissions under the 'with measures' scenario show a downward trend in overall GHG emissions from 2008 to 2020, with only F-gases showing an increase. Total emissions are expected to amount to 541.8 Tg CO_2 eq in 2010, of which CO_2, CH_4 and N_2O emissions are 465.5, 36.5 and 30.7 Tg CO_2 eq respectively. GHG emissions are expected to total 534.2 Tg CO_2 eq in 2020, of which CO_2, CH_4 and N_2O emissions are projected to be around 457.7, 33.2 and 30.1 Tg CO_2 eq respectively. This represents a decrease of 1.7, 9.0 and 2.0 per cent respectively compared to the 2010 levels. The projected emissions of F-gases are expected to increase by 46.2 per cent for the same period during 2010–2020. The key results of the emission projections are shown in table 4 and the trends are illustrated in the figure below.

77. During the review, Italy provided further information on its most recent projections. According to the latest projections, both the 'with existing measures' scenario, which includes all measures implemented and adopted up to 2010, and the 'with additional measures' scenario result in a total emission of 509.0 Tg CO_2 eq in 2010. Under the 'with existing measures' scenario, total emissions are expected to be 538.2 Tg CO_2 eq in 2020, while the 'with additional measures' scenario results in total emissions of 473.3 Tg CO_2 eq in 2020. These latest projections reflect the recent economic recession and corresponding/resulting decrease in GDP and energy consumption in 2009 and 2010. With the latest projections, the gap in relation to the Kyoto Protocol target reduces to 25.7 Tg CO_2 eq.

78. Italy's longer-term target for the non-EU ETS sectors is to reduce emissions by 13 per cent in 2020 relative to 2005 levels. According to the NC5, emissions in 2020 (without LULUCF activities) from the non-EU ETS sectors are projected to amount to 316.5 Tg CO_2 eq in the 'with measures' scenario, resulting in a 'gap' to the 2020 target of 14.1 Tg CO_2 eq. The use of additional measures is critically important. During the review, Italy informed the ERT that identified planned measures have a total reduction potential which is more than sufficient to fill the gap to the 2020 target. The ERT encourages the Party to provide more detailed information on these planned measures and to specify the long-term policy mix to reach the projected level of emissions in its next national communication.

Table 4
Summary of greenhouse gas emission projections for Italy

	Greenhouse gas emissions (Tg CO_2 eq per year)	*Changes in relation to base year level (%)*	*Changes in relation to 1990 level (%)*
Inventory data 1990[a]	517.0	0.0	NA
Inventory data 2008[a]	541.5	4.8	4.7
Kyoto Protocol base year[b]	516.9	NA	0.0
Kyoto Protocol target[b]	483.3	–6.5	–6.5
Projections in the NC5			
'With measures' projections (without the effect of the EU ETS) for 2010[c]	541.8	4.8	4.8
'With measures' projections (with the effect of the EU ETS) for 2010[c]	514.0	–0.6	–0.6
'With measures' projections for 2020[c]	534.2	3.4	3.3
Updated projections in 2011			
'With existing measures' projections for 2010[d]	509.0	–1.5	–1.6
'With additional measures' projections for 2010[d]	509.0	–1.5	–1.6
'With existing measures' projections for 2020[d]	538.2	4.1	4.1
'With additional measures' projections for 2020[d]	473.3	–8.4	–8.4

Abbreviation: NA = not applicable.

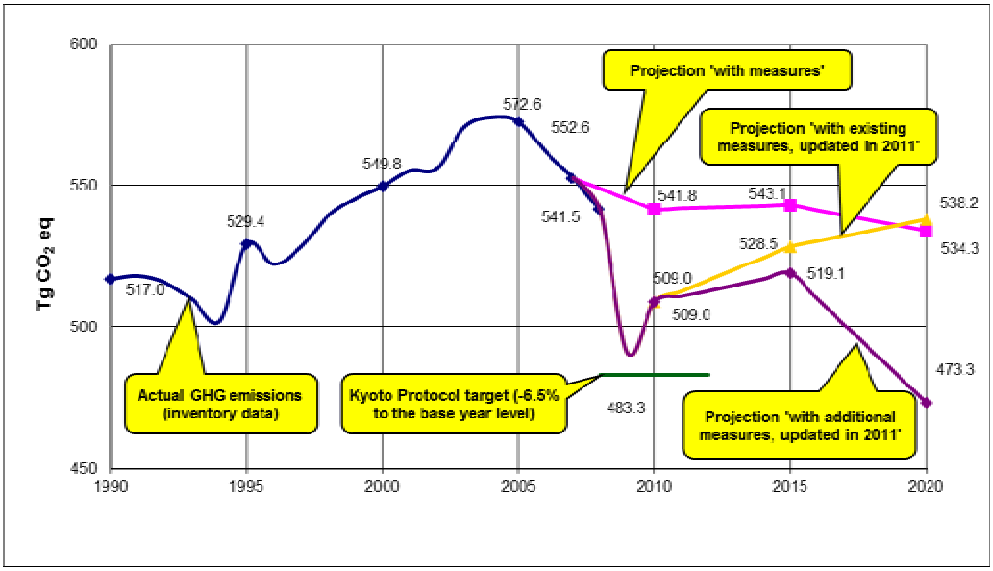
Sources: [a] Italy's 2010 greenhouse gas (GHG) inventory submission; the emissions are without land use, land-use change and forestry (LULUCF).

[b] Based on the initial review report contained in document FCCC/IRR/2007/ITA.

[c] Italy's fifth national communication.

[d] Updated projections provided by Italy during the in-depth review; the projections for 2010 are preliminary; the projections are for GHG emissions without LULUCF.

Greenhouse gas emission projections



Sources: (1) Data for the years 1990–2008: Italy's 2010 greenhouse gas inventory submission; the emissions are without land use, land-use change and forestry. (2) Data for the years 2009–2020: Italy's fifth national communication and updated projections provided by Italy during the in-depth review.

3. Total effect of policies and measures

79. In the NC5, Italy has presented information on the expected total effect of the planned PaMs in the non-EU ETS sectors for the years 2008–2012 and 2020 as an option to fill the gap between the 'with measures' scenario with the EU ETS cap and the Kyoto Protocol target. The total estimated effect of these planned PaMs in 2010 amounts to 0.86 Tg CO_2 eq.

80. However, the ERT noted that Italy did not provide the following reporting elements required by the UNFCCC reporting guidelines: an estimate of the total effect of its PaMs by gas (on a CO_2 eq basis), in accordance with the 'with measures' definition, compared with a situation without such PaMs, presented in terms of GHG emissions avoided or sequestered. According to the UNFCCC reporting guidelines, these estimates should be presented for 2005, 2010, 2015 and 2020. During the review, Italy provided the updated estimates of the total effect of adopted and planned PaMs in 2010 and 2020 for the following sectors: energy (renewables and cogeneration), industrial, residential and commercial, and transport.

81. According to the information provided in the NC5 and during the review, the PaMs adopted and planned in the residential and commercial sector will deliver the largest emission reductions, followed by the effect of the PaMs adopted and planned in the transport and industrial sectors. The most effective PaMs and drivers behind GHG emission reductions are described in sections II.B.1 and II.B.2 above. Table 5 provides an overview of the total effect of PaMs as reported by Italy during the review.

82. Considering that Italy provided sufficient details on its PaMs in the NC5 and during the review, the ERT noted that Italy could present the quantitative estimates of the total effect of implemented and adopted PaMs on emissions in a more comprehensive and transparent manner in its NC5. The ERT therefore recommends that Italy present the information on the estimated total effect of PaMs and the effects by sector and by gas in its next national communication. The ERT also encourages Italy to provide a more clear definition of implemented, adopted and planned PaMs in order to justify the estimated effects of these PaMs.

Table 5
Projected effects of planned and adopted policies and measures in 2010 and 2020

Sector	*Effect of adopted measures (Tg CO_2 eq)*	*Relative value (% of 1990 emissions)*	*Effect of planned measures (Tg CO_2 eq)*	*Relative value(% of 1990 emissions)*	*Effect of adopted measures (Tg CO_2 eq)*	*Relative value (% of 1990 emissions)*	*Effect of planned measures (Tg CO_2 eq)*	*Relative value (% of 1990 emissions)*
	2010				*2020*			
Energy (without CO_2 from transport)	2.1	0.7	1.7	0.5	22.7	7.2	32.4	10.3
Transport – CO_2	0.2	0.2	0.0	0.0	7.2	6.9	10.0	9.6
Industrial processes	0.7	1.8	0.0	0.0	0.7	2.0	0.0	0.0
Agriculture	0.4	0.9	0.0	0.0	1.2	2.9	0.0	0.0
Waste management	0.0	0.0	0.0	0.0	0.0	0.0	1.7	9.5
Total	**3.3**	**0.6**	**1.7**	**0.3**	**31.8**	**6.1**	**44.0**	**8.5**

Abbreviation: NA = not available.

Source: Latest projections prepared in 2011 provided by Italy during in-depth review.

Note: The effects of implemented policies and measures (PaMs) and of PaMs in the non-energy sectors are not included due to a lack of information; the total effect of PaMs is defined as the sum of the effect of individual PaMs estimated by policy evaluation.

4. Supplementarity relating to mechanisms pursuant to Articles 6, 12 and 17

83. In its NC5, Italy provided information on how its use of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol is supplemental to domestic action. Supplementarity is defined in Italy's NC5 as the possibility of using Kyoto units (CERs and ERUs) to achieve up to 50 per cent of the GHG emissions reduction effort needed to meet the target for Italy of 6.5 per cent emission reduction (see para. 1). Italy explained in its NC5 that in defining supplementarity it took into account 50 per cent of the difference between the projected emissions and the Kyoto Protocol target, estimated in 2005. This difference was estimated at 90.3 Tg CO_2 eq, and 50 per cent of it amounts to 45.15 Tg CO_2 eq.

84. In accordance with the EU linking directive,[8] companies that are under the EU ETS can meet their emissions reduction target by reducing emissions and/or by acquiring

[8] Directive 2004/101/EC of the European Parliament and of the Council of 27 October 2004 amending

emission allowances from the market. The maximum amount of Kyoto units (CERs and ERUs) that can be used by companies under the ETS in the period 2008–2012 is 30.2 Tg CO_2 eq, which is 15 per cent[9] of their annual cap (201.6 Tg CO_2 eq). This leaves 14.9 Tg CO_2 eq of Kyoto units that can be used by the Government. The current investment by the Italian Government in CDM and JI projects is expected to deliver carbon credits of 3.4 Tg CO_2 eq/year for the period 2008–2012. Hence the further purchase of Kyoto units (CERs and ERUs) by the Government is limited up to 11.5 Tg CO_2 eq. per year. During the review, Italy explained that it plans to acquire further Kyoto units in order to meet its Kyoto Protocol targets. However, at the time of the review these plans have not yet been approved by the Italian Government. It remains unclear to the ERT how Italy will meet its Kyoto Protol target.

85. According to the information provided by the Party during the review, the Italian Government has contributed to "starting up" the market for CO_2 credits by allocating approximately USD 55 million for the development of JI and CDM projects. The credits expected from this investment amount to 3.4 Tg CO_2 eq/year from 2008 to 2012. The ERT encourages Italy to present the detailed information on the use of Kyoto Protocol mechanisms, including the amount of investment for each fund and the number of projects, in its next national communication.

D. Vulnerability assessment, climate change impacts and adaptation measures

86. In its NC5, Italy has provided the required information on the expected impacts of climate change in the country and an outline of the action taken to implement Article 4, paragraph 1(b) and (e), of the Convention with regard to adaptation. Table 6 summarizes the information on vulnerability and adaptation to climate change presented in the NC5.

Table 6
Summary of information on vulnerability and adaptation to climate change

Vulnerable area	*Examples/comments/adaptation measures reported*
Agriculture and food security	*Vulnerability*: Climate change is projected to have mainly negative impacts on the agriculture and food security sector. Among these are the possibility of generally decreased yields and increased variability of yields of most crops, especially in areas bordering the Mediterranean, due to increased and more extreme temperatures during critical phenological phases, drought and water availability, and pest damage. Wine production and olive plantations are also at risk. *Adaptation*: The implementation of the national irrigation plan and a rural development plan for improving water and soil management through measures such as forest restoration and the building of water-retaining stone walls.
Biodiversity and natural ecosystems	*Vulnerability*: Increasing temperatures and the increasing incidence and intensity of hydro-meteorological events have led to biodiversity loss in terrestrial, coastal, mountain and aquatic ecosystems. Several terrestrial species are at risk of extinction due to northward and upward shifts owing to increasing temperatures and changes in phenological phases. *Adaptation*: The establishment of a National Biodiversity Strategy, legislative frameworks for terrestrial and marine protected areas and the Life Plus

Directive 2003/87/EC establishing a scheme for greenhouse gas emission allowance trading within the Community, in respect of the Kyoto Protocol's project mechanisms.

[9] Approved JI/CDM Limit (per cent of allocation) according to the approved National Allocation Plan.

Vulnerable area	*Examples/comments/adaptation measures reported*
	Programme for new projects concerning biodiversity protection.
Coastal zones	*Vulnerability*: The morphology of coastal zones and significant anthropogenic pressures make them vulnerable to the impacts of climate change, in particular to relative sea level rise (SLR) and increased occurrence of storm surges that will lead to the increased incidence of flood risk, instability, coastal erosion and saline intrusions into coastal aquifers. *Adaptation*: The implementation of technical measures, such as hard defences and beach nourishment, behavioural strategies, such as changing the location of recreational facilities, managerial interventions, such as changing agricultural practices in areas prone to floods, and integrated coastal zone management (ICZM) strategies, including land-use planning and research.
Drought	*Vulnerability*: Climate change is expected to worsen the desertification trend, especially in the south of the country. Increased risk of soil degradation, further desertification and erosion is expected, and will be highest in areas also characterized by intensive land-use. *Adaptation*: The implementation of measures to combat drought and desertification, pilot projects and actions, such as water-saving technologies and slope stabilization, and pilot projects to combat drought for certain regions.
Coastal fisheries	*Vulnerability*: In the Mediterranean Sea, fish stock movements, including new invasive species, anthropogenic stresses caused by overfishing, pollution, fragmentation and loss of habitat, will all exacerbated by climate change and transboundary aquatic infections. *Adaptation*: The establishment of an Operational Programme for the period 2007–2013 on the sustainable management of fisheries.
Forests	*Vulnerability*: Expected effects on forests include northward and altitudinal range shifts, productivity changes with negative impacts in central-south Italy, the threat of drought; an increase in forest productivity in the Alps due to the expansion of the growing season; and a higher risk of forest fires, the most critical areas being the Alps, Sicily and Sardinia. *Adaptation*: The protection of forests from fires; a plan for natural parks and reserves; and technical and scientific support for forest management.
Human health	*Vulnerability*: Heat-related mortality and morbidity, a slight reduction in winter mortality, an increase in the risk of injuries, deaths and morbidity from floods and fires, allergic disorders, and an increase of vector-, water- and food-borne diseases. The most vulnerable will be the elderly, children and marginalized peoples. *Adaptation*: The prevention of and response to health effects from heat waves, the implementation of the National Heat Health Prevention Plan, and the dissemination of information and scientific research.
Infrastructure and economy	*Vulnerability*: Reduced hydropower production, less summer tourism and more expensive or reduced winter tourism, reduced fisheries productivity, the disruption of the transport network, the disruption of settlements and trade, and pressures to build infrastructure. *Adaptation*: Winter tourism adaptation includes artificial snow-making systems in Italian ski centres and the diversification of the tourism sector.
Water resources	*Vulnerability*: High stress on water resources will be exacerbated by climate changes, thus compromising the ability to mitigate extreme climate events and regenerate reservoirs. Effects include: reduced water availability, especially in summer, increased competition among different water users, and an increased risk of landslides. *Adaptation*: Water management and the management of water emergencies and crises, as well as drought control, irrigation and potable water plans, and networks integrating national and regional warning systems, and civil protection activities.

87. The focus of the NC5 is relatively balanced between vulnerability and adaptation. Information was provided on the macroeconomic impacts of climate change in Italy and covers four vulnerable areas: the Alps and glacier ecosystems; coastal zones; arid areas and areas threatened by desertification; and areas prone to floods and landslides. The ERT

noted that there is limited information on methodologies on vulnerability assessment and adaptation. During the review, Italy informed the ERT that detailed information on methodologies were provided in the NC4. The ERT encourages Italy to make a reference to these methodologies in its next national communication. The ERT further noted that the information on the non-climate drivers and on the social impacts of climate change and variability need to be elaborated in the next national communication.

88. Italy has undertaken actions to implement Article 4, paragraph 1, of the Convention in the area of adaptation. It has considered adaptation measures in key vulnerable areas based on a variety of strategies linked to adaptation such as environmental and health protection, natural hazard prevention and the sustainable management of natural resources.

89. Italy has supported a number of bilateral and multilateral cooperation projects with non-Annex I (NAI) Parties in preparing for adaptation. This includes cooperation on climate change with countries in Asia and the Middle East and with the Mediterranean region of Africa that focuses on sustainable development and water resources and coastal zone management. However, the ERT encourages Italy to enhance the transparency of its reporting, especially on methodologies and quantified results, in the chapter on vulnerability and adaptation in its next national communication.

E. Financial resources and transfer of technology, including information under Articles 10 and 11 of the Kyoto Protocol

1. Provision of financial resources, including "new and additional" resources and resources under Article 11 of the Kyoto Protocol

90. The information provided in the NC5 covers all of the issues on which information is required under the Convention and its Kyoto Protocol. To enhance transparency, the ERT encourages Italy to: report the exact amount of official development assistance (ODA) allocated for the years 2005–2008; provide relevant information on the separate financial contributions of the public sector as opposed to the private sector, pursuant to Article 4, paragraphs 3, 4 and 5, of the Convention; make a clear distinction between climate change financing and development financing, considering that the environment and climate change are essential to sustainable development; and provide a clearer picture of its contribution to the Adaptation Fund.

91. In its NC5, Italy provided details on measures taken to give effect to its commitments under Article 4, paragraphs 3, 4 and 5, of the Convention as required by the UNFCCC reporting guidelines and under Article 11 of the Kyoto Protocol, as required by the Guidelines for the preparation of information required under Article 7 of the Kyoto Protocol. Italy has indicated what "new and additional" financial resources it has provided pursuant to Article 4, paragraph 3, of the Convention, but has not fully clarified how it has determined such resources as being "new and additional".

92. During the review, Italy provided further clarifications on the definition of "new and additional" financial resources. According to Italy, the total contribution of the Ministry for the Environment, Land and Sea to climate change activities is new and additional as it is separate from ODA flows. For example, in 2008 its contribution amounted to EUR 55.6 million, of which EUR 12.9 million was spent on multilateral activities, while EUR 42.7 million was spent on bilateral activities. Italy further explained that it has committed these new and additional financial resources through a series of multilateral and bilateral agreements, especially with developing countries, and has focused on both climate change and adaptation issues.

93. Italy has also provided detailed information on the assistance it has made available to developing country Parties that are particularly vulnerable to the adverse effects of climate change to help them meet the costs of adaptation to those adverse effects. Furthermore, Italy has provided detailed information on a number of financial resources related to the implementation of the Convention provided through bilateral, regional and other multilateral channels. In particular, it has provided financial resources related to the implementation of the Convention through the Global Environment Facility (GEF) for the years 2006 –2008. Table 7 summarizes the information on financial resources.

Table 7
Summary of information on financial resources for 2005–2008

Channel of financial resources	*Years of disbursement (EUR million)*			
	2005	*2006*	*2007*	*2008*
Official development assistance (ODA)	NA	66.37	66.84	89.14
Climate-related aid in bilateral ODA	NA	158.9 (2006–2008)		
Climate-related support programmes (bilateral/regional)	NA	63.0	55.1	40.9
Contributions to GEF	NA	13.7	21.6	2.9
Ministry for the Environment, Land and Sea for climate change activities			59.5	55.6
Other (bilateral/multilateral) (USD million)	NA	137.8	224.86	1 030.19

Abbreviations: CDM = clean development mechanism, GEF = Global Environment Facility, JI = joint implementation, NA = not available.

94. Except for other bilateral (e.g. energy, water resources and coastal zones) and multilateral (e.g. the World Bank, the United Nations Development Programme) funding, the trends of the flows of financial resources through bilateral, regional and other channels declined, in some cases significantly, in the period 2007–2008, most likely due to the global economic crisis. The priority areas and countries to which the financial resources have been channelled are countries in Asia and the Middle East, the Mediterranean region of Africa, Central and Eastern European countries, Latin America and the Caribbean, and the Pacific Islands. There is very little change in the priority areas compared to the NC4.

95. As regards the most recent financial contributions, namely the 'Fast-Track Funding' that is meant to enhance the implementation of the Convention by developing countries, Italy committed itself to provide EUR 211.0 million in 2010, of which EUR 45.4 million was for multilateral funds, and EUR 165.6 million for bilateral funds. The priority sectors identified were adaptation and mitigation through renewable energy technologies (RETs) and the priority countries and regions are China, the Mediterranean, the Balkans, Iraq, the Pacific Islands and Mexico.

2. Activities related to transfer of technology, including information under Article 10 of the Kyoto Protocol

96. In its NC5, Italy has provided some details of measures related to the promotion, facilitation and financing of the transfer of, or access to, environmentally sound technologies (ESTs). However, the ERT noted that Italy did not provide the following reporting elements required by the UNFCCC reporting guidelines: precise information on the separation of measures undertaken by the public sector and those undertaken by the private sector in relation to the facilitation and financing of the transfer of ESTs; its activities related to technology transfer in developing countries; its activities for financing access by developing countries to 'hard' or 'soft' ESTs; and steps taken to promote, facilitate and finance transfer of technology so as to support the development and enhancement of the endogenous capacities and technologies of developing countries. The ERT recommends that Italy include this information in its next national communication.

97. The priorities for technology transfer with regard to mitigation are renewable energy technologies in Asia, South America and the Caribbean, the Mediterranean region of Africa and the Pacific Islands. For adaptation, the priorities focus on coastal zone and water resources management in South America, the Caribbean, the Mediterranean region of Africa and the Pacific Islands. Capacity-building initiatives focus on sustainable development and institutional strengthening.

98. During the review, Italy explained that it is difficult to collect information on the measures taken by the private sector to promote, facilitate and finance technology transfer. However, there have been a number of success stories on technology transfer in the public sector, especially with regard to renewable energy, such as biomass gasification and second-generation biofuel production.

F. Research and systematic observation

99. In its NC5, Italy has provided information on its actions relating to research and systematic observation (RSO), and addressed both domestic and international activities, including the Global Climate Observing System (GCOS). The NC5 also reflects action, though limited, taken to support related capacity-building in developing countries. Furthermore, Italy has provided a summary of information on GCOS activities. However, the ERT noted that Italy did not provide information on its contribution to the World Climate Programme and the International Geosphere–Biosphere Programme. The ERT recommends that Italy provide this information in its next national communication. Further, the ERT noted that there was a lack of information on Italy's policy relating to the funding of RSO as well as on opportunities for, and barriers to, the free and open international exchange of data and information. The ERT encourages Italy to improve and enhance the transparency of its reporting by including this information in its next national communication.

100. In its NC5, Italy has also presented a vast and impressive array of climate change research and observation activities at the regional level, within the EU, and globally. Italy is one of the most advanced countries with regard to its international and domestic actions relating to RSO activities, which include: climate modelling; climate change impact studies; research and development on mitigation and adaptation technologies; and support for developing countries to establish and maintain climate observation and monitoring systems.

101. Italy has undertaken actions to support technical research capacity-building in developing countries by means of national projects funded by bilateral agreements and EU-funded projects with Italian participation. Italy has, through projects run by the Strategic

Programme for Sustainable Development and Climate Change, conducted research and transferred a limited amount of research and development to a number of developing countries on climate change mitigation, and on impacts on ecosystems and society. Italy provided limited information in its NC5 on assistance to developing countries for the purpose of enabling their participation in research and development efforts.

102. In its NC5, Italy acknowledged its active participation in GCOS activities, such as the GCOS Surface Network (GSN), the GCOS Upper-Air Network (GUAN) and the Global Atmospheric Watch (GAW) programme. Also, the Ministry for the Environment, Land and Sea is actively involved in lending technical support for research and capacity-building activities.

G. Education, training and public awareness

103. In its NC5 and during the review, Italy provided comprehensive information on its activities related to education, training and public awareness at both the national and the international level. Compared with the NC4, Italy provided in the NC5 more extensive information on public access to information, public awareness campaigns, school programmes and training programmes that are administered and organized by different stakeholders (e.g. ministries, agencies, local authorities). Municipalities are key actors in the promotion and implementation of energy policies and have carried out important initiatives to raise public awareness of climate change issues in cooperation with regional administration and regional environmental agencies. Italy organized a series of national conferences on climate change and the environment, and has also established an international task force and national forum to provide education on climate change and the environment.

104. Among the initiatives undertaken by the Party on education and training, Italy established in 2008 the Doctorate School in Global Change Science and Policy that is a consortium of three Italian universities in collaboration with the Euro-Mediterranean Centre for Climate Change (CMCC). The School promotes advanced studies and PhD programmes on climate change impacts and policy and organizes advanced training and research activities. In addition to the higher education programme, Italy issued, in December 2009, the Guidelines for Environmental Education on Sustainable Development addressed to primary and secondary schools. The ERT encourages Italy to present the outcome of these guidelines in its next national communication.

105. To ensure the participation and inclusion of different stakeholder groups, some formal bodies have been set up to enable the participation of public and non-governmental organizations in the decision-making process. For example, the National Council for the Economy and Labour (CNEL) provides a mechanism for stakeholders to provide inputs into the policymaking process. The Inter-ministerial Committee for Community Affairs (CIACE) is a national focal point for the implementation of the EU Sustainable Development Strategy (EU SDS), and environmental and business NGOs can take part in ad hoc consultation meetings for specific items on agenda of their interests.

106. The ERT commends Italy for its extensive range of activities implemented in this area. However, the ERT encourages Italy to present, in its next national communication, information on public participation in the preparation and review of the national communication in a more structured and transparent manner.

H. Evaluation of supplementary information under Article 7, paragraph 2, of the Kyoto Protocol

107. Italy has provided all the supplementary information under Article 7, paragraph 2, of the Kyoto Protocol in its NC5. The supplementary information is placed in different sections of the NC5. Table 8 provides an overview of supplementary information under Article 7, paragraph 2, of the Kyoto Protocol as well as references to the NC5 chapters in which this information is provided. The technical assessment of this information is contained in the relevant sections of this report.

Table 8
Overview of supplementary information under Article 7, paragraph 2, of the Kyoto Protocol

Supplementary information	*Reference*
National registry	NC5, chapter 3.3
National system	NC5, chapters 1.2.4 and 3.2
Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	NC5, chapter 4.2
Policies and measures in accordance with Article 2	NC5, chapter 4.6
Domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures	NC5, chapter 4.2
Information under Article 10	NC5, chapters 1.6 and 7
Financial resources	NC5, chapters 1.6 and 7

I. Minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol

108. Italy reported the information requested in section I.H. of the annex to decision 15/CMP.1 on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol as a part of its 2010 annual submission. During the in-country review, Italy provided the ERT with the additional information on how it strives to implement its commitments under Article 3, paragraph 1, of the Kyoto Protocol in such a way as to minimize adverse social, environmental and economic impacts on developing country Parties, particularly those identified in Article 4, paragraphs 8 and 9, of the Convention. The ERT considers the reported information to be transparent and complete. The ERT commends the Party for its comprehensive, transparent and well-documented information on the minimization of adverse impacts and encourages it to continue exploring and reporting on the adverse impacts of the response measures.

109. The 2010 NIR and the additional information provided during the review presented several of the Party's initiatives aiming to minimize adverse impacts, including two EU policies (the directive on the promotion of the use of energy from renewable sources and the extension of the EU ETS to the aviation sector) that have been identified as having potential impacts on developing countries. The impacts have been identified through the EU wide-ranging impact assessment system introduced in 2005 and further enhanced in 2009. The impacts of Italian national policies on third countries are mostly indirect and very often cannot be attributed to a specific policy. It was reported that most of the national policies are aimed at the promotion of energy efficiency and a low-carbon energy system. The national policies are also subject to an impact assessment.

110. During the review, Italy presented additional information on its large portfolio of CDM projects implemented in developing countries that could potentially be directly impacted. Italy further informed the ERT that it has several national mechanisms in place to evaluate and monitor the impacts on developing countries and aid effectiveness, such as the Aid Effectiveness Action Plan and Guidelines for on-going and ex-post evaluation of official development assistance by the Ministry of Foreign Affairs and the monitoring of the CDM/JI projects through NCA.

III. Conclusions and recommendations

111. The ERT concludes that the NC5 generally provides a good overview of the national climate policy of Italy. The information provided in the NC5 includes most of the mandatory information required by the UNFCCC reporting guidance and all elements of the supplementary information under Article 7 of the Kyoto Protocol, with the exception of: summary tables on PaMs by sector for some of the sectors, such as agriculture and industrial processes; information on how Italy believes its PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals; the total effect of implemented and adopted PaMs; emission projections for related to fuel sold to ships and aircraft engaged in international transport; information on the distinction between activities undertaken by the public sector and those undertaken by the private sector; and activities for financing access by developing countries to 'hard' and 'soft' environmentally sound technologies. During the review, Italy provided additional information on the above elements. The ERT also concludes that information provided in the NC5 is broadly transparent. However, the ERT noted with great concern the delay in the submission of the NC5.

112. Italy's emissions for 2008 were estimated to be 4.7 per cent above its 1990 level excluding LULUCF and 0.4 per cent above including LULUCF. Emissions increases were driven by population growth, overall economic activity and growing energy demand, and transportation flow and associated growth in fuel consumption. GHG emissions levels have been affected recently by the economic crisis that also affected Italy and associated drop in energy demand.

113. In its NC5, Italy presents GHG projections for the period 1990–2020. Two scenarios are included: a 'with measures' scenario, which includes all measures implemented and adopted up to 2008 (without the EU ETS), and an 'updated 2009 with measures' scenario, which incorporates the effects of the ongoing global economic downturn. The GHG emissions under the 'with measures' scenario are projected to increase by 4.8 per cent in 2010 in relation to the base year level, while the GHG emissions under the 'updated 2009 with measures' scenario are projected to decrease by 0.4 per cent in 2010 compared to the base year level. Thus, the projections indicate that Italy cannot meet its Kyoto Protocol target (which is a 6.5 per cent emissions reduction), even under the 'updated 2009 with measures' scenario. This implies that additional PaMs and the use of Kyoto Protocol flexibility mechanisms are essential for Italy to meet its Kyoto Protocol target.

114. The NC5 contains information on how Italy's use of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol is supplemental to domestic action. Based on the threshold value used by Italy to define supplementarity, the maximum amount of carbon credits that can be used by the Italian Government is estimated at 14.9 Tg CO_2 eq. The current investment by the Italian Government in CDM and JI projects is expected to deliver carbon credits of 3.4 Tg CO_2 eq/year for the period 2008–2012. The further purchase of CERs and ERUs has not yet been approved by the Government at the time of the review. It remains unclear to the ERT how Italy will achieve its Kyoto Protocol target.

115. Italy has reported that the National Climate Change Strategy is a key policy document aimed at defining the climate change policy framework and identifying climate change mitigation as a sustainable development priority, including the measures required to meet the Kyoto Protocol target. The most important cross-cutting policy in achieving the Kyoto Protocol target in Italy is the EU ETS, which covers about 40 per cent of total national GHG emissions. The other key areas of policy intervention include the development of renewables and the promotion of energy efficiency. Italy has promoted the development of renewables through the green certificates system and the enhancement of energy efficiency through the WhCs system. These are the PaMs with the greatest impact on GHG emission reductions. The longer-term national target in Italy involves a 13 per cent reduction in GHG emissions in the sectors not covered by the EU-ETS, including transport, housing, agriculture and waste sector by 2020 compared with the 2005 level by 2020. To achieve these targets, Italy adopted the National Renewables Action Plan (to achieve a 17 per cent share of renewables in gross final energy consumption by 2020) and the National Energy Efficiency Action Plan (to achieve 9 per cent of energy savings by 2016) that are based on a set of policies in the energy sector. Currently, Italy is in the process of revising its climate change strategy, which will enhance the existing PaMs targeted at reaching the Kyoto Protocol and EU targets.

116. In its NC5, Italy indicated that the total contribution of the Italian Ministry for the Environment, Land and Sea for climate change activities is new and additional as it is separate from the ODA flows. During the review, Italy provided further information on its contribution to the 'Fast-Track Funding', which totalled EUR 211.0 million in 2010. The priorities for technology transfer with regard to mitigation are renewable energy technologies in Asia, South America and the Caribbean, the Mediterranean region of Africa and the Pacific Islands. Capacity-building initiatives focus on sustainable development and institutional strengthening in a number of developing countries.

117. The ERT concluded that the NC5 contains sufficient information on vulnerability assessment and adaptation measures. According to Italy, there are four main vulnerable areas: the Alps and glacier ecosystems; coastal zones; arid areas and areas threatened by desertification; and areas prone to floods and landslides. Italy has considered adaptation measures in key vulnerable areas based on a variety of strategies linked to adaptation such as environmental and health protection, natural hazard prevention and the sustainable management of natural resources.

118. The ERT noted and commended the steps taken by Italy in furthering education, training and public awareness on matters related to climate change. However, the ERT noted that information on public participation in the preparation and domestic review of the national communication should be presented in a more structured and transparent manner. Italy has provided information on actions relating to RSO with regard to climate change, and has addressed both domestic and international activities, including GCOS. However, the ERT noted a lack of information in the NC5 on Italy's policy relating to the funding of RSO as well as on opportunities for, and barriers to, the free and open international exchange of data and information.

119. The ERT concluded that Italy's national system continues to perform its required functions as set out in decision 19/CMP.1; that the national registry continues to perform the functions set out in decision 13/CMP.1 and decision 5/CMP.1, and continues to adhere to the technical standards for data exchange between registry systems in accordance with relevant CMP decisions. The ERT noted that updates of databases and applications, implemented security measures and changes to the national registry software are documented on a regular basis by nominated responsible persons.

120. Supplementary information under Article 7, paragraph 1, of the Kyoto Protocol on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the

Kyoto Protocol provided by the Party in its 2009 and 2010 annual submissions is complete and transparent. The ERT encourages Italy to further enhance the reporting on Article 3, paragraph 14, including by indicating how it integrates the results and recommendations of the ex-ante and ex-post impact assessments of its policies and projects into its ongoing policy planning and project development cycle and by providing information on the prioritization of the action taken in implementing its commitments under Article 3.

121. In the course of the IDR, the ERT formulated several recommendations relating to the completeness and transparency of Italy's reporting under the Convention and its Kyoto Protocol. The key recommendations[10] are that Italy:

(a) Improve the completeness of its reporting by including in the next national communication the following information:

(i) Summary tables on PaMs by sector for some of the sectors, such as agriculture and industrial processes, that were missing in the NC5;

(ii) How Italy believes its PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals;

(iii) The total effect of implemented and adopted PaMs;

(iv) Emission projections related to fuels sold to ships and aircrafts for international transport;

(v) The distinction between activities undertaken by the public sector and those undertaken by the private sector on technology transfer;

(vi) Activities for financing access by developing countries to 'hard' and 'soft' environmentally sound technologies.

(b) Improve the transparency of reporting by:

(i) Providing more details on PaMs in the summary table subdivided by gas and by sector;

(ii) Providing additional information on supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17;

(iii) Clarifying how it believes the financial resources are "new and additional";

(iv) Reflecting actions taken to support RSO-related capacity-building activities in developing countries.

122. The ERT encourages Italy to undertake a number of improvements regarding the transparency and completeness of its reporting; the most important of these are that the Party:

(a) Provide information on the PaMs that could potentially increase its GHG emissions;

(b) Provide information on the costs of PaMs and the non-GHG mitigation benefits of PaMs;

(c) Explain how PaMs interact with each other at the national level and explain the synergies and overlaps among PaMs at the national and regional level;

(d) Elaborate on the PaMs that are no longer in place;

(e) Provide the "with additional measures" scenario in GHG projections;

[10] The recommendations are given in full in the relevant sections of this report.

(f) Provide more detailed information on methodologies and quantified results with regard to vulnerability assessment and adaptation measures.

IV. Questions of implementation

123. During the review the ERT assessed the NC5, including supplementary information provided under Article 7, paragraph 2, of the Kyoto Protocol and reviewed information on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol, with regard to timeliness, completeness and transparency. No questions of implementation was raised by the ERT during the review.

Annex

Documents and information used during the review

A. Reference documents

"Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications". FCCC/CP/1999/7. Available at <http://unfccc.int/resource/docs/cop5/07.pdf>.

"Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories". FCCC/CP/1999/7. Available at <http://unfccc.int/resource/docs/cop5/07.pdf>.

"Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol". Decision 15/CMP.1. Available at <http://unfccc.int/resource/docs/2005/cmp1/eng/08a02.pdf#page=54>.

"Guidelines for review under Article 8 of the Kyoto Protocol". Decision 22/CMP.1. Available at <http://unfccc.int/resource/docs/2005/cmp1/eng/08a03.pdf#page=51>.

FCCC/SBI/2007/INF.6. Compilation and synthesis of fourth national communications. Available at <http://unfccc.int/resource/docs/2007/sbi/eng/inf06.pdf>.

FCCC/SBI/2007/INF.6/Add.1. Compilation and synthesis of NC4s, Add.1: Policies, measures, past and projected future greenhouse gas emission trends of Parties included in Annex I to the Convention. Available at <http://unfccc.int/resource/docs/2007/sbi/eng/inf06a01.pdf>.

FCCC/SBI/2007/INF.6/Add.2. Compilation and synthesis of NC4s, Add.2: Financial resources, technology transfer, vulnerability, adaptation and other issues relating to the implementation of the Convention by Parties included in Annex I to the Convention. Available at <http://unfccc.int/resource/docs/2007/sbi/eng/inf06a02.pdf>.

FCCC/SBI/2007/INF.7. Compilation and synthesis of supplementary information incorporated in fourth national communications submitted in accordance with Article 7, paragraph 2, of the Kyoto Protocol. Available at <http://unfccc.int/resource/docs/2007/sbi/eng/inf07.pdf>.

FCCC/ARR/2009/ITA. Report of the individual review of the greenhouse gas inventory of Italy submitted in 2009. Available at <http://unfccc.int/resource/docs/2010/arr/ita.pdf>.

FCCC/IRR/2007/ITA. Report of the review of the initial report of the Italy Available at <http://unfccc.int/resource/docs/2007/irr/ita.pdf>.

FCCC/IDR.4/ITA. Report on the in-depth review of the fourth national communication of Italy. Available at <http://unfccc.int/resource/docs/2009/idr/ita04.pdf>.

Fourth national communication of Italy. Available at <http ://unfccc.int/resource /docs/natc/itanc4.pdf>.

2009 greenhouse gas inventory submission of Italy. Available at <http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/4771.php>.

2010 greenhouse gas inventory submission of Italy. Available at <http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/5270.php>.

B. Additional information provided by the Party

Responses to questions during the review were received from Mr. Corrado Clini and Ms. Mara Angeloni (Ministry for the Environment, Land and Sea), including additional material on updated policies and measures, GHG projections, the national registry and recent climate policy developments in Italy. The following documents[1] were also provided by Italy:

[1] Reproduced as received from the Party.