



COMPLIANCE COMMITTEE

**CC/ERT/2009/1
31 August 2009**

**Report of the centralized in-depth review of the fourth national
communication of Italy**

Note by the secretariat

The report of the centralized in-depth review of the national communication of Italy was published on 28 August 2009. For purposes of rule 10, paragraph 2, of the rules of procedure of the Compliance Committee (annex to decision 4/CMP.2, as amended by decision 4/CMP.4), the report is considered received by the secretariat on the same date. This report, FCCC/IDR.4/ITA, contained in the annex to this note, is being forwarded to the Compliance Committee in accordance with section VI, paragraph 3, of the annex to decision 27/CMP.1.



**UNITED
NATIONS**



**Framework Convention
on Climate Change**

Distr.
GENERAL

FCCC/IDR.4/ITA
28 August 2009

ENGLISH ONLY

**Report of the centralized in-depth review of
the fourth national communication of Italy**

According to decision 4/CP.8, Parties included in Annex I to the Convention are requested to submit to the secretariat, in accordance with Article 12, paragraphs 1 and 2, of the Convention, a fourth national communication by 1 January 2006. This report presents the results of the in-depth review of the fourth national communication of Italy conducted by an expert review team in accordance with relevant provisions of the Convention and Article 8 of the Kyoto Protocol.

CONTENTS

	<i>Paragraphs</i>	<i>Page</i>
I. INTRODUCTION AND SUMMARY	1–8	3
A. Introduction.....	1–4	3
B. Summary	5–8	3
II. TECHNICAL ASSESSMENT OF THE REVIEWED ELEMENTS..	9–68	4
A. National circumstances relevant to greenhouse gas emissions and removals	9–13	4
B. Policies and measures	14–40	6
C. Projections and the total effect of policies and measures.....	41–51	11
D. Vulnerability assessment, climate change impacts and adaptation measures	52–53	14
E. Financial resources and transfer of technology	54–60	16
F. Research and systematic observation	61–62	17
G. Education, training and public awareness	63–68	17
III. EVALUATION OF INFORMATION CONTAINED IN THE REPORT DEMONSTRATING PROGRESS AND OF SUPPLEMENTARY INFORMATION UNDER ARTICLE 7, PARAGRAPH 2, OF THE KYOTO PROTOCOL	69–74	18
A. Information contained in the report demonstrating progress..	69–71	18
B. Supplementary information under Article 7, paragraph 2, of the Kyoto Protocol	72–74	19
IV. CONCLUSIONS.....	75–79	20
<u>Annex</u>		
Documents and information used during the review		22

I. Introduction and summary

A. Introduction

1. Italy has been a Party to the Convention since 1994 and to its Kyoto Protocol since 2002. 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 in relation to the 1990 level during the first commitment period from 2008 to 2012.

2. This report covers the centralized in-depth review (IDR) of the fourth national communication (NC4) of Italy, coordinated by the UNFCCC secretariat, in accordance with decision 7/CP.11. The review took place from 11 to 16 May 2009 in Bonn, Germany, and was conducted by the following team of nominated experts from the UNFCCC roster of experts: Ms. Amrita Narayan Achanta (India); Mr. Matjaz Cesen (Slovenia); Mr. Gebru J. Endalew (Ethiopia); Mr. Eric De Brabanter (Luxembourg); Ms. Svetlana Dolgikh (Kazakhstan); Ms. Agnieszka Janowska (European Community); Ms. Diana Harutyunyan (Armenia); Ms. Asta Mikalauskiene (Lithuania); Ms. Valia Peeva (Energy Charter); and Mr. Janis Rekis (Latvia). Ms. Achanta and Ms. Peeva were the lead reviewers. The review was coordinated by Ms. Ruta Bubniene (UNFCCC secretariat).

3. During the IDR, the expert review team (ERT) examined each part of the NC4. The ERT also evaluated the information contained in Italy's report demonstrating progress (RDP) in achieving its commitments under the Kyoto Protocol, and the supplementary information provided by Italy under Article 7, paragraph 2, of the Kyoto Protocol.

4. In accordance with the guidelines for review under Article 8 of the Kyoto Protocol (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, in this final version of the report.

B. Summary

5. The ERT noted that Italy's NC4 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), with minor deviation in the headings used on the contents page. However, the presentation of information required by the guidelines could be improved upon. As required by decisions 22/CP.7 and 25/CP.8, the RDP provides clear and detailed information on the progress made by Italy in achieving its commitments under the Kyoto Protocol. Italy included an executive summary in the NC4, but did not provide any references to relevant additional background information. Supplementary information required under Article 7, paragraph 2, of the Kyoto Protocol¹ is provided in both the NC4 and the RDP. The ERT commended Italy for its coherent and consistent reporting.

1. Completeness

6. The ERT noted that the NC4 covers all of the sections required by the UNFCCC reporting guidelines and that Italy has provided the supplementary information required under Article 7, paragraph 2, of the Kyoto Protocol. However, the Party informed the ERT that because the NC4 was prepared prior to the conclusion of the review of the Government's national climate change strategy, the information

¹ Decision 15/CMP.1, annex, chapter II.

contained in the NC4 (in particular on policies and measures (PaMs)) is not necessarily consistent with the current climate change strategy.

2. Timeliness

7. The NC4 was first submitted on 29 November 2007. It was revised, and resubmitted on 12 June 2008. The RDP was submitted on 11 November 2006. Decision 4/CP.8 requested Parties to submit their NC4 by 1 January 2006; decision 22/CP.7 set the same date for Parties to submit their RDP.

3. Transparency

8. The ERT acknowledged that Italy's NC4 is well structured and provides reasonably clear information on all required aspects of implementation, with the exception of projections. During the review, the ERT formulated a number of recommendations that could help Italy to further increase the transparency of its reporting. These include a recommendation that Italy present in its next national communication in tabular form the estimated and expected total effect of all implemented and adopted measures and, separately, of planned PaMs, in terms of GHG emissions avoided or sequestered, by gas (on a carbon dioxide equivalent (CO₂ eq) basis), for the years 1995, 2000, 2005, 2010, 2015 and 2020. The ERT also encourages Italy to clearly separate the effects of domestic measures from the effects of Kyoto mechanisms and those of land use, land-use change and forestry (LULUCF) activities. Italy may also wish to report on funds established under the Bonn Political Declaration which are considered 'new and additional' with regard to 2001 contribution levels and to address the gaps in information in the financial resources section, particularly on pledged contributions to key funds.

II. Technical assessment of the reviewed elements

A. National circumstances relevant to greenhouse gas emissions and removals

9. In its NC4, Italy has provided a description of its national circumstances as well as an analysis of regional energy use and energy policies. The ERT noted that, in general, national circumstances are very well described, including a detailed analysis of how national circumstances and changes thereto have affected GHG emissions and removals in the transport and forestry sectors. However, for other sectors, the ERT is of the view that the interaction between national circumstances and GHG emissions should be better reflected in the text, as required by the UNFCCC reporting guidelines.

10. The ERT noted that the main drivers of the CO₂ emission trend are overall economic activity in the reported sectors, transportation flows and associated fuel consumption. For methane (CH₄), the main drivers of the emission trend are higher emissions from solid waste disposal sites and lower emissions stemming from agricultural activities; for nitrous oxide (N₂O), lower emissions from agricultural soils and animal waste management systems have been counterbalanced by rising emissions from energy combustion, especially in the transport sector. The emission trends for fluorinated gases (F-gases) presented in the NC4 reveal that emissions of hydrofluorocarbons (HFCs) have increased sharply since 1997 and that perfluorocarbon (PFC) emissions were reduced by a factor of 7 in the first half of the 1990s. No clear trend for sulphur hexafluoride (SF₆) could be observed. 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	2007	Change 1990–2000 (%)	Change 2000–2007 (%)	Change 1990–2007 (%)
Population (million)	56.72	56.84	56.94	58.77	0.4	3.2	3.6
GDP (2000 USD billion using PPP)	1 243.55	1 324.64	1 455.77	1 557.40	17.1	7.0	25.2
TPES (Mtoe)	148.07	161.09	173.28	186.79	17.0	7.8	26.1
GDP per capita (2000 USD thousand using PPP)	21.92	23.30	25.57	26.50	16.6	3.6	20.9
TPES per capita (toe)	2.61	2.83	3.04	3.18	16.6	4.4	21.7
GHG emissions without LULUCF (Tg CO ₂ eq)	516.32	529.69	549.51	552.77	6.4	0.6	7.1
GHG emissions with LULUCF (Tg CO ₂ eq)	448.83	444.10	470.28	481.86	4.8	2.5	7.4
CO ₂ emissions per capita (Mg)	7.66	7.84	8.13	8.09	6.0	-0.5	5.5
CO ₂ emissions per GDP unit (kg per 2000 USD using PPP)	0.35	0.34	0.32	0.31	-9.1	-4.0	-12.7
GHG emissions per capita (Mg CO ₂ eq)	9.10	9.32	9.65	9.41	6.0	-2.5	3.3
GHG emissions per GDP unit (kg CO ₂ eq per 2000 USD using PPP)	0.42	0.40	0.38	0.35	-9.1	-6.0	-14.5

Data sources: (1) GHG emissions data: Italy's 2009 greenhouse gas inventory submission; (2) Population, GDP and TPES data: International Energy Agency.

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.

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.

11. In the NC4, Italy has provided a summary of information on GHG emission trends for the period 1990–2005. This information is consistent with the 2007 GHG inventory submission and the most recent 2009 GHG inventory submission. When comparing NC4 and the 2009 GHG inventory submission, the two sources report a similar trend in total GHG emissions, excluding LULUCF, between 1990 and 2005: the NC4 reports an increase of 12.1 per cent and the 2009 inventory reports a net increase of 11.1 per cent. The estimates for total GHG emissions excluding LULUCF are slightly lower in the 2009 inventory than in the NC4 (0.1 per cent lower for 1990 and 1.0 per cent lower for 2005), while the estimates for total GHG emissions including LULUCF are higher (2.7 per cent higher for 1990 and 1.9 per cent higher for 2005). This difference is explained by major recalculations of the CO₂ and N₂O emission estimates for the NC4. By sector, these recalculations affected the estimates for energy-related emissions and emissions from industrial processes, which are both slightly lower in the 2009 inventory submission than in the NC4. But the major recalculation was made in the LULUCF sector: in the 2009 inventory submission, LULUCF removals are estimated to be between 15 and 20 per cent lower (in CO₂ eq) than in the NC4.

12. The analysis of the 2009 inventory submission suggests that total GHG emissions including net emissions and removals from LULUCF increased by 7.4 per cent between 1990 and 2007, while total GHG emissions excluding net emissions or removals from LULUCF increased by 7.1 per cent (see table 2). This was mainly attributed to the 9.3 per cent growth in CO₂ emissions over this period (excluding LULUCF). Emissions of CH₄ and N₂O decreased during this time: by 8.4 per cent for CH₄ and by 14.8 per cent for N₂O (excluding LULUCF). Within the same period, CO₂ emissions decreased between 1990 and 1994 and increased thereafter up to 2002. Since that year, CO₂ emissions have levelled off and even started to decrease in 2007. CH₄ emissions increased up to 1997 and then decreased sharply between 2000 and 2006, whereas total N₂O emissions remained stable up to 2004 and then began to fall when N₂O emissions from industrial processes were cut by a factor of 3. Emissions of F-gases increased significantly from 1996 onwards, such that their share in total GHG emissions (excluding LULUCF) grew from 0.5 per cent in 1990 to 1.3 per cent in 2007. Table 2 provides an overview of GHG emissions by sector from 1990 to 2007 (see also discussion of sectoral trends in chapter II B).

Table 2. Greenhouse gas emissions by sector in Italy, 1990–2007

	GHG emissions (Tg CO ₂ eq)					Change (%)		Shares ^a by sector (%)		
	1990	1995	2000	2005	2006	2007	1990–2007	2006–2007	1990	2007
1. Energy	418.95	431.96	450.72	474.51	469.59	458.67	9.5	-2.3	81.1	83.0
A1. Energy industries	134.79	138.66	147.55	160.03	159.89	158.55	17.6	-0.8	26.1	28.7
A2. Manufacturing industries and construction	90.61	89.50	89.70	83.42	83.80	80.55	-11.1	-3.9	17.5	14.6
A3. Transport	103.28	114.24	122.95	127.80	129.18	129.19	25.1	0.0	20.0	23.4
A4.–A5. Other	79.51	79.49	81.51	95.42	89.34	83.14	4.6	-6.9	15.4	15.0
B. Fugitive emissions	10.76	10.06	9.01	7.84	7.38	7.25	-32.7	-1.8	2.1	1.3
2. Industrial processes	36.47	34.53	34.90	40.37	35.92	36.30	-0.5	1.1	7.1	6.6
3. Solvent and other product use	2.39	2.18	2.28	2.14	2.15	2.13	-10.9	-0.6	0.5	0.4
4. Agriculture	40.58	40.35	39.94	37.24	36.63	37.21	-8.3	1.6	7.9	6.7
5. LULUCF	-67.49	-85.59	-79.23	-95.34	-89.80	-70.91	5.1	-21.0	-13.1	-12.8
6. Waste	17.94	20.67	21.66	19.43	18.71	18.46	2.9	-1.3	3.5	3.3
7. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
GHG total with LULUCF	448.83	444.10	470.28	478.35	473.18	481.86	7.4	1.8	86.9	87.2
GHG total without LULUCF	516.32	529.69	549.51	573.68	562.98	552.77	7.1	-1.8	100.0	100.0

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

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.

^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.

13. Findings of the ERT on the basis of the 2009 inventory with regard to emission trends by gas and by sector confirm Italy's assessment of its emission trends in the NC4. The ERT encourages Italy, however, to provide greater explanation in its next national communication of the link between national circumstances and emission trends in the industrial processes, agriculture, waste, and energy (except transport) sectors, and to provide in particular a more in-depth analysis of how recent socio-economic and demographic trends have affected GHG emissions.

B. Policies and measures

14. As required by the UNFCCC reporting guidelines, Italy has provided in its NC4 an account of its package of PaMs implemented, adopted and planned in order to fulfil its commitments under the Convention and its Kyoto Protocol. In response to a request made by the ERT during the review, the Party provided updated information on PaMs in the form of the *2009 Italy Climate Policy Progress Report*, submitted to the European Commission pursuant to decision 280/2004/EC (hereinafter referred to as the Climate Policy Progress Report). In the NC4, each sector has its own textual description of the principal PaMs, including: type; objectives; the GHG affected; status of implementation; and the implementing entity or entities. The ERT noted that Italy focuses on PaMs in the energy sector, especially PaMs involved in promotion of energy efficiency, use of renewable energy sources (RES), and cogeneration. The descriptions are supplemented by summary tables on PaMs by sector.

15. Although this information is reasonably comprehensive, it is not presented in a very transparent way. The description of the type of PaMs lacks detail; in particular, when the term "regulatory" is used it is not clear whether this refers to a subsidy, a fiscal measure or some other legal instrument. The ERT noted that the list of GHGs affected by each of the PaMs presented is sometimes inconsistent, and very often limited to CO₂, when other GHGs might also be mitigated.

16. Italy has also provided information 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 NC4 includes estimated effects of PaMs for 2010, 2015 and 2020, expressed in Mt of avoided CO₂.

These amount to 23.94 Mt CO₂ eq in 2010 (excluding the European Union emissions trading scheme (EU ETS), forestry, and joint implementation and the clean development mechanism (JI and CDM)), 82.30 Mt CO₂ eq in 2015 and 112.09 Mt CO₂ eq in 2020. The ERT noted that the information included in the NC4 is more up to date than equivalent data in the RDP. In addition, the Climate Policy Progress Report contains updated and expanded information on PaMs and further updated estimates of their effects in 2010, 2015 and 2020.

Table 3. Summary of information on policies and measures

Major policies and measures	Examples/comments
Framework policies and cross-sectoral measures	
Integrated climate programme	National climate change strategy (comprising the revised guidelines for national policies and measures for reduction of greenhouse gas (GHG) emissions, 2002, and the National Action Plan 2003–2010)
White certificates scheme	Promotion of energy efficiency with emission reduction target until 2012
Emissions trading	European Union emissions trading scheme (implemented for 2005–2007 and 2008–2012)
Flexible mechanisms	Use of credits from joint implementation and the clean development mechanism
Other	Budget law 2007 – economic resources to support implementation of emission reduction policies and measures
Policies and measures by sector	
Energy	
Combined heat and power generation	Regulatory instruments on renewable energy source (RES) cogeneration and white certificates; cogeneration through implementation of the white certificates scheme (1.65 Mt CO ₂)
Renewable energy sources	Green certificates system; production of photovoltaic electricity covered by feed-in tariffs (0.58 Mt CO ₂ eq); new regulatory supporting system for RES (6.20 Mt CO ₂ eq); RES thermal (866 Mt CO ₂ eq) ^a
Energy efficiency improvements	Improvement in energy efficiency of electric power plants (includes conversion of 9 400 MW from fuel oil capacity to modern combined cycle gas turbine, simplifying and speeding up the authorization process for the construction and operation of new power plants and infrastructure); white certificates on energy savings (640 Mt CO ₂ eq) ^a ; replacement of low-efficiency motors and inverters; improvement in energy efficiency of buildings through implementation of the budget law (2.64 Mt CO ₂)
Transport	
Integrated transport planning	Fleet update (2.96 Mt CO ₂); new infrastructure in public transport; infrastructural measures (1 800 Gg CO ₂ eq) ^a ; intermodal measures in public transport; improvement of road circulation in urban areas
Biofuels	Promotion of the use of biofuels (2.39 Mt CO ₂ eq, estimated effect of implemented measures only)
Industrial processes	
	Installation of advanced technology (selective catalytic reduction) for the nitric acid production plants (1.4 Mt CO ₂); energy efficiency standards for equipment (1 525 Gg CO ₂ eq in 2015) ^a ; reducing GHGs from aluminium production (0.6 Mt CO ₂ eq); reducing CO ₂ emissions through substitution of fossil fuels with waste in cement production (0.4 Mt CO ₂ eq)
Agriculture	
	Rationalization in the use of nitrogen fertilizer (0.18 Mt CO ₂); recovery of biogas from animal storage systems (0.32 Mt CO ₂)
Forestry	
	Forest management (10.2 Mt CO ₂ eq); afforestation and reforestation, and induced recolonization (15.1 Mt CO ₂ eq)
Waste management	
	Compliance with targets for separating waste collection and reducing disposal of biodegradable waste in landfills (1.80 Mt CO ₂ eq); treatment of all biodegradable waste prior to landfill (4.6 Mt CO ₂ eq in 2015)

Note: The greenhouse gas reduction estimates, given for some measures (in parentheses), are reductions in CO₂ or CO₂ eq for the year 2010 unless otherwise stated.

^a Data from the 2009 *Italy Climate Policy Progress Report*, submitted to the European Commission pursuant to decision 280/2004/EC.

17. The ERT recommends that Italy provide more comprehensive, transparent and better organized information for each PaM in its next national communication, including an improved structure for the categories and subcategories. The ERT also suggests that sections on the waste, industrial processes and agriculture sectors be expanded upon. It noted that Italy did not provide information on the mitigation impact of most of the implemented PaMs and recommends that Italy report on the mitigation impact of all implemented, adopted and planned PaMs in future.

18. The ERT also noted that the distinction between implemented, adopted and planned PaMs is made between implemented PaMs on the one hand, and planned and adopted PaMs on the other. Another shortcoming is the absence of exact references for legal acts and texts referred to in the NC4. Therefore, the ERT encourages Italy to provide more detailed references and descriptive information regarding PaMs and their mitigation potentials in its next national communication. Table 3 provides a summary of the reported information on the PaMs of Italy.

1. Policy framework and cross-sectoral measures

19. The national Government in Italy is responsible for most climate change matters and has overall responsibility for the implementation of the Kyoto Protocol, although some policies in energy planning, for example, are designed and implemented by the regions, provinces and municipalities. At the central level, the Ministry for the Environment, Land and Sea is responsible for overall climate policy coordination. The Italian National Agency for New Technologies, Energy and Environment is also responsible for implementation of some PaMs. Monitoring and evaluation of progress in climate-related PaMs is carried out by an Inter-ministerial Technical Committee for Greenhouse Gas Emissions (CTE), chaired by the Ministry for the Environment, Land and Sea. The CTE includes representatives from the regions and the Ministries for Economic Development; Agricultural and Forestry Policies; Infrastructure and Transport; University and Research; and Foreign Affairs.

20. Italy has developed revised guidelines for national PaMs for GHG emission reduction, which were approved in 2002 along with the National Action Plan 2003–2010. These serve as the basis for Italian climate policy. The ERT learned during the review that a review of these documents is under way. As an EU member State, Italy provided information on PaMs that are common to all members, both in the NC4 and during the review. This included information on the implementation of the EU ETS for the first phase (2005–2007) and second phase (2008–2012). The ERT noted that, according to the Climate Policy Progress Report, GHG emissions from the installations covered by the EU ETS for the second period are limited to 201 Mt CO₂ eq and the mitigation impact of Italy's participation in the EU ETS is estimated at 32.1 Mt CO₂ eq in 2010.

21. Italy's climate policy framework also includes: the white certificate system, aimed at promoting energy efficiency and delivering emission reductions in all energy end-use sectors with an energy saving target of 2.9 Mtoe per year by 2009; use of the Kyoto flexible mechanisms, whose contribution was assessed in the NC4 at 20 Mt CO₂ eq/year for 2008–2012; and the budget law 2007, which provides economic resources to implement PaMs in areas such as cogeneration, energy efficiency, RES, district heating and cooling.

22. Italy plans to gain JI and CDM credits mainly by purchasing credits. It therefore participates in the World Bank's Community Development Carbon Fund and in the BioCarbon Fund. It also signed an agreement with the World Bank to establish an Italian Carbon Fund in 2003. The ERT noted that according to Italy's estimates in the NC4, the economic resources already transferred to the World Bank would allow the purchase of about 3.42 Mt CO₂/year in JI and CDM credits.

23. The ERT noted that using domestic PaMs alone will be insufficient for Italy to meet its Kyoto target, requiring Italy to also use credits from the flexible mechanisms. However, the planned use of flexible mechanisms reported in the NC4 will not be sufficient to fill the gap between the projected emission levels and the Kyoto target. Therefore, additional measures would be required. According to the NC4, the additional measures are under investigation by the competent institutions and they will be included in the national climate change strategy, which was undergoing revision at the time of the NC4 preparation. The ERT recommends that Italy report on these additional PaMs in its next national communication.

24. The ERT noted that the Climate Policy Progress Report includes information on the options for the additional measures necessary to meet the Kyoto target, such as: implementation of additional PaMs currently only identified; improvement of efficiency in final use of electricity; management of carbon sinks; and further purchase of certified emission reduction units and emission reduction units.

25. The ERT suggests that in the future Italy provide more detailed information on the way in which progress in PaMs to mitigate GHG emissions is monitored and evaluated, including more information on institutional arrangements in place for this.

2. Policies and measures in the energy sector

26. Italy is characterized by dependency on natural gas and fuel oil, which have direct price linkage to crude oil prices. Additionally, Italy is highly dependent on electricity imports, with about 16 per cent of its total final electricity consumption coming from abroad. Between 1990 and 2007, GHG emissions from the energy sector increased by 9.48 per cent and GHG emissions from energy industries increased by 17.6 per cent. Within fuel combustion, there were notable increases in transport (25.1 per cent) and some increased energy use in other sectors (4.6 per cent). Drivers for the trend in transport include an increase in mobility since 1990, namely through growth in private car use (levels of public transport and railroad transport use remained stable). The total car and vehicle fleet for road transport increased by 36 per cent between 1990 and 2005. The demand for mobility in terms of passenger-kilometres is very high in Italy: 29 per cent higher than the European average.

27. **Energy supply.** A number of measures were implemented (mitigation impact: 0.58 Mt CO₂ in 2010), adopted and planned (joint mitigation impact: 7.94 Mt CO₂ eq in 2010) in the energy supply sector, including promotion of RES, cogeneration and energy efficiency.

28. **Energy demand.** Measures implemented (mitigation impact: 2.64 Mt CO₂ in 2010), adopted and planned (joint mitigation impact: 3.74 Mt CO₂ in 2010) in energy end-use sectors include an improvement in industrial energy intensity, tax initiatives and other forms of support to improve energy efficiency of buildings, and energy efficiency standards, which are implemented by three decrees that have transposed the EU directive on energy efficiency of buildings (directive 2002/91/EC).

29. **Transport.** Only one measure was implemented and four planned in the transport sector. These measures focus on promotion of biofuels; infrastructural, inter-modal management and technological standards; as well as measures to update the fleet. The ERT noted that the estimated mitigation potential of promoting the use of biofuels is given in the NC4 as 2.39 Mt CO₂ eq in 2010. The impact of the planned measures is expected to be 2.96 Mt CO₂ eq in 2010. The ERT notes that, given the trend for increasing emissions in this sector, effective implementation of both existing and planned PaMs is crucial.

30. There are many regional initiatives relating to energy and the environment, which contain measures to mitigate GHG emissions and constitute the main tool with which the regions can plan their actions in these areas. Examples include an initiative in Calabria resulting in an increase in electricity production from biomass from 80.2 GWh in 2001 to 752.4 GWh in 2005; an initiative in Puglia also resulting in an increase of electricity production from biomass from 258.1 GWh in 2004 to 421.3 GWh in 2005; and, in Sicily, an increase of 86 per cent in electric power production from RES between 2004 and 2005.

31. During the review, Italy provided the Climate Policy Progress Report, which contains additional information on PaMs, including an updated estimate of the mitigation potential of most planned and some implemented measures in the energy sector. The ERT welcomed the estimate of the mitigation impact of all the planned PaMs and encourages Italy to report this information in its next national communication.

3. Policies and measures in other sectors

32. Between 1990 and 2007, GHG emissions from industrial processes (including solvent and other product use), agriculture and waste decreased by about 3.4 per cent, which represented 16.4 per cent of total GHG emissions in 2007 (excluding LULUCF). With the exception of the waste sector, in which GHG emissions increased by slightly less than 3 per cent over that period, all non-energy sectors showed decreasing trends: industrial processes by 0.5 per cent, solvent and other product use by 10.9 per cent and agriculture by 8.3 per cent. Within the industrial processes sector, GHG emissions decreased significantly in the chemical industry. CO₂ emissions in the metal industry also showed an important reduction over the period. In contrast, emissions from mineral products, the main source of industrial process emissions, increased between 1990 and 2007. In agriculture, two contrasting trends were observed: while N₂O emissions increased in manure management (by 12.9 per cent) and agricultural soils (by 62.9 per cent), CH₄ emissions dropped in manure management (by 11.7 per cent), enteric fermentation (by 9.5 per cent) and rice cultivation (by 2.5 per cent). In the waste sector, both CH₄ and N₂O showed upward trends over the period, whereas CO₂ emissions from waste incineration were almost halved between 1990 and 2007.

33. **Industrial processes.** In 2007, industrial processes accounted for 6.3 per cent of total GHG emissions, excluding LULUCF. Of these emissions, 65.2 per cent were generated by mineral product activities, which are dominated by cement production, followed by emissions of F-gases, accounting for 19.7 per cent. The chemical industry (especially ammonia and carbon black production) accounted for 8.8 per cent of total emissions in this sector, followed by metal production, accounting for 6.2 per cent. The NC4 stresses that PaMs in the manufacturing industry are generally designed to improve energy efficiency. Nevertheless, the NC4 put forward three non-energy related planned (at the time) measures. For cement production, substituting fossil fuels with waste-derived fuels is expected to yield a GHG emission reduction of 0.4 Mt CO₂ eq in 2010. Making use of advanced technology (selective catalytic reduction) for the treatment of gases associated with the nitric acid production process could achieve a 1.4 Mt CO₂ eq cut in GHG emissions in 2010. Finally, supporting greater use of recycled aluminium in the aluminium production process is expected to yield a reduction of 0.6 Mt CO₂ eq in 2010.

34. From the Climate Policy Progress Report, the ERT noted that the two measures relating to nitric acid and aluminium production have been implemented. The ERT also noted that neither the NC4 nor the Climate Policy Progress Report includes any measures targeting F-gases, despite a relevant requirement having existed at the European level since 2006 (EC Regulation 842/2006 on certain fluorinated GHGs).

35. **Agriculture.** In 2007, agriculture accounted for 6.5 per cent of total GHG emissions, excluding LULUCF. Almost 48 per cent of the GHG emissions generated in agriculture are attributable to agricultural soils, with the main sources being synthetic fertilizers, manure applied to soils, and nitrogen leaching and run-off. Enteric fermentation represented slightly less than 30 per cent of the total sectoral emissions in 2007, with cattle as the main source (accounting for 78.7 per cent of the total CH₄ emissions from enteric fermentation). Manure management represented 18.4 per cent of the GHG emissions from agriculture. These emissions are divided almost equally between CH₄ (45 per cent, with cattle and swine being the main emitting sources) and N₂O (55 per cent, attributable to animal waste management systems). CH₄ emissions from rice cultivation accounted for about 4 per cent of the total emissions in this sector.

36. To address the relatively large contribution of nitrogen fertilizers to total agriculture emissions (11.3 per cent in 2007), Italy has put in place a policy aimed at reducing their use. This policy has been promoted through such actions as awareness-raising, the introduction of a code of agricultural practice and the promotion of organic farming. It is supported by the EU Common Agricultural Policy, which, since it has been reformed, reinforces the integration of environmental concerns into agricultural

practices. The policy is expected to yield a reduction in emissions of 0.18 Mt CO₂ eq in 2010. With regard to manure management, Italy proposes to promote the production of biogas from animal storage systems. This measure is financially supported via feed-in prices for electricity producers and the Rural Development Plans subsidized by the European Agricultural Guarantee Fund. Italy expects this measure to achieve a 0.32 Mt CO₂ eq reduction in 2010.

37. **Forestry.** Italy has chosen to account for forest management as an activity under Article 3, paragraph 4, of the Kyoto Protocol for meeting its obligations in the first commitment period. The NC4 reports that, combined with activities covered by Article 3, paragraph 3, of the Kyoto Protocol, these activities are expected to have a 25.3 Mt CO₂ eq mitigation effect in 2010 (10.2 Mt CO₂ eq for forest management and 15.1 Mt CO₂ eq for afforestation and reforestation of old and new plantations). Italy plans to monitor the activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol by a special instrument, the National Registry for Forest Carbon Sinks, which is part of the Italian national system and was set up to estimate and account for removals in order to allow the relevant removal units for activities under Article 3, paragraphs 3 and 4, to be issued. The ERT noted, however, that, in its Climate Policy Progress Report, Italy no longer provides mitigation potentials for forestry management activities owing to difficulties in operationalizing the National Registry for Forest Carbon Sinks.

38. **Waste.** In 2007, waste and wastewater handling accounted for 3.2 per cent of total GHG emissions, excluding LULUCF. CH₄ emissions from solid waste disposal on land accounted for 72 per cent of the total emissions from this sector. About 90 per cent of these emissions stemmed from managed waste disposal sites; the rest are attributed to unmanaged sites. Emissions from wastewater handling represented 24.1 per cent of the waste sector emissions, divided almost equally between CH₄ and N₂O. Waste incineration represented 3.6 per cent of the total sectoral emissions in 2007.

39. In the NC4, Italy reports two implemented PaMs targeting municipal solid waste. The first defines goals for separate collection of various waste streams, and the second establishes decreasing limits (in kg/person/year) for biodegradable waste going to landfill. These two implemented measures are expected to reduce GHG emissions in 2010 by 1.8 Mt CO₂ eq (revised downwards to 1.2 Mt CO₂ eq in the Climate Policy Progress Report). The effect of these measures is expected to grow to 4.5 Mt CO₂ eq in 2015 and 5–5.5 Mt CO₂ eq in 2020, according to the Climate Policy Progress Report.

40. The ERT welcomed the comprehensive reporting of PaMs in the non-energy sectors in the NC4 as well as the summary tables. However, it noted that the explanations of some measures in the non-energy sectors are too short or incomplete. The descriptions of planned measures in the industrial processes sector were imprecise, and explanation of how CH₄ reductions in manure management have been estimated was limited. The ERT acknowledges the clarification on these points that was provided by Italy during the review.

C. Projections and the total effect of policies and measures

1. Projections

41. The GHG emission projections provided by Italy in the NC4 include a ‘trend’ scenario including some measures, a scenario ‘with the effect of all implemented measures’ and a scenario ‘with the effect of all possible measures’ until 2020, and are presented relative to actual inventory data for 1990, 1995 and 2000.

42. Projections for the ‘trend’ scenario are presented on a gas-by-gas basis for the following GHGs: CO₂, CH₄, N₂O, PFCs and HFCs (treated collectively) and SF₆. In addition, for all three scenarios, projections are provided in an aggregated format for each sector as well as for a national total, using global warming potential values.

43. The ERT noted that Italy did not report emission projections related to fuel sold to ships and aircraft engaged in international transport separately, which is required by the UNFCCC reporting guidelines. The ERT also noted that the ‘trend’ scenario does not correspond to the ‘with measures’ scenario of the UNFCCC reporting guidelines, as it encompasses only some implemented measures. The scenario ‘with the effect of all implemented measures’ better corresponds to the ‘with measures’ scenario, because it includes the effect of all implemented measures. However, it differs from a typical ‘with measures’ scenario by including already purchased JI and CDM credits and emission reductions resulting from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol.

44. The NC4 contains comprehensive information on projection methodologies and key assumptions used for the energy sector, and less detailed information on those used for other sectors. Italy used the MARKAL-ITALY model, based on MARKAL software, for the energy projections. This is a partial equilibrium, technology-oriented, bottom-up model that represents demand for energy services in four main sectors: agriculture, industry, transport, and commercial and household. The following key assumptions for the energy sector under the ‘trend’ scenario are presented: economic assumptions, fuel prices, population, number of persons per family, passenger- and freight-kilometres, vehicle fleet data for cars and motorcycles, and energy consumption. For the other sectors, projections involved extrapolation of the most recent data and information from industry (industrial processes), data and models used for the preparation of the emission inventory (agriculture), a population forecast and assumptions for waste production (waste) and a tool for estimating the forest carbon stocks (forestry).

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 (%)
Inventory data 1990 ^a	516.32	NA
Inventory data 2007 ^a	552.77	6.9
Kyoto Protocol base year ^b	516.85	NA
Kyoto Protocol target ^b	483.26	-6.5
‘With measures’ projections for 2008–2012 ^c	517.40	0.1
‘With additional measures’ projections for 2008–2012	513.80	-0.6

^a *Data source:* Italy’s 2009 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.

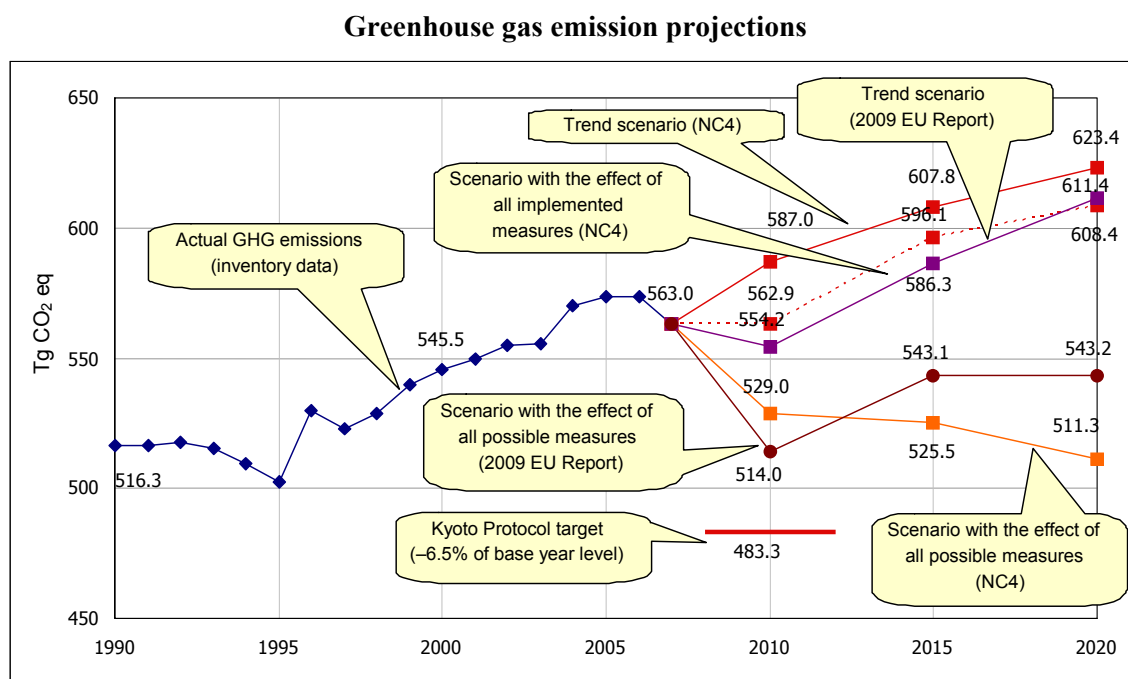
^c *Data source:* Updated projections provided by Italy in the 2009 *Climate Policy Progress Report*, submitted to the European Commission pursuant to decision 280/2004/EC; the projections are for GHG emissions without LULUCF. The ‘with measures’ projections are based on the ‘with policies and measures (PaMs)’ scenario, subtracting joint implementation and clean development mechanism credits already purchased. The ‘with additional measures’ scenario includes planned domestic measures such as additional PaMs, excluding participation in the European Union emissions trading scheme, and improvement of efficiency in final use of electricity, in addition to the PaMs of the ‘with measures’ scenario.

45. During the review, Italy provided updated information on projections in the Climate Policy Progress Report. The main differences with respect to the NC4 are: 2008 is used as a base year for some projections as well as 2004 (which is the base year for projections in the NC4), in order to take into account the ongoing economic crisis; new scenarios for energy prices from the International Energy Agency *World Energy Outlook 2008* are included. Also, modelling for the service and industrial sectors, that are included in the EU ETS has been improved; modelling for certain technological options (such as carbon dioxide storage and sequestration) has been expanded; and the consideration of renewable energy options has been improved.

46. The Climate Policy Progress Report includes two scenarios: a ‘trend’ scenario and a ‘with PaMs’ scenario, where PaMs refers to implemented and adopted measures. As with the NC4, the scenarios presented in the Climate Policy Progress Report do not correspond to those in the UNFCCC reporting guidelines, because the ‘with PaMs’ scenario also contains the effect of JI and CDM credits

already purchased. Table 4 and the figure below provide a summary of GHG emission projections for Italy.

47. The ERT acknowledged that if only domestic measures (implemented, adopted and planned) are taken into account, Italy will not reach its Kyoto Protocol target, since the emission projection that corresponds to the ‘with additional measures’ scenario of the UNFCCC reporting guidelines is 513.8 Mt CO₂ eq in 2010, 30.5 Mt CO₂ eq below the Kyoto level. According to the Climate Policy Progress Report submitted during the review, Italy will use JI and CDM credits (17.1 Mt CO₂ eq, of which 3.4 Mt CO₂ eq of credits have already been purchased) and removal units resulting from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol (10.2 Mt CO₂ eq). The ERT noted that even after taking into account all measures, Italy will still fall short of its Kyoto Protocol target by 3.2 Mt CO₂ eq.



Data sources: (1) Data for the years 1990–2007: Italy’s 2009 greenhouse gas inventory submission; the emissions are without land use, land-use change and forestry. (2) Data for the years 2008–2020: Italy’s fourth national communication; updated projections from the 2009 *Italy Climate Policy Progress Report*, submitted to the European Commission pursuant to decision 280/2004/EC (the “2009 EU Report”), provided by the Party during the in-depth review.

48. The ERT commends Italy on its comprehensive description of assumptions underlying its projections in the energy sector. It recommends that Italy use the definition of scenarios given in the UNFCCC reporting guidelines in its next national communication, and provide greater clarity in the presentation of the results. In the NC4, the presentation of the methodologies and key assumptions also lacks clarity for all sectors except energy, because data are scattered across the projections chapter. The ERT encourages Italy to include in its next national communication only the most pertinent information; clearly distinguish in the projections between the effects of domestic measures, Kyoto mechanisms and the use of removal units; and include a sensitivity analysis.

2. Total effect of policies and measures

49. In the NC4, Italy presents the estimated and expected total effect of implemented and adopted measures (for some measures only), and indicates the estimated effect of all additional PaMs as a sum of the effect of individual measures in 2010, 2015 and 2020. It also presents relevant information on factors

and activities for each sector for the years 1990 to 2020. However, the ERT noted that Italy did not provide the estimated and expected effect of all implemented measures, by gas (on a CO₂ eq basis) for 1995 or 2000. Table 5 provides an overview of the total effect of PaMs as reported by Italy.

Table 5. Projected effects of planned, implemented and adopted policies and measures in 2010

Sector	Effect of implemented and adopted measures (Tg CO ₂ eq)	Relative value (% of base year emissions)	Effect of planned measures (Tg CO ₂ eq)	Relative value (% of base year emissions)
EU ETS ^a	32.1	6.2	2.6	0.5
Other sectors	4.7	0.9	1.0	0.2
Land-use change and forestry	0	0.0	10.2	2.0
Total	36.8	7.1	13.8	2.7

Data source: 2009 Italy Climate Policy Progress Report, submitted to the European Commission pursuant to decision 280/2004/EC.

Note: The total effect of implemented and adopted policies and measures is defined as the sum of the effect of individual measures. The same applies to the total effect of planned measures.

^a“EU ETS” (European Union emissions trading scheme) covers energy industries and part of industrial processes. “Other sectors” refers to the rest of the energy sector, agriculture and waste.

50. The total effect of implemented and adopted measures in 2010 is a reduction in emissions of 36.8 Mt CO₂ eq, according to additional information submitted during the review. Italy’s participation in the EU ETS is expected to make the greatest contribution (87 per cent of the reduction). The total effect of additional measures in 2010, not taking into account LULUCF, is estimated to be 3.6 Mt CO₂ eq. In total, the reduction in emissions in 2010 owing to implemented domestic measures (including only those that are not included under the ‘trend’ scenario) and all planned domestic measures is 40.4 Mt CO₂ eq. The ERT noted that domestic measures represent the majority of the Party’s efforts to reach its Kyoto target.

51. The ERT recommends that Italy present in its next national communication the estimated and expected total effect of all implemented and adopted measures and, separately, the effect of planned PaMs, in terms of GHG emissions avoided or sequestered, by gas (on a CO₂ eq basis) for the years 1995 and 2000. The ERT also encourages Italy to include in tabular form the estimated and expected effect of all implemented and adopted measures and, separately, of planned PaMs, for 2005, 2010, 2015 and 2020. It further encourages Italy to distinguish between the effects of domestic measures, Kyoto mechanisms and the use of removal units, and present them clearly.

D. Vulnerability assessment, climate change impacts and adaptation measures

52. The ERT noted that Italy has broadly complied with the guidelines for reporting on vulnerability, climate change impacts and adaptation measures. In its NC4, Italy has provided the required information on the expected impacts of climate change in the country and on adaptation options. Table 6 summarizes the information on vulnerability and adaptation to climate change presented in the NC4. The ERT also noted that Italy, being in the Mediterranean region, is expected to be very vulnerable to climate change, and sensitive both to global phenomena and to events on a regional and local scale. The NC4 presents in detail the expected impacts of climate change and assesses the vulnerability of the energy sector, agriculture, coastal zones, soil degradation and water resources, desertification, biodiversity and ecosystems, tourism, human health and the economy. It also discusses adaptation measures that have been implemented so far and those planned to be implemented in the future. The findings of the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) are also considered, along with the results of research in the fields of vulnerability assessment and adaptation in Italy.

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

Vulnerable area	Examples/comments/adaptation measures reported
Agriculture and food security	<p>Vulnerability: The following are expected: more extreme climate events during crop development stages – higher rainfall intensity and longer dry spells are likely to reduce the yield of summer crops in the Mediterranean region; a lengthening of the growing period by about 10–15 days per each °C of rise in yearly average temperature and consequent shortening of cold winter periods – expected to favour olive tree, citrus tree and vine cultivations whereas corn cultivations will be disadvantaged; northward shift of all ecosystems</p> <p>Adaptation: Development and employment of cultivars with more adaptive characteristics; substitution of the existing species; change in agronomic practices; introduction of new techniques to retain soil moisture and improve plant watering management; land-use change; changes in species in agriculture production, changes in microclimate</p>
Forest and biodiversity	<p>Vulnerability: Climate change might cause an overall migration of ecosystems northwards and upwards in the mountainous areas; the increased aridity observed in central-southern Italy makes the Italian forests more vulnerable to biotic and abiotic disturbances, reducing their resistance and resilience</p> <p>Adaptation: Development of efficient ecological corridors that allow species migration in fragmented landscapes; integration of climate change considerations into all land-use planning and management processes; surveillance of the most competitive species; widespread protection projects for endangered species</p>
Coastal zones	<p>Vulnerability: The following are expected: coastal erosion; saltwater intrusion with adverse impacts on agriculture and fresh water supply; loss of humid zones near rivers and estuaries; sea level rise, implying higher risks for the Italian coastal areas; about 4 500 km² of coastal areas and plains at risk of sea flooding</p> <p>Adaptation: Adoption of national guidelines on coastal zone management; creation of 'soft' natural zones between land and sea; restoration of dune ecosystems, restoration of dune ecosystems; sediment input exchange systems between dunes and beaches; defending the coastline with soft measures instead of hard ones</p>
Desertification	<p>Vulnerability: Changes in soil use, forest fire, erosion, salinization, loss of organic substances, waterproofing and extensive run-off caused by floods are expected to cause degradation. The highest sensitivity to desertification risk occurs in southern and insular regions, where environmental conditions are more unfavourable and where agriculture and sheep farming affect the territories' conditions</p> <p>Adaptation: The National Action Plan to Combat Drought and Desertification has been developed, providing information on soil protection, sustainable management of water resources and reduction of the environmental impact of productive activities</p>
Tourism	<p>Vulnerability: Increases in the frequency of heat waves, low water availability and changes in winter precipitation are expected to have an increasing negative impact on tourism</p> <p>Adaptation: Coastline protection; development of north-facing slopes; extension of ski areas to higher elevations; slope development; tree planting to protect the slopes; artificial snowmaking for the winter tourism</p>
Water resources	<p>Vulnerability: The following are expected: an increase in extreme meteorological events, which is likely to cause mud and debris slides; a general decrease in deep slide phenomena and mean river flow rates; more rock falls; and more flash floods in the mountainous Alpine and Apennine zones and the Piedmont region. In some areas, a decrease in availability of water resources is affecting hydropower generation, supply of drinking water and water for irrigation</p> <p>Adaptation: Development of an early warning system in relation to water and health; improved plant watering management; inclusion of water resource management the future national climate change strategy</p>
Human health	<p>Vulnerability: Increase in summer heat and decrease in winter cold will result in mortality and morbidity; extreme weather events are expected to increase the risk of accidents, mortality, morbidity, disability, pressure on health systems and changes to health economics</p> <p>Adaptation: Early warning systems integrated with response plans; comprehensive heat wave plans including rapid health system preparedness and response, urban planning and indoor home improvements; control and reduction of water-related diseases</p>
Energy	<p>Vulnerability: Reduced availability of water resources is affecting electricity generation from hydropower; water abstractions from the main basins could jeopardize river navigability and thermoelectric power plant cooling</p> <p>Adaptation: Promotion of highly efficient technologies such as heat pumps and combined photovoltaic/thermal-powered conditioners; development of renewable energy sources that are not negatively affected by climate change, such as solar and geothermal</p>

53. The review report of the third national communication of Italy² made the observation that Italy had indicated only the national initiatives to combat drought and desertification, such as the National

² FCCC/IDR.3/ITA.

Action Plan to Combat Drought and Desertification. The National Committee to Combat Drought and/or Desertification, which was created by a Council of Ministers Decree of 26 September 1997, initiated pilot projects in the five most affected regions in 2005 and 2006. Following the Committee's recommendations, Italy incorporated in the NC4 a framework directive for soil protection (COM (2006) 232), which sets out common principles for protecting soils across the EU. This represents a valuable opportunity to start new soil protection and monitoring activities to prevent desertification, mitigate its effects and restore the ecosystem's functionality. However, the ERT noted that, in the future, Italy may wish to devote more attention and importance to reporting its actions in the field of adaptation.

E. Financial resources and transfer of technology

1. Financial resources

54. In its NC4, Italy has generally complied with the requirement of Article 12, paragraph 3, of the Convention, whereby Parties included in Annex II to the Convention shall provide details of measures taken to give effect to their commitments under Article 4, paragraphs 4 and 5. The ERT noted that while Italy did not provide a definition of 'new and additional' financial resources pursuant to Article 4, paragraph 3, it referred to 'new and additional' financial resources, aimed at technology transfer in the environmental sector, responding to Articles 4, paragraphs 3, 4 and 5, of the Convention. In accordance with the UNFCCC reporting guidelines, Italy included a table showing the financial contributions made to the Global Environment Facility since 2001.

55. The ERT noted the reference in the NC4 to the Bonn Political Declaration, to which Italy is a signatory. During the review, in response to a request by the ERT, Italy provided clarification on its planned contribution to the Declaration, as well as the actual (as opposed to pledged) contributions to the Special Climate Change Fund, the Least Developed Countries Fund and the Kyoto Protocol Fund, and any overlap between them.

56. Italy provided tabulated data on financial resources related to the implementation of the Convention provided through bilateral, regional and other multilateral channels, from 2001 to 2005. Table 7 summarizes information on financial resources.

57. The ERT noted that Italy may wish to revisit the definition of 'new and additional' financial resources in the light of the Convention definition, which reflects funds provided on a grant or concessional basis through the financial mechanism under Article 11, paragraph 1. Italy may also wish to elaborate on funds made under the Bonn Political Declaration which are considered 'new and additional' with regard to 2001 contribution levels, and also to address the gaps in information in the financial resources section, particularly on pledged contributions to key funds.

Table 7. Summary of information on financial resources

Official development assistance	USD 5 091 million (0.29% of gross national income (2005))
Contributions to Global Environment Fund (GEF)	EUR 58 million (2001–2006)
Pledge for third GEF replenishment	EUR 118.9 million (source: GEF)
Least Developed Countries Fund	EUR 780 000 (2003) EUR 1 million (2006)
Special Climate Change Fund	Pledge of EUR 10 million (2006)
Co-finance for GEF projects	USD 100 000 for GEF project: A Framework for Sustainable Water Resources Management in the la Plata Basin, with respect to the Hydrological Effects of Climatic Variability and Change (2003) USD 500 000 for GEF/United Nations Environment Programme project: Support to the National Programme of Action for the Protection of the Arctic Marine Environment USD 250 000 for preparation phase of the African Rift Geothermal Development Facility (ARGeo) (2003)

2. Transfer of technology

58. In its NC4, Italy has provided details of measures relating to the promotion, facilitation and financing of the transfer of, or access to, environmentally sound technologies. The NC4 also indicates that the Italian Ministry for the Environment, Land and Sea has been actively involved in signing cooperation agreements with countries such as Algeria, Egypt, Morocco and Tunisia for the development of wind and solar energy sectors as part of the Mediterranean Renewable Energy Programme. The Ministry has also been promoting and supporting research programmes involving academia and the business sector in the Mediterranean region, the Balkans and Asia. Among the technologies being developed, tested and optimized are solar thermal-driven cooling systems for the food and agriculture industry, water heating, water desalination and electricity production from solar pond technology, and carbon sequestration. The NC4 mentions projects implemented in Brazil for the development and promotion of technologies for the use of solar energy and the use of biomass for energy production.

59. The Italian Ministry of Foreign Affairs is also collaborating with around 25 countries to facilitate a strengthening of technical networks in each country and enable cross-sector exchange of information, experiences and technology. The NC4 referred to a memorandum of understanding between the Italian Ministry for the Environment, Land and Sea, and the former Republic of Serbia and Montenegro involving transfer of know-how and technologies to prevent and control environmental pollution and water management.

60. The ERT also noted the existence of scholarship programmes for researchers from developing countries and countries with economies in transition, supported by technical and scientific institutions such as the Italian National Agency for New Technologies, Energy and the Environment (ENEA) and the National Research Council (CNR). The ERT further noted that the information in this section of the NC4 was dominated by activities undertaken by the public sector and that there did not appear to be any coverage of private-sector activities nor details of how the Party has encouraged them. It noted that the NC4 did not present information on selected technology transfer projects and recommends that Italy in its next national communication report on such examples, including aspects of success and failure, in a tabular format, as required by the UNFCCC reporting guidelines.

F. Research and systematic observation

61. Italy has provided information on its actions relating to research and systematic observation, and addressed both domestic and international activities, including the World Climate Programme, the Global Climate Observing System (GCOS) and the IPCC. Furthermore, Italy has provided a summary of information on GCOS activities. However, the ERT noted that Italy did not provide information on its actions taken to support related capacity-building activities in developing countries for the purpose of enabling their participation in research and development efforts, or on the support for developing countries to establish and maintain observing systems, and related data and monitoring systems. Thus, it recommends that Italy do so in the future.

62. In addition to a large number of institutions addressing climate change, Italy also has a dense network of observing stations for meteorological and hydrological parameters. Support for scientific research and technological development is provided by the Special Integrative Fund for Research.

G. Education, training and public awareness

63. In the NC4, Italy has reported information on its actions relating to education, training and public awareness, as required by the UNFCCC reporting guidelines, with the exception of detail on public participation in the preparation or national review of the national communication and in international activities.

64. Italy reports that the Ministry of Public Instruction, University and Research has been responsible for organizing an annual “Scientific and technological week” since 2004, to increase public awareness of climate change. The NC4 states that approximately 20 events have been held per year, most of them focused on energy and climate. The NC4 also refers to the collaboration between the Ministry of Environment and ENEA to encourage public participation in efforts to address climate change and desertification. The Ministry of Environment website, which promotes the new energy bill, is also mentioned.

65. Efforts in education, training and awareness-raising at the regional, provincial and local levels were primarily targeted at communication campaigns, information centres and facilitating decision-making through the sharing of climate change information. The national agencies ENEA, CNR and the Agency for Environmental Protection and Technical Services are also involved in climate change education and public awareness activities. The Institute of Atmospheric Sciences and Climate, one of the most important institutes inside the CNR with around 130 researchers and technicians, is active in dynamic meteorology, earth observation, atmospheric processes and climate change. Attention is paid to the training of young researchers within the Institute and in collaboration with the universities.

66. Recent educational reform which has led to greater autonomy of schools makes it difficult to form an accurate picture of climate change activities carried out in schools in Italy. However, the fact that there has been an increase in requests for climate change material by schools from relevant ministries was noted by the ERT.

67. The NC4 provided a table outlining some of the key climate change activities carried out by non-governmental organizations such as ICLEI – Local Governments for Sustainability, Alleanza per il Clima, Kyoto Club, Legambiente and WWF. The target audience of these activities comprised the general public, students, local authorities including municipalities, professionals and associations.

68. The ERT noted that Italy did not report on its efforts, if any, to implement the New Delhi work programme on Article 6 of the Convention. While acknowledging the information provided by the Party during the review on the participation of the public, the ERT suggests that Italy consider reporting in more detail in future on the public’s participation in the preparation or domestic review of its national communications.

III. Evaluation of information contained in the report demonstrating progress and of supplementary information under Article 7, paragraph 2, of the Kyoto Protocol

A. Information contained in the report demonstrating progress

69. Italy’s RDP includes four chapters, which contain all of the information required by decisions 22/CP.7 and 25/CP.8. The ERT noted that this information is not fully consistent with the information provided in the NC4, as the NC4 was prepared after the RDP in order to reflect the revision of the strategy to achieve Italy’s emission reduction target under the Kyoto Protocol, which took place in 2006 after a new Italian Government took office.

70. Within the burden-sharing agreement of the EU for meeting commitments under the Kyoto Protocol, Italy is required to reduce its GHG emissions in the period 2008–2012 by 6.5 per cent in relation to its 1990 emission level (this equates to 69.5 Mt CO₂ eq in order to meet its Kyoto target of 483.3 Mt CO₂ eq, according to the 2007 emission level reported in the 2009 GHG inventory). Following ratification of the Kyoto Protocol in December 2002, the Inter-ministerial Committee for Economic Planning approved the National Action Plan 2003–2010 for the reduction of GHG emissions, as well as the revised guidelines for national PaMs that address GHG emissions, containing the Government’s

strategy to achieve Italy's emission reduction target under the Kyoto Protocol. The ERT learned during the review that a revision of these documents is under way. In its RDP, Italy also highlighted a parliamentary resolution adopted by the new Government, whose goal is to limit the use of Kyoto mechanisms by requiring the country to achieve 80 per cent of its reduction target through domestic PaMs.

71. Italy's total GHG emissions in 2007, excluding LULUCF, were 6.9 per cent higher than those in the base year. Based on the projections presented in the RDP, Italy will not meet its Kyoto target with the existing and additional PaMs envisaged. Hence, Italy will use flexible mechanisms of the Kyoto Protocol to acquire the equivalent of around 17 Mt CO₂ eq/year in credits in the period 2008–2012, although even this will not be adequate to bridge the gap (see para. 47 above). The ERT encourages Italy to elaborate on the planned use of Kyoto Protocol mechanisms and LULUCF activities and to clearly describe how these mechanisms supplement the domestic measures (a subject which was covered in the Climate Policy Progress Report submitted during the review) in its next national communication.

B. Supplementary information under Article 7, paragraph 2, of the Kyoto Protocol

72. Italy has provided all of the supplementary information under Article 7, paragraph 2, of the Kyoto Protocol in its NC4 and RDP. This information reflects the steps taken by Italy to implement the relevant provisions of the Kyoto Protocol. The supplementary information is placed in different sections of the NC4 and RDP. Table 8 provides references to the NC4 and RDP chapters in which supplementary information is provided.

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

Supplementary information	Reference
Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	RDP, chapter 3, pp. 30–40 NC4, chapter 5, pp. 159–160
Policies and measures in accordance with Article 2	RDP, chapter 1.2, pp. 10–19 NC4, chapter 4, pp. 81–120
Domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures	RDP, chapter 1.1, pp. 8–10 NC4, chapter 4, pp. 81–82
Information under Article 10	RDP, chapter 4, pp. 41–56
Financial resources	NC4, chapter 7, pp. 219–247 RDP, chapter 4.8, pp. 56–59

Abbreviations: NC4 = fourth national communication, RDP = report demonstrating progress.

73. In the NC4 and the RDP, Italy has provided a short description of its national inventory system, the national registry system and national legislative arrangements and administrative procedures relating to the implementation of activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol. The ERT of the initial review under the Kyoto Protocol concluded³ that the national system is in line with the guidance for national systems, noting that it would be necessary for some legal, institutional and procedural arrangements to be further developed in order for the capacity of the system to be sustained in the future. The ERT also noted during the initial review that the national registry is fully compliant with the requirements for registries. The ERT of the present review took note of these conclusions.

74. The ERT recognizes the exhaustive reporting of the supplementary information under Article 7, paragraph 2, of the Kyoto Protocol. Nevertheless, the ERT suggests that Italy better reflect the 2002 national strategy for sustainable development and its national climate change strategy in its next national communication. The ERT also suggests that the next communication devote more attention to the issue of international aviation, and international and interregional cooperation.

³ FCCC/IRR/2007/ITA.

IV. Conclusions

75. The analysis of the 2009 inventory submission from Italy shows that total GHG emissions including emissions and removals from LULUCF increased by 7.4 per cent between 1990 and 2007, while total GHG emissions excluding net emissions or removals from LULUCF increased by 7.1 per cent. This growth is mainly attributable to a rise by 9.3 per cent in CO₂ emissions (excluding LULUCF) in this period, with the main drivers being the energy industries and transport sectors, which recorded growth of 17.7 per cent and 25.6 per cent, respectively, between 1990 and 2007.

76. In the NC4 and RDP, Italy presented GHG emission projections for the period from 2005 to 2020. The projections differ between the two sources because the RDP was submitted more than a year before the NC4, and the projections were revised in that time. The NC4 included three scenarios: (1) a 'trend' scenario; (2) a scenario 'with all implemented measures' (including the effect of currently implemented and adopted PaMs, already purchased JI and CDM credits and the effect of LULUCF activities); and (3) a scenario 'with the effect of all possible measures', which also includes planned measures and the purchase of additional JI and CDM credits. These scenarios do not strictly correspond to the definition of scenarios recommended in the UNFCCC reporting guidelines. During the review, Italy submitted additional information in the form of the Climate Policy Progress Report, which contained further revised projections. According to this report, the annual projected reduction in GHG emissions, taking into account all domestic measures (implemented and planned), in relation to the base year is 0.6 per cent.

77. The projections analysed by the ERT indicate that Italy will not meet its Kyoto Protocol target (which is a 6.5 per cent reduction) with domestic measures only. The shortfall in 2010 is 30.5 Mt CO₂ eq. According to additional information provided during the review, Italy will use LULUCF activities (10.2 Mt CO₂ eq) and JI and CDM credits (17.1 Mt CO₂ eq) to minimize the gap, leaving a shortfall in 2010 of 3.2 Mt CO₂ eq.

78. In the course of the IDR, the ERT formulated a number of recommendations relating to the completeness and transparency of Italy's reporting under the Convention and its Kyoto Protocol. The key recommendations⁴ are that Italy:

- Provide greater explanation of the link between national circumstances and emission trends for all sectors, where relevant, by providing information on how recent socio-economic and demographic trends have affected GHG emissions;
- Provide more comprehensive, transparent and better organized information on each PaM, including the GHG mitigation impacts of each implemented PaM as well as adopted and planned ones, differentiated by sector and subdivided by gas;
- Report on implementation of PaMs to mitigate GHG emissions in the transport sector, where emissions have increased significantly;
- Revise its GHG emission scenarios in line with the scenario definitions provided in the UNFCCC reporting guidelines, and provide greater clarity in the presentation of results in the projections section of the NC4, in particular reflecting the 'with measures' and 'with additional measures' scenario definitions recommended in the UNFCCC reporting guidelines, which demand the separation of the effect of domestic measures from the effect of Kyoto mechanisms and LULUCF activities;

⁴ The recommendations are given in full in the relevant sections of this report.

- Provide information on its actions taken to support capacity-building activities in developing countries for the purpose of enabling their participation in research and development efforts, and to support establishment and maintenance of observing systems, and related data and monitoring systems in the developing countries.

79. Italy may wish to revisit the definition of ‘new and additional’ financial resources, taking into account the provisions of Article 11, paragraph 1, of the Convention. It may also consequently wish to elaborate on funds made under the Bonn Political Declaration and also to address the gaps in information on financial resources allocated for different issues, particularly on pledged contributions to key funds.

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 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/IDR.3/ITA. Report on the in-depth review of the third national communication of Italy. Available at <<http://unfccc.int/resource/docs/idr/ita03.pdf>>.

FCCC/SBI/2006/INF.2. Synthesis of reports demonstrating progress in accordance with Article 3, paragraph 2, of the Kyoto Protocol. Available at <<http://unfccc.int/resource/docs/2006/sbi/eng/inf02.pdf>>.

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.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/2008/ITA. Report of the individual review of the greenhouse gas inventories of Italy submitted in 2007 and 2008. Available at <<http://unfccc.int/resource/docs/2009/arr/ita.pdf>>.

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

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

Report demonstrating progress of Italy. Available at <<http://unfccc.int/resource/docs/dpr/ita1.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>.

International Energy Agency. 2008. *IEA World Energy Outlook 2008*. Paris: International Energy Agency.

B. Additional information provided by the Party

Responses to questions during the review were received from Mr. Mario Condaldi (Ministry of Environment, Land and Sea), including additional material on updated policies and measures, greenhouse gas projections, the national registry and recent climate policy developments in Italy.¹ The following documents were also provided by Italy:

Ministry for the Environment, Land and Sea. 2009. *Italy Climate Policy Progress Report*, submitted to the European Commission pursuant to decision 280/2004/EC.

Italian National Agency for New Technologies, Energy and the Environment. 2008. *Post Kyoto e Cambiamenti Climatici*.

¹ The text has been reproduced as received from the Party and has not been formally edited.