



Framework Convention on Climate Change

Distr.: General
7 October 2011

English only

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

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 France conducted by an expert review team in accordance with the relevant provisions of the Convention and Article 8 of the Kyoto Protocol.

Contents

	<i>Paragraphs</i>	<i>Page</i>
I. Introduction and summary	1–9	3
A. Introduction	1–4	3
B. Summary	5–9	3
II. Technical assessment of the reviewed elements	10–136	4
A. National circumstances relevant to greenhouse gas emissions and removals, including legislative arrangements and administrative procedures	10–27	4
B. Policies and measures, including those in accordance with Article 2 of the Kyoto Protocol	28–88	8
C. Projections and the total effect of policies and measures, and supplementarity relating to the Kyoto Protocol mechanisms	89–110	20
D. Vulnerability assessment, climate change impacts and adaptation measures.	111–116	25
E. Financial resources and transfer of technology, including information under Articles 10 and 11, of the Kyoto Protocol	117–124	28
F. Education, training and public awareness.....	125–127	29
G. Research and systematic observation	128–132	30
H. Evaluation of supplementary information under Article 7, paragraph 2, of the Kyoto Protocol.....	133–134	31
I. Minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol.....	135–136	32
III. Conclusions and recommendations.....	137–150	32
IV. Questions of implementation	151	35
Annex		
Documents and information used during the review.....		36

I. Introduction and summary

A. Introduction

1. For France the Convention entered into force on 23 June 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, France committed itself to keeping its greenhouse gas (GHG) emissions at the 1990 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 France, 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 23 to 28 May, 2011 in Paris, France, and was conducted by the following team of nominated experts from the UNFCCC roster of experts: Ms. Branca Americano (Brazil), Ms. Madeleine Diouf Sarr (Senegal), Ms. Regine Roethlisberger (Switzerland) and Ms. Lisa Ryan (International Energy Agency). Ms. Americano and Ms. Rayn 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 section of the NC5. The ERT also evaluated the supplementary information provided by France 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 France in its 2010 annual submission and elaborated further in its 2011 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 France, which provided comments that were considered and incorporated, as appropriate, in this final version of the report.

B. Summary

5. The ERT noted that France's NC5 complies mostly 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 Protocol¹ is provided in the NC5. France considered some recommendations provided in the report on the in-depth review of the fourth national communication (NC4) of France.²

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 France provided further relevant information.

1. Completeness

7. The NC5 covers all sections required by the UNFCCC reporting guidelines and most of the supplementary information under Article 7, paragraph 2, of the Kyoto Protocol,

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

² FCCC/IDR.4/FRA.

except for identification of steps taken to promote and/or implement any decisions by the International Maritime Organization (IMO) in order to limit or to reduce GHG emissions not included in the Montreal Protocol from marine bunker fuels and information on what efforts France is making to implement policies and measures (PaMs) in such a way as to minimize adverse effects on international trade (see chapter II.H). The ERT recommends that France enhance the completeness of its reporting by providing this information in its next national communication.

2. Transparency

8. The ERT acknowledged that France's NC5, including supplementary information provided under Article 7, paragraph 2, of the Kyoto Protocol, is generally transparent. The NC5 provides clear information on all aspects of the implementation of the Convention and its Kyoto Protocol. The ERT noted that supplementary information submitted under Article 7, paragraph 2, of the Kyoto Protocol is easily identifiable. In the course of the review, the ERT formulated a number of recommendations that could help France to further increase the transparency of its reporting with regard to PaMs (see para. 29), projections and total effects of PaMs (see para. 91), financial resources and technology transfer (see paras. 121 and 124), and information on the minimization of adverse impacts (see para. 88).

3. Timeliness

9. The NC5 in French and an abstract of the NC5 in English were submitted on 2 December 2009, before the deadline of 1 January 2010 mandated by decision 10/CP.13. A revised version of the NC5 was submitted on 8 February 2010, within six weeks after the due date; the review was based on that revised version.

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, France has provided a concise description of its national circumstances and has elaborated on its framework legislation and key policy documents on climate change. A further technical assessment of the institutional and legislative arrangements for the coordination and implementation of PaMs is provided in chapter II.B.1.

1. National circumstances

11. In its NC5, France has provided a description of its national circumstances and information on how these national circumstances affect GHG emissions and removals in France and how changes in national circumstances affect GHG emissions and removals over time. Information is provided on the government structure, population, geography, climate and economy and on relevant economic sectors (see paras. 16–17). The national circumstances imply that emissions from electricity production comprise a small share of GHG emissions from energy, since the majority of electricity is produced from nuclear power (see para. 49).

12. France has provided a summary of information on GHG emission trends for the period 1990–2007. This information is consistent with its 2009 annual submission. Summary tables, including trend tables for emissions in carbon dioxide equivalent (CO₂ eq) (given in the common reporting format (CRF)), are provided in an annex to the NC5.

During the review, the ERT assessed the recently submitted 2011 annual submission (version 2.1 submitted on 12 May 2011) and reflected the findings in this report.

13. France is a constitutional republic with a presidential–parliamentary system. The administrative structure consists of 26 regions, 100 departments (in 2009) and 36,783 municipalities, including the overseas departments (départements d’outre-mer – DOM) and the other overseas territories (territoires d’outre-mer – TOM). Reporting under the Kyoto Protocol covers mainland France and the overseas territories belonging to the EU. The overall responsibility for climate change policymaking lies within the Ministry of Ecology, Sustainable Development, Transport and Housing (MEDDTL), in close collaboration with other ministries. A number of other national implementing agencies under the supervision of respective ministries are involved in the implementation of climate policy, such as the Environment and Energy Management Agency (ADEME), the National Research Agency (ANR), the National Agency for Housing Improvements, the National Forestry Commission and the Centre for Interdisciplinary Air Pollution Studies (CITEPA) (see para. 34).

14. Climate change policy has been continuously strengthened through the revisions of the Climate Plan (every two years since 2004), the adoption of two ‘Grenelle’ environment acts (in 2009 and in 2010) and the implementation of the EU climate and energy package (see paras. 37–39). Implementation of provisions set in the documents mentioned above underpins the meeting of the commitments under the Convention and its Kyoto Protocol. 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.

15. Total GHG emissions³ excluding emissions and removals from land use, land-use change and forestry (LULUCF) decreased by 8.1 per cent between the base year and 2009, whereas total GHG emissions including net emissions or removals from LULUCF decreased by 13.4 per cent. This was mainly attributed to nitrous oxide (N₂O) emissions, which decreased by 32.7 per cent (30.3 Tg CO₂ eq), CO₂ emissions, which decreased by 5.1 per cent (20.1 Tg CO₂ eq), and methane (CH₄) emissions, which decreased by 2.3 per cent (1.5 Tg CO₂ eq) between the base year and 2009. Emissions of perfluorocarbons (PFCs), hydrofluorocarbons (HFCs) and sulphur hexafluoride (SF₆) (fluorinated gases) taken together accounted for 1.8 per cent of total GHG emissions in 1990 and 3.2 per cent in 2009. The levels of emissions of fluorinated gases and groups of such gases changed following the trends of different drivers: HFC emissions have increased due to the substitution of chlorofluorocarbons by HFCs; PFC emissions have slowly decreased due to the decline in aluminium production.

16. Although GHG emissions decreased (see para. 15 above), the population grew by 10.2 per cent, the gross domestic product (GDP) by 38.8 per cent and the total primary energy supply by 19.0 per cent between 1990 and 2008. Table 1 illustrates the national circumstances of the country by providing some indicators relevant to GHG emissions and removals.

17. Changes in the trends in total GHG emissions in France were not significant and were mostly underpinned by GHG emissions trends in the industrial sector, driven by the reduction of PFC emissions from aluminium production and N₂O emissions from nitric and adipic acid production.

18. The other main drivers include the following: road transportation (CO₂ emissions from this category increased by 12.4 per cent in 1990–2009); the use of gas in the residential and commercial sector (CO₂ emissions from this category increased by

³ In this report, the term “total GHG emissions” refers to the aggregated national GHG emissions expressed in terms of CO₂ eq excluding LULUCF, unless otherwise specified.

13.1 per cent in 1990–2009) and the use of air-conditioning equipment (HFC emissions from this category increased by 6.5 per cent in 1990–2009). The increase from the categories listed above was offset by a decrease of N₂O emissions from adipic acid production (by 7.3 per cent) and of CO₂ emissions from coal combustion in the public electricity and heat production category (by 5.1 per cent) and the iron and steel category (by 2.7 per cent). An analysis of drivers for GHG emissions trends in each sector is provided in chapter II.B. Table 2 provides an overview of GHG emissions by sector from 1990 to 2009.

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

	1990	1995	2000	2005	2008	Change 1990–2000 (per cent)	Change 2000–2008 (per cent)	Change 1990–2008 (per cent)
Population (million)	58.2	59.4	60.7	63.0	64.1	4.4	5.6	10.2
GDP (2000 USD billion using PPP)	1261.9	1336.4	1534.9	1667.0	1751.0	21.6	14.1	38.8
TPES (Mtoe)	223.9	236.7	251.9	260.8	266.5	12.5	5.8	19.0
GDP per capita (2000 USD thousand using PPP)	21.7	22.5	25.3	26.5	27.3	16.5	8.1	25.9
TPES per capita (tonnes oil equivalent)	3.8	4.0	4.1	4.1	4.2	7.8	0.2	8.0
GHG emissions without LULUCF (Tg CO ₂ eq)	562.9	559.7	566.8	569.0	539.2	0.7	–4.9	–4.2
GHG emissions with LULUCF (Tg CO ₂ eq)	523.2	511.8	517.8	504.1	470.3	–1.0	–9.2	–10.1
CO ₂ emissions per capita (Mg)	6.8	6.6	6.7	6.7	6.1	–0.5	–9.5	–10.0
CO ₂ emissions per GDP unit (kg per 2000 USD using PPP)	0.3	0.3	0.3	0.3	0.2	–14.6	–16.3	–28.5
GHG emissions per capita (Mg CO ₂ eq)	9.7	9.4	9.3	9.0	8.4	–3.5	–9.9	–13.1
GHG emissions per GDP unit (kg CO ₂ eq per 2000 USD using PPP)	0.4	0.4	0.4	0.3	0.3	–17.2	–16.6	–31.0

Sources: (1) GHG emissions data: France's 2011 annual submission of 12 May 2011, version 2.1; (2) Population, GDP and TPES data: International Energy Agency, 2010.

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.

2. National system

19. In accordance with decision 15/CMP.1, France has 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 (decision 19/CMP.1). The description includes all the elements as required in decision 15/CMP.1.

Table 2
Greenhouse gas emissions by sector in France, 1990–2009

Sector	GHG emissions (Tg CO ₂ eq)						Change (per cent)		Shares ^a by sector (per cent)	
	1990	1995	2000	2005	2008	2009	1990–2009	2008–2009	1990	2009
	1. Energy	379.78	381.14	396.18	405.23	376.33	360.67	–5.0	–4.2	67.5
A1. Energy industries	65.68	57.18	63.37	68.06	62.97	60.56	–7.8	–3.8	11.7	11.7
A2. Manufacturing industries and construction	83.23	80.08	81.92	77.39	71.70	63.66	–23.5	–11.2	14.8	12.3
A3. Transport	119.93	130.21	138.27	140.82	132.19	130.57	8.9	–1.2	21.3	25.2
A4–A5. Other	100.77	103.72	104.49	113.45	103.97	100.85	0.1	–3.0	17.9	19.5
B. Fugitive emissions	10.18	9.95	8.12	5.52	5.50	5.04	–50.5	–8.5	1.8	1.0
2. Industrial processes	59.09	57.46	45.03	43.03	40.62	37.60	–36.4	–7.4	10.5	7.3
3. Solvent and other product use	2.06	1.81	1.83	1.47	1.30	1.21	–41.4	–7.2	0.4	0.2
4. Agriculture	108.72	102.91	104.67	98.26	99.36	95.79	–11.9	–3.6	19.3	18.5
5. LULUCF	–39.70	–47.82	–49.05	–64.88	–68.90	–63.92	61.0	–7.2	–7.1	–12.4
6. Waste	13.22	16.36	19.13	20.98	21.57	21.98	66.3	1.9	2.3	4.2
7. Other	NO	NO	NO	NO	NO	NO	NA	NA	NA	NA
GHG total with LULUCF	523.19	511.85	517.79	504.09	470.27	453.33	–13.4	–3.6	NA	87.6
GHG total without LULUCF	562.89	559.67	566.84	568.97	539.18	517.25	–8.1	–4.1	100.0	100.0

Source: France's 2011 annual submission of 12 May 2011, version 2.1.

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, NO = not occurring.

^a The shares of sectors is 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.

20. France 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, also contribute to the conservation of biodiversity and the sustainable use of natural resources.

21. During the review France provided additional information on the national system, elaborating on the robust system of GHG inventory preparation. The ERT noted that quality assurance and control (QA/QC) of the GHG inventory has been enhanced through accreditation of the organization preparing it (CITEPA) under ISO 9001. The ERT also

noted that France provided support for developing country Parties in the preparation of inventories, including relevant training for experts from seven countries.

22. The ERT took note of the conclusions of the report of the individual review of the annual submission of France submitted in 2010⁴ (the 2010 ARR) that the arrangements in the national system enable an accurate estimation to be made of the areas of forest land subject to activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol. The ERT also took note of the conclusions of the 2010 ARR that the national system continued to perform its required functions as set out in decision 19/CMP.1.

3. National registry

23. In its NC5, France 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 5/CMP.1 and how it complies with the requirements of the technical standard for data exchange between registry systems.

24. During the review, France provided additional information on developments made, and the possibilities for further developments, in particular for additional security measures for manual transactions implemented in 2011 (such as the introduction of double validation, a second factor of authentication and a new transaction message flow). The ERT noted that the registry administrator was awarded with ISO 9001 certification in 2010, which should ensure enhanced quality management.

25. The ERT noted that France expects to change the registry software in 2012 from SERINGAS software to the EU registry. This change will be followed by institutional rearrangements, but all the staff of the registry administrator are expected to remain in place.

26. The ERT took note of the recommendation of the standard independent assessment report⁵ (SIAR) that a clear statement should be made on its website on which components of paragraphs 46 and 47 of the annex to decision 13/CMP.1 are confidential, including those that are confidential by EU regulation for a defined time period.

27. The ERT noted the conclusion of the 2010 ARR that the national registry continues to perform the functions set out in the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1 and that it continues to adhere to the technical standards for data exchange between registry systems in accordance with relevant decisions of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP).

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

28. As required by the UNFCCC reporting guidelines, France has provided in its NC5 comprehensive information on its package of PaMs implemented, adopted and planned in order to fulfil its commitments under the Convention and its Kyoto Protocol. Each sector has its own textual description of the principal PaMs, supplemented by summary tables on PaMs by sector. France 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 NC5 contains an augmented set of PaMs compared with those listed in the NC4, and includes longer-term targets and additional measures introduced in 2009; it also contains comprehensive information on PaMs at the national level and limited information on PaMs at the subnational level (see para. 35).

⁴ FCCC/ARR/2010/FRA.

⁵ IAR/2009FRA/1/1 and IAR/2009FRA/2/1.

29. However, the ERT noted that France did not provide the following reporting elements required by the UNFCCC reporting guidelines and by decision 15/CMP.1: information on steps France has taken to promote and/or implement any decisions by IMO in order to limit or reduce emissions of GHGs from marine bunker fuels. The ERT recommends that France include this information in its next national communication and that it increase transparency of reporting by presenting PaMs by sector subdivided by GHGs and by specifying the implementation status and enhancing information on how France believes its PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals. The ERT encourages France to highlight the PaMs that will have the most impact on GHG reduction and on PaMs that could potentially increase GHG emissions.

30. France has provided information on PaMs that are no longer in place since the NC4 in the energy, transport and agriculture sectors, but has not reported on PaMs that could potentially increase emissions. The PaMs that are no longer in place have been superseded by other programmes and the NC5 provides short descriptions of these changes; however, the reason for discontinuation of a particular PaM is generally not given. For example, for renewable energy, the tendering mechanism for the wind energy plan has been updated to cover inland and offshore wind power; for the transport sector, a European-wide voluntary agreement on the energy efficiency of passenger cars has been complemented by a national regulation. According to information provided during the in-country review, the foreseen effect of abolishing carbon tax for sectors not in the European Union emissions trading scheme (EU ETS) (mentioned in the NC4) has been offset by the effects from the slower economic growth and other PaMs.

31. France has made some progress since the NC4 in evaluating the effects of individual PaMs. Two approaches were used: the SceGES model, which provides a detailed evaluation of individual PaMs, and the MED-PRO model, which develops macroeconomic scenarios and future projections. The MED-PRO model makes a top-down estimate of GHG reductions by sector, but it does not estimate the impacts of individual PaMs. It is therefore difficult to link the bottom-up SceGES estimates with the MED-PRO estimates: a significant gap remains between the results of these two models. The ERT welcomes the effort made by France to estimate the effect of individual PaMs and, while acknowledging the difficulties in estimating the potential overlap of the effect of PaMs, encourages France to provide a sectoral aggregation of the effect of PaMs, in order to estimate the effects of all individual PaMs by gas in its next national communications.

32. Some of the recommendations from the previous review were taken into consideration to improve reporting in the NC5, including the presentation of PaMs for emissions from waste as a separate sector. Also, progress has been made since the NC4 in the reporting of costs for PaMs, as the NC5 reports on the assessment of the cost-effectiveness of some PaMs. However, the costs are not systematically provided for each individual PaM and therefore it is not clear what the costs and benefits of the implemented PaMs are. Since France evaluates the cost of individual PaMs or groups of PaMs using the SceGES model, the ERT encourages France to include the information on the costs of PaMs in a systematic manner in its next national communication.

33. Table 3 provides a summary of key PaMs in France.

1. Policy framework and cross-sectoral measures

34. MEDDTL has overall responsibility for climate change policy in France (see para. 13). Several other ministries, such as the Ministry of Higher Education and Research, the Ministry for the Economy, Finance and Industry, the Ministry for Agriculture, Food, Fisheries, Rural Development and Spatial Planning and the Ministry for Foreign Affairs, also contribute to the French policy for combating climate change. The General Directorate

for Energy and Climate Change (DGEC) is responsible for co-ordinating and directing the climate change policy, while the General Directorate for European and International Affairs is responsible for international issues. The National Observatory for the Impacts of Global Warming (ONERC) (supervised by DGEC) is responsible for collecting and distributing information on global warming and extreme weather events.

Table 3
Summary of information on policies and measures in the fifth national communication and updates made during the in-depth review

<i>Major policies and measures</i>	<i>Examples/comments</i>
<i>Policy framework and cross-sectoral measures</i>	
Integrated climate programmes	Climate Plan (2004, with latest update in 2009) Grenelle environmental acts: Grenelle I (2009) and Grenelle II (2010) European Union emissions trading scheme, second phase (2008–2012) and third phase (2013–2020) Energy-efficiency certificate scheme, first phase (2006–2009) and second phase (2011–2013) (6.9 Mt CO ₂ eq) Domestic joint implementation projects in France (since 2006) in sectors not covered by the European Union emissions trading scheme
<i>Policies and measures by sector</i>	
<i>Energy</i>	
Renewable energy source	National Renewable Energy Action Plan (2010) Feed-in tariff for electricity produced from renewable energy sources Tenders for the construction of wind and biomass power plants Renewable energy purchase obligations Renewable heat fund (13.04 Mt CO ₂ eq)
Energy-efficiency improvements	National Energy Efficiency Action Plan (2011) Energy-efficiency certificates (6.9 Mt CO ₂ eq) Sustainable development tax credit for energy-efficient equipment (6.56 Mt CO ₂ eq) Equipment energy performance labelling and regulations Support for energy audits and energy management activities
Other	Continued use of nuclear power; European Union directives on the promotion of cogeneration, on biofuels, on energy use in buildings, on promotion of power generation from renewable energy sources and on minimum energy performance standards and labelling
<i>Residential and commercial</i>	
Standards and regulations	Regulations on energy performance of new buildings (RT 2005, RT 2012) Passive energy buildings requirement in 2020 (planned) (1.24 Mt CO ₂ eq for RT 2005, 3.55 Mt CO ₂ eq for RT 12)
Financial mechanisms	Financial support for the refurbishment of existing buildings Sustainable development tax credit for energy-efficient equipment (6.56 Mt CO ₂ eq) Loans for purchase of low-energy consuming new buildings (1.89 + 0.18 Mt CO ₂ eq)
Information	Mandatory energy performance certificates and labelling (0.15 Mt CO ₂ eq)

<i>Major policies and measures</i>	<i>Examples/comments</i>
	Support for energy audits for buildings
<i>Transport</i>	
Passenger cars	Bonus–malus scheme to promote vehicles with low CO ₂ emissions and scrappage scheme (6.05 Mt CO ₂ eq for total financial measures) Plan for electric vehicles (1.9–2.1 Mt CO ₂ eq)
Modal shift	National transport infrastructure scheme (2–3 Mt CO ₂ eq)
Biofuels	Biofuel obligation on fuel suppliers (7.7 Mt CO ₂ eq) Tax exemptions on sales of biofuels
<i>Industrial processes</i>	
Energy-efficiency improvements	Financial assistance for energy audits
Pollution prevention and control	Control of SF ₆ emissions Measures on hydrofluorocarbon emissions, including recuperation and limitation of hydrofluorocarbon emissions by rationalizing the use of air conditioners (6.48 Mt CO ₂ eq) Tax on industrial polluting activities Joint implementation projects limiting N ₂ O emissions from adipic acid and nitric acid production
<i>Agriculture</i>	
Information and research	Reductions of N ₂ O emissions through a more rational use of mineral fertilizers Measures aimed at reducing energy consumption by tractors and other agricultural machinery through information sessions and retrofitting of machinery Objective Grounds 2020 Plan, which promotes improved crop practices
<i>Forestry</i>	
Promotion of wood use	Measures aimed at enhancing the harvesting of wood products, developing wood biomass energy, including a grant scheme for the sawmill industry (2006), financial incentives for the installation of wood-burning boilers, minimum requirement for the use of wood in the construction of buildings
<i>Waste</i>	
	Reduction of waste disposed on land (2 Mt CO ₂ eq) Taxes on waste disposal on land and on landfills

Note: The greenhouse gas reduction estimates, given for some measures (in parentheses), are reductions for 2020.

35. Some PaMs are deferred to institutions at the regional and local levels; however, limited information is provided on the role of the institutions at those levels and on the linkages between the efforts at all levels in the NC5. During the in-country review, France provided additional information on the increasing role of local authorities in climate change policy. The ERT learned that since 2004, 200 local authorities have developed climate plans. Grenelle II has strengthened the requirements for local authorities by asking local authorities with more than 50,000 inhabitants to put into place climate and energy plans (PCETs) by the end of 2012. Local spatial planning schemes are required to take into account the PCETs and may define a level of threshold population density in order to encourage more dense urban areas. The NC5 highlighted the inclusion of sustainable

development and energy efficiency in public procurement by local authorities, which makes up 10.0 per cent of the GDP of France. The ERT commends France for this initiative.

36. The implementation of PaMs is monitored and evaluated at the national level by the Grenelle monitoring committee, which meet every two months, and at the sectoral level by the individual ministries. Committees monitoring the implementation of PaMs were set up in 2009 on a sectoral basis and are led by the Greenhouse Effect Prevention Department. The committees aim to evaluate the impacts of PaMs in each sector for GHG emissions scenarios. Further, the ministries involved in the development of climate change policy present to the French Parliament, through the relevant ministers, their cross-cutting climate mitigation and adaptation policies, including their performance indicators and costs. However, the ERT noted that it does not appear to be a systematic nor continuous approach for the monitoring, evaluation and modification, if necessary, of PaMs in France.

37. The ERT notes an increasing level of integration of climate and energy policies at the national (see para. 42) and local levels (see para. 35) in France and a growing focus on the promotion of energy efficiency and the use of renewable energy sources in the residential and transport sectors, which are addressed through regulations, financial incentives and economic instruments.

38. The main frameworks for PaMs relating to climate change are the Climate Plan (2004–2012), the two Grenelle environmental acts (2009 and 2010) and the EU climate and energy package. The Climate Plan (2004, updated every two years, with the last update in 2009) includes France's actions for meeting its commitments under the Kyoto Protocol. The Climate Plan is based on two pillars, mitigation and adaptation, and is linked to the National Strategy for Sustainable Development (2003, updated in 2005 and 2010).

39. At the EU level, the main framework guiding climate change policy is the EU climate and energy package (2008), which sets targets for GHG emission reductions of at least 20.0 per cent below the 1990 levels at the EU level and is linked to the implementation of the EU ETS and the "effort-sharing" agreement for the sectors not covered by the EU ETS. The sectors covered by the EU ETS have to reduce their GHG emissions by 21.0 per cent below the 2007 levels during 2013–2020. The sectors not covered by the EU ETS have to reduce their GHG emissions by 14.0 per cent below the 2005 levels by 2020, but this target has not yet been divided further into specific sectoral targets.

40. The implementation of the EU climate and energy package (2008) is also linked to the European Energy Efficiency Plan and the EU directive on the promotion of the use of energy from renewable sources. At the national level, France set a target to increase energy efficiency by 2.0 per cent per year by 2015 and by 2.5 per cent per year by 2030. France addresses energy demand through the National Energy Efficiency Action Plan, Energy Saving Certificates, the implementation of the EU eco-design directive and a range of financial incentives, including accelerated depreciation (until 2011), the reduction of business tax for energy-efficient equipment (until 2011) and subsidies for energy audits. Promotion of the use of renewable energy sources is addressed by setting a target to increase the share of renewable energy sources in the total primary energy supply to 23.0 per cent by 2020.

41. Other EU-level legislation influencing GHG emission levels targets reducing GHG emissions from passenger cars and buildings, decreasing energy consumption by appliances and carbon dioxide capture and storage.⁶

⁶ The regulation on CO₂ from new passenger cars to reduce average CO₂ emissions to 120 grams per kilometre by 2015; directive 2009/31/EC on the geological storage of carbon dioxide; directive 2002/91/EC on the energy performance of buildings; directive 2009/125/EC on eco-design; and

42. At the national level, climate change policy was strengthened by the Grenelle environmental acts, initiated by the Grenelle Environment Forum in 2007 as a result of a broad consultative round-table process involving 16,900 stakeholders. The Grenelle Environment Forum defined a package of PaMs across all sectors, prioritizing transport and buildings.

43. The Grenelle Planning Act (Grenelle I, 2009), which set a national long-term GHG emission reduction target of 75.0 per cent by 2050 compared with emission levels in 1990, was followed by the Grenelle National Commitment Act (Grenelle II, 2010), which specified sectoral targets for transport (to stabilize GHG emissions from the transport sector at the 1990 level by 2020) and waste (to reduce waste generation per capita by 7.0 per cent by 2013 and to increase the waste recycling rate to 45.0 per cent by 2015 compared with the level in 2007) and included a package of PaMs to achieve these targets. With regard to the agriculture sector, France aims that 30.0 per cent of all farms become low-energy dependent farms by 2013. The package of PaMs to achieve these targets is made up of strengthened regulations, renewable energy and energy-efficiency obligations, and financial mechanisms, with a priority given to the building and transport sectors.

44. The ERT noted that many of the medium-term targets are very ambitious and their achievement seems to be challenging, that a number of PaMs that should ensure achievement of the medium-term targets are still under preparation and that the poorly quantified effect of some of the PaMs makes it difficult to assess whether the national and sectoral targets can be achieved with these PaMs. The ERT encourages France to monitor the progress towards the achievement of these targets.

45. An innovative cross-sectoral measure to reduce GHG emissions has been the development of GHG reduction projects applying the joint implementation (JI) rules to projects developed in France (hereinafter referred to as domestic JI projects) since 2006. This allows reduction of emissions in sectors not covered by the EU ETS by rewarding projects, and indirectly the participating companies and households that reduce GHG emissions, with emission reduction units. Through implementation of these projects, France seeks to gain know-how in methodologies for the estimation of diffuse emissions from the agriculture, transport, housing and LULUCF sectors. The government has already approved methodologies (for 13 projects) that could be applied for the domestic JI projects.

46. A successful PaM for reducing GHG emissions (the PaM with the largest GHG reduction effect in 2010), as shown in the NC5, was the sustainable development tax credit for the purchase of energy-efficient appliances for buildings. The measure cost EUR 2.1 billion in 2008; it is estimated to have saved 3.83 Mt CO₂ of emissions in 2010 and is expected to save 6.56 Mt CO₂ in 2020. Additional information provided during the in-country review also highlighted the success of the bonus–malus tax scheme in encouraging the purchase of new passenger cars with low emissions, although the scheme has cost more than expected.

2. Policies and measures in the energy sector

47. Between 1990 and 2009, GHG emissions from the energy sector decreased by 5.0 per cent (19.1 Mt CO₂ eq); GHG emissions from the energy sector made up 69.7 per cent of total GHG emissions in 2009. The decrease was mainly driven by a reduction in GHG emissions in manufacturing industries and construction (by 23.5 per cent) and energy industries (by 7.8 per cent), which was partly offset for by an increase (by 8.9 per cent) in GHG emissions from the transport sector. In the residential and services sector the GHG emissions level slightly fluctuated throughout the period, but overall did not substantially change, as the energy-efficiency improvements compensated

directive 2009/28/EC on the promotion of the use of energy from renewable sources.

the impact from the increase in the number of dwellings and commercial buildings. Although energy demand increased in the energy sector over the period, there has been a shift from oil and coal use to the use of renewables and gas for energy generation, resulting in lower GHG emissions.

48. Overall, GHG emission reductions from the energy sector are focused on the following: the management of energy demand and the reduction of related emissions; the reduction of emissions in the production of electricity by increasing the amount of renewable-based electricity production; increasing research and innovation in the energy sector; and improving non-road transport infrastructure.

49. **Energy supply.** The national circumstances for France imply that emissions from electricity production comprise a small share of GHG emissions from energy, since the majority of electricity is produced from nuclear power. Thus, efficiency measures targeted at electricity end-users may not necessarily bring substantial GHG reductions.

50. Since 2000, the level of electricity generation has risen by 3.6 per cent. The major change in the power generation mix has been the increase of the use of gas; however, it remains at a low level (4.0 per cent) compared with power generation from nuclear power (75.0 per cent) and power generation from renewables (13.5 per cent) and coal (5.5 per cent) in 2009. French domestic energy production rose by 19.4 per cent (to 136.6 Mtoe) over the period 1990–2008, mostly caused by the growth in the production of nuclear-based electricity.

51. The NC5 highlights several PaMs to reduce GHG emissions from power generation, notably the following: the feed-in tariffs for electricity from renewable energy sources; the obligation of electricity suppliers to purchase electricity produced by cogeneration (up to 345 TWh in 2011–2013); the extension of the life of existing nuclear power plants and the construction of a new plant; and the implementation of the EU ETS directive in the power generation sector. The ERT noted some related research, namely by ADEME, which managed demonstration projects on the integration of renewables into the grid and investigated measures to reduce peak electricity demand. Research in carbon dioxide capture and storage has also been launched in France.

52. **Renewable energy sources.** Renewable energy sources accounted for 19.9 Mtoe in France in 2009, of which approximately 33 per cent was used for electricity generation and 50 per cent for heat production; the remainder was used as biofuels for transport.

53. Following the Grenelle Environment Forum, the National Renewable Energy Action Plan (2010) sets a target of 23.0 per cent of final energy consumption (a total of 36 Mtoe of renewable energy or an additional consumption of 20 Mtoe of renewable energy in comparison with 2006) to come from renewable sources by 2020. This will require an additional 17.0 Mtoe production of energy from renewable sources between 2009 and 2020. The National Renewable Energy Action Plan (2010) also includes ambitious individual targets for different types of renewable energy sources that together will achieve a doubling of electricity and heat generated from renewable sources. The latest estimates of the impact of PaMs indicate that the following annual GHG emission reductions will be achieved: 5.37 Mt CO₂ eq through wind power, 3.94 Mt CO₂ eq through hydroelectric power, 1.93 Mt CO₂ eq through biomass, and 1.80 Mt CO₂ eq through solar photovoltaic panels.

54. The NC5 highlighted several PaMs aimed at achieving this ambitious target, namely the following: the Renewable Heat Fund (which was set up in 2008 with a budget of EUR 1.2 billion for the period 2009–2013 to promote the use of renewable and recovery heat, including solar thermal, biomass and geothermal energy); sustainable development tax credits (available to individuals for the purchase of renewable energy equipment); and a combination of feed-in tariffs and tendering procedures for renewable electricity and heat (feed-in tariffs are differentiated per segment and provide a guaranteed tariff for 10–20

years). The legislative framework has been changed to improve administrative procedures, enable the pre-selection of sites for offshore wind power and encourage local and public authorities to install solar panels. The existing hydroelectric plants will also be modernized and the call tenders will select operators based on energy-efficiency criteria and water quality improvement measures.

55. **Energy efficiency.** In 2005, France adopted the Energy Law, which set energy intensity improvement targets of reaching an annual reduction of 2.0 per cent of energy intensity by 2015 and of 2.5 per cent by 2030. PaMs to achieve these targets can be divided into financial, market-based and regulatory measures.

56. The main market-based measure to achieve the targets is the energy-efficiency certificate scheme (white certificate scheme), which was launched in 2006 and ran in a first phase until 2009. The objective for energy savings was set at 54 TWh (for 2006–2009) through individual targets for suppliers; the scheme is considered a success, with 65 TWh of energy savings delivered during that period. The scheme covered energy suppliers but excluded transport fuel suppliers. France estimates that 1.83 Mt CO₂ emissions were saved annually (during 2006–2009) as a result of this measure. A second phase of the energy-efficiency certificate scheme (2011–2013) includes also transport fuel suppliers and sets a target of 345 TWh cumulative energy savings over the period 2011–2013. France estimates that 6.9 Mt CO₂ eq will be saved in 2020 through this measure.

57. The NC5 also briefly describes awareness and support campaigns run by ADEME to promote energy management, particularly by public authorities. France also requires energy performance labels on some energy-using equipment. Regulatory measures include energy performance standards for energy-using equipment, buildings and cars. These last measures have not been assessed for their impact on any GHG emissions.

58. Additional information has been provided by France on more recent PaMs for the improvement of energy efficiency. The National Energy Efficiency Action Plan (2011), which identifies the measures that France will put into place to achieve a 20.0 per cent energy saving through energy-efficiency improvements by 2020, will be submitted to the European Commission in 2011.

59. As part of the implementation of the eco-design directive, 11 regulations regarding energy performance standards for products have been adopted. It is estimated that the phasing out from the market of incandescent light bulbs alone, planned to take place by 2012, will deliver 4.0 Mt CO₂ eq in energy savings in 2020. France encourages the use of energy performance contracts, particularly in the public sector through the provision of information and legislative changes. In the residential sector it is obligatory for large multidwelling buildings to consider an energy performance contract once an energy audit has been carried out. At the end of 2009, France launched an Investments in the Future fund. Some of the themes for investment include energy efficiency. There appears to be few estimates of the effect that these PaMs will have on France's GHG emissions and energy-efficiency targets in 2020.

60. **Residential and commercial sectors.** Reduction of energy consumption and GHG emissions from buildings in the residential and commercial sectors is one of the priorities for French climate policy. The residential and commercial sectors accounted for 17.2 per cent of total national GHG emissions in 2009, from which two thirds came from the residential sector and one third came from the commercial sector. GHG emissions from these sectors have been reducing since 2004 as a result of PaMs that have reduced the heating demand in buildings, despite the increased number of dwellings.

61. France identified ambitious medium-term GHG emission reduction targets for both existing buildings (38 per cent reduction of energy consumption in 2020 compared with the levels in 2007) and new buildings (all new buildings shall be positive energy buildings by

2020) and introduced a package of regulatory, financial and information measures to deliver these targets. However, information is not available in the NC5 on the impacts of all PaMs, in particular the effects of PaMs in the residential and commercial sectors are not estimated.

62. The target for existing buildings is planned to be achieved through incentive measures such as eco-loans and tax credits for the renovation of existing buildings. In addition, although energy performance audits have been mandatory since 2007 for the rental or sale of residential buildings, a decree in 2010 made it mandatory for energy performance certificates to be displayed in real estate agencies from 2011, and a national database has been created with information from the energy performance certificates. Moreover, an energy performance certificate must be issued for all multi-storey buildings with a collective heating system by the end of 2016. There have been fewer measures put into place targeting commercial buildings. A new measure is planned that will require commercial buildings to carry out cost-effective thermal renovations by 2020.

63. To facilitate the implementation of the target for new buildings, along with increased tax credits for the purchase of low-energy consuming new houses, additional measures have been introduced, which include a new regulation on energy performance of new buildings ('thermal regulation' RT 2012), which requires all new buildings to meet low-energy building specifications of 50 kWh/m² per year for heating, hot water, cooling and lighting. It is estimated that 3.55 Mt CO₂ eq of emissions will be reduced annually by 2020 as a result of this measure. The RT 2012 regulation will be implemented in October 2011 for the commercial sector and in 2013 for the residential sector. The implementation of the requirement and the requirement for buildings to be positive energy buildings by 2020 is supported by a loan scheme introduced to facilitate the purchase of low-energy consuming houses by first-time buyers.

64. There is a range of financial incentives provided to encourage homeowners and businesses to invest in energy-efficient equipment and buildings. These include the sustainable development tax credit on low-energy-using equipment, exemptions from property taxes, accelerated depreciation in the commercial sector, the sustainable development savings account, an 'eco-bonus' for house renovations, energy saving funds for low-income groups, the 'thermal regulation' and a minimum wood inclusion rate in buildings materials. To date, six million out of 30 million residential housing units have been renovated as a result of these measures; the sustainable development tax credit is judged to have had the most significant impact, with 6.5 Mt CO₂ eq of emissions reduced (compared with 1.9 Mt CO₂ eq of emissions saved by the eco-loans). The effect of the 'thermal regulation' (RT 2005) is estimated to be 1.24 CO₂ eq in 2020.

65. **Transport sector.** The transport sector accounted for the largest share, 25.2 per cent, of total national GHG emissions in 2009. Transport emissions increased strongly between 1990 and 2001, but have been decreasing since 2004. A total of 93.5 per cent of emissions in transport sector in 2009 came from road transportation. While emissions from passenger cars have been decreasing since 2004, emissions from freight vehicles have been growing and are projected to continue to grow.

66. In the transport sector, France has set a target to stabilize GHG emissions at the 1990 level by 2020 (a reduction of the order of 20.0 per cent compared with 2007), which is planned to be achieved through the following subsectoral medium-term targets: CO₂ emissions efficiency for new cars shall not exceed 130 g/km in 2015 and 95 g/km in 2020 (these legally binding objectives for manufacturers are set by the EU); there should be an increase in the non-air share of freight transport to 25.0 per cent by 2022; there should be an increase in the share of biofuels in motor fuel by 10.0 per cent in 2015; and there should be an increase in the share of the use of renewable energy sources in transport other than biofuels, to 1.5 per cent, by 2020.

67. PaMs in the transport sector are clustered around the following: investments in infrastructure that promote a modal shift from road transportation to rail and waterways transportation; incentives for the use of low CO₂ emitting vehicles; and incentives for an increased use of biofuels. The transportation modal shift is implemented through the National Scheme for Transport Infrastructure, which intends to deliver 2–3 Mt CO₂ eq of emission reductions by 2020. The package of PaMs to promote the efficiency of passenger cars include CO₂ labelling for passenger cars, a bonus–malus scheme to encourage low CO₂ vehicle purchases and regulation of emissions from air conditioning. The bonus–malus scheme was introduced in January 2008 and provides an incentive to purchasers of low-emitting vehicles and introduces a higher registration tax on high-emitting vehicles. This has been enormously successful and resulted in a reduction in average CO₂ emissions per vehicle of nearly 11.0 per cent between 2007 and 2009. It is estimated that the bonus–malus scheme will deliver 6 Mt CO₂ of reductions in 2020. With regard to the promotion of the use of biofuel, the ERT notes that although fuel suppliers are required to sell biofuels, either by blending or as pure biofuels, the 2010 target of a 7.0 per cent share of biofuel was missed by 0.6 per cent. The 2015 target (10.0 per cent share of biofuel) is expected to result in 3.8 Mt CO₂ eq of emission reductions.

68. The ERT noted that France now has one of the most efficient car fleets in the world; this is a result of the financial incentives for the purchase of low-emitting vehicles and of fuel pricing policies that have led to increased dieselization of the car fleet (55.0 per cent of the car fleet in 2009 was run on diesel) and hence lower CO₂ emissions on average per vehicle.

69. With regard to the PaMs in aviation, France reports the inclusion of aviation in the EU ETS as of 2012. At the national level, France has signed an agreement (2008) which summarized various environment-related voluntary commitments with all airlines operating in France. According to this agreement, Air France-KLM, for example, has committed to reduce fuel consumption to 3.7 litres per passenger per 100 km by 2012. At the European level, France provided a sizable contribution (EUR 200 million) to the development of the European air navigation system, which, inter alia, aims to reduce emissions from intra-European flights by 6.0–12.0 per cent by 2012.

70. With regard to steps taken to promote and/or implement decisions by IMO in order to limit or reduce GHG emissions from marine bunker fuels, in response to the ERT request during the review, France highlighted its active participation in the work by IMO on improving energy efficiency and reducing GHG emissions from ships since 2009. France has also been promoting an emissions trading system for the shipping industry.

71. **Industrial sector.** The ERT noted that the NC5 presents PaMs targeted at a reduction of emissions from fuel combustion in industry as well as PaMs targeted at a reduction of emissions from industrial processes in one section. The ERT encourages France, in order to improve transparency, to report these PaMs separately in its next national communication.

72. There appear to be fewer PaMs to reduce GHG emissions from fuel consumption in the industrial sector in France compared with other sectors. The EU ETS is the major PaM to reduce CO₂ emissions from this sector. During the in-country review, additional information was provided by France on the significantly expanded portfolio of PaMs targeted at GHG emission reductions from fuel combustion in industry; however, many of these are still in the planning stage. The introduction of the green loans scheme (2010) for companies for investment in improvements in their environmental and energy performance has been well received. The ERT welcomes the initiative of France to require companies with more than 500 employees to report a carbon balance from 2012 onwards.

3. Policies and measures in other sectors

73. Between 1990 and 2009, GHG emissions from industrial processes (including solvent and other product use), agriculture and waste decreased by 16.9 per cent, mainly driven by emission reductions in industrial processes and agriculture. The trend in GHG emissions from industrial processes showed notable decreases, which were partly offset by increases in emissions from the waste sector.

74. **Industrial processes.** In 2009, emissions from industrial processes accounted for 7.2 per cent of total national GHG emissions in France; they have decreased by 36.4 per cent since 1990. The reduction of emissions stems from the reduction in emissions from adipic acid production and an improvement in efficiency in the chemicals industry.

75. The ERT noted that N₂O emissions from industrial processes decreased by 84.1 per cent during 1990–2009 and by 42.9 per cent during 2005–2009, mainly due to technological changes in the production of adipic acid. This technological change in recent years was to some extent driven by domestic JI projects and by the approaching inclusion of N₂O emissions from the production of nitric and adipic acid under the EU ETS as of 2013. The ERT noted that the potential for a reduction of N₂O emissions from adipic acid production has already been explored and that France may wish to explore emission reduction potentials in the other sectors.

76. Emissions of HFCs used in refrigeration increased by over 300 per cent over the period, as a result of the substitution of the chlorofluorocarbons controlled by the Montreal Protocol. In accordance with the European regulation on certain fluorinated GHGs,⁷ France introduced measures aimed at limiting emissions of these gases into the atmosphere in 2007. These measures include imposing air-tightness tests for refrigeration and air-conditioning equipment for which the fluid content exceeds 2 kg, the recovery of fluids at the equipment's end of life and a minimum level of skill for the installation, maintenance and changing of these fluids. Additional information was provided during the review week on supplementary regulations relating to the use of fluorinated gases for non-refrigeration purposes from 2011. It is estimated that these two measures will deliver a reduction in GHG emissions of 6.48 Mt CO₂ eq in 2020.

77. Although PFC emissions decreased by 91.5 per cent during 1990–2009, the NC5 does not report on PaMs targeted at the reduction of these emissions. The ERT encourages France to elaborate on how its PaMs influence GHG emission trends in its next national communication.

78. **Agriculture.** Between 1990 and 2009, GHG emissions from the agriculture sector decreased by 11.9 per cent, mainly driven by the reduction of N₂O emissions from agricultural soils. Similarly as in the industrial processes sector, the ERT noted that the NC5 reports PaMs targeted at a reduction of CO₂ emissions from fuel combustion in the agriculture sector and, to the limited extent, those targeted at a reduction of CH₄ and N₂O emissions from manure management and agricultural soils together under the agriculture sector. The ERT encourages France, in order to improve transparency of reporting, to report these PaMs separately in its next national communication.

79. France has set a target to increase the share of organic agriculture by 20.0 per cent by 2020 (from 6.0 per cent in 2012) and provides incentives for the voluntary environmental certification of organic farming with the objective of engaging 50.0 per cent of farms in 2012.

⁷ Regulation No. 842/2006 of the European Parliament and of the Council of 17 May 2006 on certain fluorinated greenhouse gases.

80. The main PaMs targeted at the reduction of CH₄ emissions from the agriculture sector address the development of CH₄ recovery from manure for heat and electricity use. PaMs targeted at the reduction of N₂O emissions from agricultural soils include the Objective Grounds 2020 Plan, which provides support for the development of improved crop practices (pasturage systems, relaunching the culture of legumes and planting hedges, promoting limits on the use of fertilizers and pesticides, and enhancement of the carbon stock in soils). France estimate that these practices will result in a reduction of 0.5 Mt CO₂ eq annually by 2020.

81. *LULUCF*. The LULUCF sector was responsible for a net removal of 63.9 Tg CO₂ eq in 2009. Net GHG emissions and removals increased by 61.1 per cent during 1990–2009 but decreased by 7.1 per cent during 2008–2009. The key driver for the rise in removals was the expansion in the area of forest land and the increase in removals per unit area of forest land remaining forest land.

82. The main PaMs outlined in the NC5 focused on enhancing harvesting of wood through a grants scheme for saw mills and on developing wood biomass energy through financial mechanisms. These measures were expected to facilitate the installation of 1,800 biomass-fired boiler plants and the mobilization of 0.1–0.15 million m³ of wood over the period 2000–2006. Another measure (the Biomass Plan) was implemented from 2007 to 2010 and was expected to facilitate the implementation of another 1,000 biomass-fired boiler plants and the relevant use of 0.06–0.072 million m³ of wood over this period.

83. During the in-country review, additional information was provided on the Wood Construction Law, which requires the minimum use of 20 dm³ of wood per m² in buildings. Also, the National Renewable Energy Action Plan (2010) requires an increase in the use of wood fuel from 9 Mm³ per year in 2012 to 12 Mm³ per year in 2020. Multi-annual regional plans for forestry development were established in July 2010 to identify regional priority actions for mobilizing the use of wood. The sustainable development tax credit and the eco-loans apply to biomass equipment in private homes, and the electricity generated from biomass is supported by a purchase obligation.

84. *Waste management*. Between 1990 and 2009, GHG emissions from the waste sector increased by 66.3 per cent, mainly driven by the dynamics in CH₄ emissions from solid waste disposal on land, which followed the growing trend of population and GDP.

85. France has set a target to reduce waste generation per capita by 7.0 per cent by 2013 (from 391 to 362 kg/capita per year) and to increase the waste recycling rate to 45.0 per cent by 2015 (in 2007 the recycling rate was 34.0 per cent). France also aims to optimize energy recovery from landfills.

86. The main PaMs in the waste sector are financial incentives for households and landfill operators⁸ followed by information campaigns and research. Reduction of waste generation is encouraged through incentives for recycling, composting, CH₄ recovery from manure storage on farms and improvement of efficiency in waste incineration. It is expected that these measures will result in emission reductions from the waste sector of 2 Mt CO₂ eq per year by 2020. The ERT encourages France to further elaborate on PaMs for the different categories in the waste sector in its next national communication.

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

87. In its NC5, France has 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,

⁸ Incentives for landfill operators include the set price for electricity produced from landfill biogas, which is aimed at higher methane recovery rates.

including the adverse effects of climate change and social, environmental and economic impacts, on other Parties, especially developing country Parties. The NC5 underlines the capacity-building activities and technology transfer undertaken by France in developing countries. Further information on how France 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, and further elaborated in the 2011, annual submission, is presented in chapter III.

88. The NC5, however, does not elaborate information on how France strives to implement PaMs in such a way as to minimize adverse effects on international trade. During the review, France informed the ERT about EU-wide measures, such as reduced custom duties for imported products from developing countries and reduced support to EU Member States for agricultural production.

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

89. In its NC5, France presents projected GHG emissions based on a bottom-up energy model and input from sectoral models for all GHG emissions, including a ‘with measures’ scenario, a ‘with additional measures’ scenario and a ‘without measures’ scenario until 2020, presented relative to actual inventory data for 1990 and 2007. The ‘without measures’ scenario presents the GHG projections assuming that no PaMs were implemented since 1990. The ‘with measures’ scenario includes all PaMs adopted before 1 January 2008, while the ‘with additional measures’ scenario includes PaMs planned or adopted since 1 January 2008.

90. During the review, France presented a new set of updated projections, which included a consistent set of ‘with measures’, ‘with additional measures’ and ‘without measures’ scenarios that were all derived based on the same model as those provided in the NC5. The main differences compared with the projections presented in the NC5 are the underlying assumptions and the PaMs considered in the scenarios (see para. 98 below). The ERT commends France for updating its GHG projections. The ERT analysed this additional information provided during the review and presents the results in this report.

1. Projections overview, methodology and key assumptions

91. The NC5 presents projections on a gas-by-gas basis for all GHGs: CO₂, CH₄, N₂O, PFCs, HFCs and SF₆ (treating PFCs, HFCs and SF₆ collectively). Projections are also provided in an aggregated format for each sector as well as for a national total, using global warming potential values. However, the ERT noted that France did not provide emission projections related to fuel sold to ships and aircraft engaged in international transport. The ERT recommends that France report, to the extent possible, emission projections for fuel sold for international transport separate from the national totals in its next national communication.

92. The presentation of sectoral emissions in the projection section of the NC5 does not fully correspond to the sectoral disaggregation of PaMs in the PaMs section, which makes it difficult to compare effects of the individual PaMs with the projected total effect of PaMs. The ERT encourages France to improve the transparency and consistency of reporting by addressing these issues in its next national communication.

93. The ERT noted that the ‘without measures’ scenario was developed with a different model and based on a different set of assumptions (see para. 95 below) compared with the ‘with measures’ and ‘with additional measures’ scenarios, which made the comparison between the scenarios rather difficult. Based on the information available, it was difficult to

quantify the effect these different approaches used may have on the projected emissions. The ‘without measures’ scenario reported in the NC5 corresponds to that presented in the NC4. However, energy consumption has been scaled based on the changes in GDP growth rate and changes in the oil price. The GDP growth rate was reduced compared with the NC4, while the oil price was increased. The ‘with additional measures’ and the ‘with measures’ scenarios are based on an energy balance that was derived using a bottom-up energy demand model (Medpro⁹) in combination with a global energy model (POLES). The energy balance was complemented with additional information on activity data from other sectors (e.g. for the agriculture, waste and energy industries) and provided a sound basis for the calculation of the national total GHG emissions.

94. The definitions of scenarios provided in the NC5 have not specified which particular PaMs were considered as the existing PaMs and which as the additional PaMs. During the in-country review, France clarified the status of all PaMs. With regard to projections, in order to improve transparency and cross-chapter consistency, the ERT encourages France to provide this information in its next national communication.

95. For the preparation of the scenarios, France has used plausible assumptions. For the NC5, the GDP growth rate has been set to 2.1 per cent per year, the population growth rate has been set to 0.37–0.45 per cent per year and the oil price at USD 70 per barrel between 2006 and 2020. The assumptions used for the updated projections reflect the latest data available and thus provide a more accurate basis for the projections. For the updated projections, the population growth and oil price are assumed to be higher than those in the NC5;¹⁰ the GDP growth rate used for the updated projections reflects the impact of the global economic crisis, ranging from 0.7 to 2.2 over the period 2005–2020, and the price of emissions allowances in the EU ETS is adjusted to EUR 25 per tonne for 2020.

96. In its NC5, France presents a sensitivity analysis for the period 2009–2011, assuming various decline rates for GDP in 2009 and different climatic conditions over this period. A strong sensitivity was observed for variations of economic growth and climatic evolution (winter temperatures), while a somewhat weaker sensibility was observed for variation of the oil price and the supply of nuclear energy.

97. The updated projections used the same methodology as that for the ‘with measures’ scenario in the NC5. However, for the updated projections, there was a closer collaboration between the energy modelling and the subsequent GHG emissions modelling, resulting in an optimal exchange of data between the energy model and the GHG model.

98. The updated projections and those reported in the NC5 have a different reference point. This has an impact on the definition of the ‘without measures’, ‘with measures’ and ‘with additional measures’ scenarios and the PaMs that were included in the scenarios. The updated ‘without measures’ scenario (called the pre-Grenelle scenario) assumes that no measures have been implemented since 1 January 2008, the updated ‘with measures’ scenario includes only measures implemented and adopted before 1 January 2010 and the updated ‘with additional measures’ scenario includes measures that were adopted after 1 January 2010. For example, the ‘with additional measures’ scenario in the NC5 includes a carbon tax, which is not considered in the revised ‘with additional measures’ scenario in the updated set of the projections (as it was not adopted by the French Parliament as planned in 2010). This shift in the coverage of PaMs in the scenarios has a significant impact on the ‘without measures’ and ‘with measures’ scenarios, as shown in the graph below.

⁹ A description of the model is available at <www.enerdata.net>.

¹⁰ The population growth rate is assumed to vary from 0.52 per cent per year to 0.55 per cent per year and the oil price is assumed to vary from USD 87 to USD 100 per barrel during 2006–2020.

2. Results of projections

99. The results of projections suggest that France is likely to meet its GHG emission reduction commitments under the Kyoto Protocol (stabilization of emissions at the base year level during the first commitment period of the Kyoto Protocol), since in 2009 its national GHG emissions were by 8.1 per cent below the GHG emissions levels in 1990. This is the result of the impact of the economic development and the effects of the implemented PaMs.

100. Based on the 'with measures' scenario, presented in the NC5, total GHG emissions in France are expected to drop by 3.4 per cent below the base year level by 2010, and under the 'with additional measures' scenario emissions are expected to drop by 8.3 per cent in 2010 compared with the base year. According to these projections, France is expected to meet the Kyoto Protocol target with existing domestic PaMs without making use of the flexible mechanisms under the Kyoto Protocol. The ERT welcomed further information on projections provided during the in-country review and encourages France to provide more detailed information of the sectoral projections and how they reflect effects from the PaMs in its next national communication.

101. Based on the 'with measures' scenario of the updated projections, emissions are expected to be 11.0 per cent lower than the base year level in 2020 due to the effect of PaMs that have been launched since publication of the NC5 (namely financial incentives in the building sector, introduction of the third phase of the EU ETS, incentives to reduce CO₂ emissions from new vehicles). The 'with additional measures' projections for 2020 project that GHG emissions will be 23.0 per cent below the base year level both in the projections presented in the NC5 and in the updated projections, as no new additional measures were added.

102. With regard to meeting the long-term target of a 75.0 per cent reduction by 2050 (see para. 43) the projections to 2020 presented in the NC5, as well as the updated projections that continue to 2030, show that the target can only be met if GHG emissions decrease by 3.0 per cent per year on average. To sustain this reduction, the updated projections foresee the introduction of a carbon tax and a wide penetration of hybrid vehicles after 2020. Table 4 and the figure below summarize GHG emission projections in France.

3. Total effect of policies and measures

103. In the NC5, France presents the estimated and expected total effect of PaMs based on the difference between the total national GHG emissions under the 'without measures', 'with measures' and 'with additional measures' scenarios for 1990–2020. Information is presented in terms of GHG emissions avoided or sequestered, by gas (on a CO₂ eq basis), in 1995–2020. The total effect of PaMs is not provided on a sectoral basis, which makes it hard to judge which measures contribute most to the total reduction. During the review, the ERT was provided with additional information on sectoral projections, which helped to identify the sectors contributing most to the reduction of total national GHG emissions.

104. The ERT noted that the estimate of the total effect of PaMs based on the comparison of the 'without measures' and 'with measures' scenarios bears considerable uncertainty, as the two scenarios are derived from different models and are based on different macro-economic assumptions. The ERT encourages France to either provide a consistent set of 'without measures' and 'with measures' scenarios or to use a different approach to estimate the total effect of PaMs in order to improve the estimate of the total effect of measures. Also, the ERT encourages France to provide a discussion of the effects of PaMs by sector in its next national communication. In contrast to the NC5, the updated projections include

a consistent set of ‘without measures’, ‘with measures’ and ‘with additional measures’ scenarios that provide a better basis for estimating the total effect of PaMs.

105. France reported in its NC5 that the total estimated effect of adopted and implemented PaMs is 123 Tg CO₂ eq in 2010 and 163 Tg CO₂ eq in 2020 and that the total estimated effect of planned PaMs is 28 Mt CO₂ eq in 2010 and 116 Mt CO₂ eq in 2020. Accordingly, PaMs implemented in the energy sector deliver the largest emission reductions, followed by the effect of PaMs implemented in the industrial processes sector (mainly reduction of N₂O emissions) and the agriculture sector (mainly reduced CH₄ emissions).

Table 4
Summary of greenhouse gas emission projections for France

	<i>Greenhouse gas emissions (Tg CO₂ eq per year)</i>	<i>Changes in relation to base year level (per cent)</i>
Inventory data 1990 ^a	562.89	-0.2
Inventory data 2009 ^a	517.25	-8.3
Kyoto Protocol base year ^b	563.9	NA
Kyoto Protocol target ^b	563.9	0
‘Without measures’ projections for 2010 ^c	667.37	18.3
‘With measures’ projections for 2010 ^c	544.57	-3.4
‘With additional measures’ projections for 2010 ^c	517.00	-8.3
‘Without measures’ projections for 2020 ^c	716.07	27.0
‘With measures’ projections for 2020 ^c	552.63	-2.0
‘With additional measures’ projections for 2020 ^c	436.56	-22.6
Updated ‘with measures’ projections for 2020 ^d	501.60	-11.0
Updated ‘with additional measures’ projections for 2020 ^d	434.60	-23.0

^a France’s 2011 annual submission of 12 May 2011, version 2.1 (submitted under the Kyoto Protocol); the emissions are without land use, land-use change and forestry (LULUCF).

^b Based on the report of the review of the initial report of France contained in document FCCC/IRR/2007/FRA.

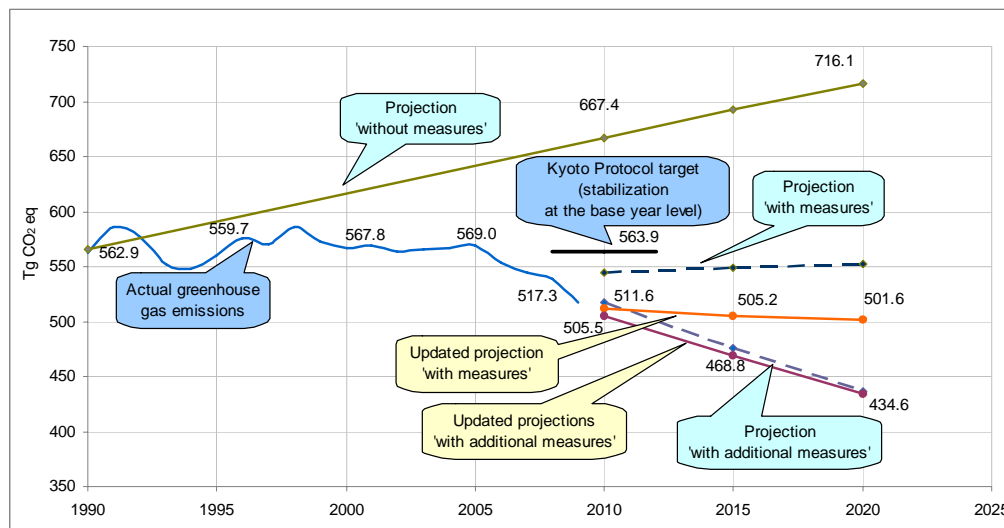
^c France’s fifth national communication (NC5); projections provided in the NC5 correspond to the geographical coverage under the Convention and is based on the 2011 annual submission of 11 April 2011 under the Convention, which includes the overseas communities (COM (collectivités d’outre-mer)). In this submission, the greenhouse gas (GHG) emissions from the COM contributed about 1.0 per cent to the total national GHG emissions and were 565,31 Tg CO₂ eq in 1990 and 512.27 Tg CO₂ eq in 2009 without LULUCF.

^d Updated projections provided by the Party during the in-country review; the projections are for the GHG emissions without LULUCF.

106. The ERT noted that the sum of the effects of the individual PaMs provided in the PaMs section of the NC5 (51 Mt CO₂ eq year by 2020) is considerably smaller than the estimated total effect of PaMs reported in the projection section of the NC5 (163 Mt CO₂ eq per year by 2020). During the review, the ERT learned that the evaluation of the individual PaMs and the assessment of the total effect of PaMs are made using different approaches; the effects of only some PaMs were quantified, thus these estimates cannot be compared directly.

107. The largest reductions among implemented PaMs are expected from the energy sector, in particular from the energy use in the residential and commercial sectors. The effects of planned measures reflect almost entirely the effects from measures in the energy sector. No effects were estimated for PaMs in the agriculture and LULUCF sectors. Table 5 provides an overview of the total effect of PaMs as reported by France.

Greenhouse gas emission projections



Sources: (1) Data for the years 1990–2009: France’s 2011 greenhouse gas inventory submission, version 2.1, submitted 12 May 2011; the emissions are without land use, land-use change and forestry (LULUCF). (2) Data for the years 2010–2020: France’s fifth national communication; the projections are for the GHG emissions are without LULUCF. (3) Updated projections provided by France during the in-country review.

108. The models used for projection development were documented briefly in the NC5, mainly with reference to other documents, and were elaborated during the in-country review. The ERT encourages France to further elaborate the description of the methodologies used for the projections in its next national communication. The ERT noted that the description of the projection could be more transparent if the data for the energy sector are disaggregated in a tabular format. Also, transparency could be improved by providing a list of the underlying assumptions for each scenario and a list of PaMs included in each scenario consistent with the PaMs presented in the PaMs section of the NC5.

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)		Effect of planned measures (Tg CO ₂ eq)		Effect of implemented and adopted measures (Tg CO ₂ eq)		Effect of planned measures (Tg CO ₂ eq)	
	Relative value (% of 1990 emissions)	Relative value (% of 1990 emissions)	Relative value (% of 1990 emissions)	Relative value (% of 1990 emissions)	Relative value (% of 1990 emissions)	Relative value (% of 1990 emissions)	Relative value (% of 1990 emissions)	Relative value (% of 1990 emissions)
	2010				2020			
Energy (including CO ₂ from transport)	76	13	28	5	107	19	116	21

Sector	Effect of implemen ed and 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 impleme d and adopted measures (Tg CO ₂ eq)	Relative value (% of 1990 emission s)	Effect of planned measures (Tg CO ₂ eq)	Relative value (% of 1990 emissions)
	2010				2020			
Industrial processes	39	7	0	0	49	9	0	0
Waste management	8	1	0	0	7	1	0	0
Total	123	22	28	5	163	29	116	21

Source: France's fifth national communication.

Note: The total effect of implemented and adopted policies and measures is defined as the difference between the 'without measures' and the 'with measures' scenarios; the total effect of planned policies and measures is defined as the difference between the 'with measures' and the 'with additional measures' scenarios.

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

109. In its NC5, France provided sufficient information on how its use of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol is supplemental to domestic action, although it did not elaborate on supplementarity as such. According to the projections of the 'with measures' scenario, GHG emissions in France are expected to be 19 Tg CO₂ eq below its Kyoto Protocol target, thus France will meet its commitment by domestic efforts only. During the in-country review, France confirmed that it does not intend to use the flexible mechanisms. However, companies under the EU ETS are allowed to acquire Kyoto units up to 13.5 per cent of their initial allocation.

110. Although France does not intend to use flexible mechanisms under the Kyoto Protocol to meet its target, it has provided assistance for developing country Parties to implement clean development mechanism (CDM) projects, focusing on French-speaking countries in Africa. By the time of the in-country review, France had initiated 96 CDM projects (which will save 50 Mt CO₂ eq per year) and 27 JI projects (which will save 4.8 Mt CO₂ eq per year). About half of the CDM projects are aimed at promoting renewable energy; however, the largest share of certificates is delivered through projects implemented in the industrial processes sector.

D. **Vulnerability assessment, climate change impacts and adaptation measures**

111. In its NC5, France has provided the required information on the expected impacts of climate change in the country and on adaptation options. ONERC, established in 2001, coordinates the work of different ministries on vulnerability and adaptation. ONERC is responsible for collecting and disseminating information on the results of studies and research on the risks related to global warming and extreme climatic events. Also, ONERC may provide recommendations on adaptation measures. In addition, MEDDTL coordinates an earlier warning system for extreme meteorological and hydrological events.

112. In order to model climate change scenarios France has applied two modelling systems, CNRM-CMARPEGE-Climat and MDZ, both of which were used for the preparation of the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report and the IPCC Fifth Assessment Report. France has identified the main risks associated with climate change as an increase in temperature, sea level rise, change in

rainfall variability (decrease of precipitation during summer), decrease of glacier and snow cover, and modification of ecosystems. The associated negative impacts identified are more frequent health problems, forest fires, avalanches, floods, storms and increased water shortages and infrastructure lost due to sea level rise. Although a list of vulnerable sectors was identified by France, there is no clarity on which sectors are considered as the most vulnerable. Table 6 summarizes the information on vulnerability and adaptation to climate change presented in the NC5 and other related documents such as the national adaptation plan.

113. Although the impacts of climate change are assessed and reported in the NC5 for many sectors, the impacts on livestock, fisheries, energy, transport, tourism and infrastructure were not reflected in it. The ERT noted that assessment of the cost of the impacts on the main sectors has been carried out since 2009 and encourages France to make efforts to quantify the impacts for the remaining sectors.

114. In 2006, France developed an adaptation strategy that focuses on health and safety, minimization of the social inequalities potentially caused by climate change and optimization of the opportunities for the positive impacts of climate change. A broad consultation with different ministries, experts, civil society and other stakeholders was carried out in 2010, which identified measures for all sectors and around 200 recommendations to be included in the national adaptation plan mentioned in paragraph 112. However, these adaptation measures have not been yet prioritized and their implementation has not been yet monitored.

115. During the in-country review, France informed the ERT about the further steps taken to implement the adaptation strategy mentioned in para. 114 above. A national adaptation plan was published during the preparation of this report, on 20 July 2011,¹¹ the adaptation plans for regions and local authorities are expected to be prepared by 2012. The ERT encourages France to elaborate on the linkages among the processes of the development of national, regional and local adaptation plans in its next national communication.

116. The NC5 gives extensive information on the cooperation of France with developing country Parties related to vulnerability and adaptation. The cooperation includes technical assistance for seasonal forecasts in West Africa and capacity-building in climate modelling through the African Center of Meteorological Applications for Development and its project African Early Warning and Advisory Climate Services in Africa. The ERT commends France for the transparent reporting of this issue.

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

<i>Vulnerable area</i>	<i>Examples/comments/adaptation measures reported</i>
Agriculture and food security	<p><i>Vulnerability:</i> crop yield will increase for areas at high latitudes (since the local temperature will increase by less than 3 °C and the higher CO₂ concentration will have a positive effect on photosynthetic activity). Crop yields at lower latitudes will decrease. Viral, bacterial and parasitical diseases will emerge</p> <p><i>Adaptation:</i> genetic research to enhance and conserve crop and fruit varieties is undertaken; long-term water management policies to improve the irrigation of small areas (capacity to store excess winter rainfall) are being assessed; crop pest and livestock disease warning</p>

¹¹ National adaptation plan, 20 July 2011, available at: <<http://www.developpement-durable.gouv.fr/Le-Plan-national-d-adaptation,22978.html>>.

<i>Vulnerable area</i>	<i>Examples/comments/adaptation measures reported</i>
	system enhanced; improvement of climate risk insurance schemes
Biodiversity and natural ecosystems	<p><i>Vulnerability:</i> loss of biodiversity, reduced areas of coral ecosystems. An economic assessment of biodiversity losses based on the concept of ecosystem services, applied to coral ecosystems and non-goods services provided by forests, indicates a negative impact</p> <p><i>Adaptation:</i> new forecast models for modification of biodiversity in line with the climatic scenarios and the economic evaluation of ecosystem services have been developed; strengthening of cross-border collaboration is planned</p>
Coastal zones	<p><i>Vulnerability:</i> sea level will rise</p> <p><i>Adaptation:</i> rolling back the infrastructure inland is forecast; water evacuation systems, equipment for floodable areas, raising of foundations of buildings and reinforcing protection services are planned; sea level rise will be mainstreamed in coastal town and country planning documents</p>
Tourism	<p><i>Vulnerability:</i> snowfalls will dramatically decrease at low altitudes, and to a lesser extent at higher altitudes. The maximum depth of accumulated snow will decrease at all altitudes. This will shorten the skiing season and will have a negative impact on the tourism industry in the mountain areas</p> <p><i>Adaptation:</i> Implementation of research programme to anticipate local snow cover depletion; promotion of alternative recreational activities for winter tourism in the mountain areas</p>
Forests	<p><i>Vulnerability:</i> forest productivity is projected to increase until 2050 (due to a shorter cold period) and is projected to decrease in the long term (until 2100) (due to more frequent extreme weather events and the spread of the Mediterranean forest)</p> <p><i>Adaptation:</i> changes in forestry management by harvesting appropriate species and amounts; research and observation on species robustness/resistance, as well as genetic improvements, is ongoing; management of protected forest areas; development of standards for and promotion of wood use in construction</p>
Health	<p><i>Vulnerability:</i> the risk of heatwaves will increase distinctly. A number of pathologies are likely to be noted; for example, more than 10 million people in France are affected by pollen allergies or hay fever</p> <p><i>Adaptation:</i> new climate-related risk factors monitored, such as pollen, fungi, insects and vector-borne diseases, and toxin-producing micro-organisms; solar ultraviolet radiation early warning system; heatwave management scheme; related health services will be upgraded</p>
Water resources	<p><i>Vulnerability:</i> by 2020, water collection is expected to decrease by 20 per cent; shortage of 2 billion m³ of water for industry, agriculture and drinking is expected by 2050. Disturbances to the hydrological cycle could be accompanied, in some circumstances, by more frequent and more intense flooding</p> <p><i>Adaptation:</i> a leakage control programme for drinking water networks is under way; water-saving investment is expected to be co-financed by the government</p>

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

117. The NC5 includes most of the information required by the UNFCCC reporting guidelines and by the “Guidelines for the preparation of information required under Article 7 of the Kyoto Protocol”, with the exception of an indication of what “new and additional” financial resources it has provided pursuant to Article 4, paragraph 3. During the review, France informed the ERT that it considers financial resources provided to the climate change related funds set up under the Copenhagen Accord as new and additional.

118. The ERT noted the increase in climate-related financial resources provided by France to developing country Parties. Financial support for climate change activities is channelled through three institutions, the Ministry of Foreign Affairs, the French Development Agency (AFD) and the General Directorate of Treasury, and includes bilateral, multilateral and regional support and official development assistance, including the Global Environment Facility (GEF) and the French Global Environment Facility (French GEF). For other support, the French GEF provided EUR 6.4 million for 2009, EUR 10.6 million for 2010 and EUR 95 million for 2011–2014.

119. The ERT noted that France has contributed EUR 98,000 to the adaptation fund established in accordance with decision 10/CP.7. With regard to the most recent financial contributions to the climate change related funds set up under the Copenhagen Accord, France has committed itself to provide EUR 1.26 billion in 2010–2012 (i.e. EUR 420 million a year). Table 7 summarizes information on financial resources for 2005–2009.

Table 7
Summary of information on provision of financial resources

Channel of financial resources	Year of disbursement				
	2005	2006	2007	2008	2009
Official development assistance (ODA) (USD million)	NA	9 442.8	8 223	9 874.6	8 999.1
Climate-related aid in bilateral ODA (USD million)	200.2	327.4	481.1	808.5	989.5
Contribution to the French GEF (EUR million)	NA	NA	NA	5.8	6.4
CTF (2008–2012) (USD million)	NA	NA	NA	NA	500
AF (2008) (EUR)	NA	NA	NA	98 000	NA
Contributions to the GEF (EUR million)	164 (2003–2006)	NA	154 (2007–2010)	NA	215.5 (2011–2014)

Abbreviations: AF = Adaptation Fund, CTF = Clean Development Fund, GEF = Global Environment Facility, NA = not applicable.

120. France provided financial support for climate change related programmes and projects to a large number of countries worldwide, in particular to countries in Africa and Asia. France highlighted that its aim is that financial resources targeted at climate change support progress towards achieving the Millennium Development Goals. Mitigation (in

particular energy efficiency and transport) remains the major area for support, followed by adaptation, for which securing water resources is the key area of funding. In 2010, 63.0 per cent of all financial resources channelled to developing country Parties were focused on mitigation, compared with 19.0 per cent that were allocated for adaptation-related projects. France's fast-start finance is focused on new actions, such as REDD-plus,¹² support to national appropriate mitigation actions and the developments of carbon markets. The ERT noted efforts made by France to develop a carbon footprint model that will facilitate project evaluation. Within the support provided, the share of loans is increasing, while the share of grants is slightly decreasing.

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

121. In its NC5, France has provided information related to all reporting requirements, with the exception of clearly distinguishing between activities undertaken by the public sector and those undertaken by the private sector. During the review, France noted the efforts made and the challenges met while seeking to make this distinction. The ERT recommends that France clearly distinguish between the activities of technology transfer undertaken by the private sector and those undertaken by the public sector in its next national communication.

122. Activities related to the transfer of technologies undertaken by the French Government and local authorities are focused on the transfer of know-how, in particular in the energy and transport sectors. Examples of technology transfer projects carried out by France include the development of decentralized electricity networks based on renewable energy in rural areas in Africa and assistance in the development of underground transport systems in Brazil. Local authorities mostly support the promotion of renewable energy, energy efficiency and electrification in rural areas, such as, for example, the installation of a wind power plant in Mauritania, the construction of river dams in Mali and the construction of a geothermal power station in Dominica. In addition, France significantly contributes to numerous international energy and climate change related partnerships, such as the International Energy Agency. The NC5 highlights that France is ranked as the third country worldwide (after the United Kingdom of Great Britain and Northern Ireland and Germany) in exporting new climate change related technologies.

123. The ERT noted that incentives for the private sector to transfer technology to developing country Parties are increasing in France and that green technology diffusion by the private sector is promoted through different schemes, such as FASEP (the Fund for Research and Assistance for the Private Sector), COFACE (the mechanism to support French firms located abroad) and UbiFrance (the French Agency for the International Development of Companies).

124. The ERT also noted that technology transfer includes the development and promotion of local technology (biogas digesters, improved cooking stoves and agro-ecology practices). The ERT encourages France to better reflect successful partnerships with local companies in developing country Parties in its next national communication.

F. Education, training and public awareness

125. In the NC5, France has provided information on its actions related to education, training and public awareness at the national and international levels. Many actions have

¹² Policy approaches and positive incentives on issues relating to reducing emissions from deforestation and forest degradation in developing countries; and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries.

been taken to include or expand climate change related subjects in the curricula of primary and secondary schools, universities and training centres through an interdisciplinary approach. Climate change related training was carried out in the areas of buildings, agriculture and renewable energy. The ERT noted that ADEME has a number of training initiatives on energy efficiency and energy savings.

126. The ERT noted that the public and stakeholders play an increasing role in climate change policymaking. For example, the Grenelle process involved over 30,000 people through the consultation process, and for major climate related policies associated public campaigns have been developed (e.g. campaigns for the promotion of energy labelling and waste recycling).

127. The ERT noted that public environmental awareness has been assessed on a regular basis by France; such monitoring attests the enhancement in awareness of the population on the impacts of human activities on climate change. However, during the in-country review the ERT was informed that after the United Nations Climate Change Conference held in Copenhagen, Denmark, in 2009, the public in general is not as receptive as before to climate change issues. Surveys have identified that climate change was a priority for 33.0 per cent of the French population in 2007, whereas in 2010 it was a priority for only 19.0 per cent. The ERT encourages France to continue to enhance information on education, training and public awareness in its next national communication.

G. Research and systematic observation

128. France provided a detailed description of its contribution to climate research and observation, in compliance with the reporting requirements provided by the UNFCCC reporting guidelines, and addressed both domestic and international activities. The NC5 and the information provided during the review also reflect actions taken to support related capacity-building in developing countries. Furthermore, France has provided in its NC5 a summary of information on Global Climate Observing System (GCOS) activities and during the review clarified how information and data related to GCOS is made publicly available.

129. Research related to climate change is a priority area of French research. The research activities cover a wide range of topics, including climate modelling, monitoring, impact studies and technical research (e.g. energy research), with increasing importance being given to research on impacts and adaptation. A large part of the funding for research is directed at various research institutions, and additional funding is provided through ANR and through programmes of the National Institute for the Sciences of the Universe. France is strongly involved in international research efforts, including those for the IPCC Fourth and Fifth Assessment Reports and the Seventh Framework Programme in Europe.

130. The Institute of Research for Development in cooperation with the AFD sets up collaborations at various levels with developing countries, ranging from support to individual researchers to long-standing collaborations between research groups. Partnerships have been set up with a number of countries in Africa and South America (e.g. for glacier monitoring in Peru). The focus of the projects includes capacity-building in climate modelling and forecasting, natural hazards management, support for the development of adaptation strategies and activities in the area of data rescue (e.g. in the Pacific region).

131. With regard to systematic observation, the ERT noted that with various stations in its overseas territories, France maintains a wide network of climate observation sites, covering the atmospheric, oceanic and terrestrial domains, and collaborates in various international efforts, such as the Integrated Carbon Observation System. Data from this

network are supplied to international data centres and are usually made publicly available for non-commercial use.

132. The ERT noted that France continues to work on enhancing public access to climate change related information and data. ONERC is in the process of setting up a database on impact and adaptation, and MEDDTL is providing funding for a project¹³ that aims to collect and diffuse regional climate scenarios and related information relevant for decision makers. France may wish to include information on where GCOS data are made publicly available in its next national communication.

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

133. France has provided most of the supplementary information under Article 7, paragraph 2, of the Kyoto Protocol in its NC5. Table 8 provides an overview of the 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.

134. France has not reported the following elements of the supplementary information required under Article 7, paragraph 2, of the Kyoto Protocol: identification of steps taken to promote and/or implement any decisions by IMO in order to limit or reduce GHG emissions not controlled by the Montreal Protocol from marine bunker fuels, and information on what efforts France is making to implement PaMs in such a way as to minimize adverse effects on international trade. During the review, France has provided information on these issues. The technical assessment of the information reported under Article 7, paragraph 2, is contained in the relevant chapters of this report. The ERT recommends that France include these reporting elements in its next national communication.

Table 8

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

<i>Supplementary information</i>	<i>Reference</i>
National registry	Chapter 3.D, pages 65–67
National system	Chapter 3.C, pages 59–65
Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	Chapter 5, page 115
Policies and measures in accordance with Article 2	Chapter 4, pages 69–106
Domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures	Chapter 4, pages 74–81
Information under Article 10	Chapter 7, pages 140–156 Chapter 6, pages 130–138 Chapter 8, pages 158–191 Chapter 9, pages 194–203
Financial resources	Chapter 7, pages 140–156

¹³ Donner accès aux scénarios climatiques Régionalisés français pour l'Impact et l'Adaptation de nos Sociétés et environnements (DRIAS).

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

135. France reported the information requested in chapter H, “Minimization of adverse impacts in accordance with Article 3, paragraph 14”, of the annex to decision 15/CMP.1 as a part of its 2010 and 2011 annual submissions. It has not reported, however, how it gives priority to the actions taken in implementing its commitments under Article 3, paragraph 14. During the in-country review France provided the ERT with 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 generally transparent and complete. The ERT recommends that France report on how it gives priority to the actions taken in implementing its commitments under Article 3, paragraph 14, and encourages it to continue exploring and reporting on the adverse impacts of the response measures, for example the impacts of CO₂ labelling.

136. The national inventory reports of the 2010 and 2011 annual submissions and the additional information provided during the review presented several initiatives by France aimed at minimizing adverse impacts, including enhancing transfer of sustainable technologies to developing country Parties through support of public–private programmes (Ubi France, COFACE), enhancing sustainable development through the CDM and JI, and strengthening meteorological services in developing country Parties. The ERT acknowledges France’s efforts in assessment and reporting and encourages it to continue exploring and reporting on how it strives to implement its PaMs in such a way as to minimize the adverse effects of response measures.

III. Conclusions and recommendations

137. The ERT concludes that the NC5 provides a good overview of the national climate policy of France. The information provided in the NC5 includes most mandatory information required by the UNFCCC reporting guidelines and most elements of the supplementary information under Article 7 of the Kyoto Protocol with the exception of some information on PaMs, projections, financial resources and transfer of technology. During the in-country review France provided additional information on the missing elements.

138. France’s emissions for 2009 were estimated to be 8.1 per cent below its 1990 level excluding LULUCF and 13.4 per cent below including LULUCF. Despite economic and population growth during 1990–2009, GHG emissions decreased, mainly driven by N₂O emission reductions from adipic acid production, CO₂ emission reductions from public electricity and heat production, and iron and steel production. Also, enhancing energy efficiency and promotion of low-CO₂ emission passenger cars contributed to the decreasing trend of the GHG emissions. Those decreases were to a larger degree offset by increases in CO₂ emissions from road transportation and in HFC emissions from air conditioning.

139. In the NC5, France presented GHG projections for three scenarios for the period from 1990 to 2020. Under the ‘without measures’ scenario, emissions are expected to grow by 18.3 per cent compared with 1990 in 2010. The projected GHG emissions under the ‘with measures’ scenario are expected to be 3.4 per cent lower and under the ‘with additional measures’ scenario are expected to be 8.3 per cent lower than the Kyoto Protocol target. The NC5 indicates that in 2007 the emissions of France returned to the base year levels, which is in accordance with the Kyoto Protocol target, and that France can meet this

target in 2008–2012, even under the ‘with measures’ scenario. GHG emissions are not expected to exceed the Kyoto Protocol target even by 2020.

140. In its NC5, France included information on how its use of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol is supplemental to domestic action, although it did not elaborate on supplementarity as such. France stated in the NC5 that it does not intend to use the Kyoto Protocol mechanisms to meet its target for the first commitment period of the Kyoto Protocol, although companies covered under the EU ETS are allowed to acquire Kyoto units up to 13.5 per cent of their initial allocation.

141. The main frameworks for PaMs relating to climate change are the Climate Plan (2004–2012), the two Grenelle environmental acts (2009 and 2010) and the EU climate and energy package, which covers a comprehensive portfolio of PaMs, including economic and regulatory instruments as well as information, education and research measures across all sectors. The ERT noted a growing focus on the promotion of energy efficiency and the use of renewable energy sources in the residential and transport sectors, which are addressed through regulations, financial incentives and economic instruments.

142. France set an overall long-term goal to reduce GHG emissions by 75.0 per cent by 2050 compared with 1990 and ambitious medium-term (2020) targets relating to the development of lower-emitting technologies and energy and transport infrastructure for all sectors. However, it will be challenging to achieve these targets and it is difficult to judge whether existing and planned PaMs will be sufficient to do so. Monitoring and enforcement of the implemented PaMs will be essential to ensuring emissions mitigation is delivered.

143. France provided sizeable contributions for climate change related programmes and projects to a large number of countries worldwide and to a range of organizations, including contributions to the GEF (EUR 215.5 million in 2011–2014 for the fifth replenishment). France provided increasing financial resources for adaptation, in particular to the least developed countries. France’s efforts to facilitate technology transfer were concentrated on the transfer of know-how, support for meteorological services and support for the development of local technologies in developing country Parties. Also, France made efforts to promote the engagement of the private sector in France and in developing country Parties in climate change actions.

144. France provided in its NC5 information on the impacts of climate change in various sectors of its economy and provided information on relevant adaptation measures. A national adaptation strategy was developed in 2006 and a national adaptation plan is expected to be prepared by 2011. The ERT encourages France to provide more information on vulnerability and adaptation of some sectors, in particular health, agriculture and biodiversity, and to prioritize adaptations measures. The ERT encourages France to clarify the linkages between the national adaptation plan and the local adaptation plans expected to be prepared by 2012.

145. Research related to climate change is a priority of French research. France supports several leading research institutes and has a wide network of climate observation stations, including many stations in its overseas territories. It collaborates with developing country Parties in the areas of climate observation, assessment of climate change impacts, adaptation to climate change and management of the risk of climate change. Also, initiatives have been started to make scientific findings publicly available to stakeholders, which will help to inform decision makers.

146. In the NC5, France has provided information on its actions relating to education, training and public awareness at the national and international levels. Many actions have been taken to enhance coverage of climate change related topics in schools, universities and research centres and to increase public awareness of the impacts of climate change and the role of mitigation.

147. The ERT concluded that France'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 decisions 13/CMP.1 and 5/CMP.1, and that France continues to adhere to the technical standards for data exchange between registry systems in accordance with relevant decisions of the CMP. The ERT noted that France implemented several additional security measures and intends to change the registry software in 2011.

148. 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 2010 and 2011 annual submissions, is generally complete and transparent.

149. In the course of the IDR, the ERT formulated several recommendations relating to the completeness and transparency of France's reporting under the Convention and its Kyoto Protocol. The key recommendations¹⁴ are that France:

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

- (i) The steps it has taken to promote and/or implement any decisions by IMO in order to limit or reduce emissions of GHGs from marine bunker fuels;
- (ii) To the extent possible, emission projections related to fuel sold to ships engaged in international transport;
- (iii) Information on how France identifies "new and additional" financial resources pursuant Article 4, paragraph 3, of the Convention;
- (iv) Those activities undertaken by the public sector and those undertaken by the private sector in the promotion, facilitation and financing of the transfer of technology;

(b) Improve the transparency of reporting by including in the next national communication the following information:

- (i) Information on PaMs organized by sector and subdivided by GHG, and a specification of the implementation status;
- (ii) Enhanced information on how France believes its PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals;

(c) Improve the transparency and completeness of reporting by including in its next annual submission further information on how it gives priority to the actions taken to implement its commitments under Article 3, paragraph 14, of the Kyoto Protocol on the minimization of the adverse impacts of response measures to climate change.

150. The ERT encourages France to undertake a number of improvements regarding the transparency and completeness of reporting; the most important of these are that France:

(a) Provide more focused reporting on key developments, especially on details of the PaMs with the most significant impacts, and on those that could potentially increase GHG emissions;

(b) Separate energy-related emissions from the industrial processes and agriculture sectors;

(c) Improve consistency of reporting among sections on historical GHG emission trends, projections and PaMs and improve consistency between the texts and the summary table in the PaMs section;

¹⁴ The recommendations are given in full in the relevant sections of this report.

- (d) Provide more detail information on the vulnerability of the health sector and biodiversity;
- (e) Elaborate on successes and failures in the transfer of technologies.

IV. Questions of implementation

151. 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 question 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/2011/INF.1. Compilation and synthesis of fifth national communications. Executive summary. Note by the secretariat. Available at <<http://unfccc.int/resource/docs/2011/sbi/eng/inf01.pdf>>.

FCCC/SBI/2011/INF.1/Add.1. Compilation and synthesis of fifth national communications. Note by the secretariat. Addendum. Policies, measures, and past and projected future greenhouse gas emission trends of Parties included in Annex I to the Convention. Available at <<http://unfccc.int/resource/docs/2011/sbi/eng/inf01a01.pdf>>.

FCCC/SBI/2011/INF.1/Add.2. Compilation and synthesis of fifth national communications. Note by the secretariat. Addendum. 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/2011/sbi/eng/inf01a02.pdf>>.

FCCC/SBI/2011/INF.2. Compilation and synthesis of supplementary information incorporated in fifth national communications submitted in accordance with Article 7, paragraph 2, of the Kyoto Protocol. Note by the secretariat. Available at <<http://unfccc.int/resource/docs/2011/sbi/eng/inf02.pdf>>.

FCCC/IRR/2007/FRA. Report of the review of the initial report of France. Available at <http://unfccc.int/files/kyoto_protocol/compliance/plenary/application/pdf/cc-ert-irr-2007-20_report_of_the_review_of_ir_of_france.pdf>.

FCCC/ARR/2009/FRA. Report of the individual review of the annual submission of France submitted in 2009. Available at <<http://unfccc.int/resource/docs/2010/arr/fra.pdf>>.

FCCC/ARR/2010/FRA. Report of the individual review of the annual submission of France submitted in 2010. Available at <<http://unfccc.int/resource/docs/2011/arr/fra.pdf>>.

FCCC/IDR.4/FRA. Report of the centralized in-depth review of the fourth national communication of France. Available at <<http://unfccc.int/resource/docs/2008/idr/fra04.pdf>>.

Fourth national communication of France. Available at
<<http://unfccc.int/resource/docs/natc/franc4f.pdf>>.

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

2011 greenhouse gas inventory submission of France. Available at
<http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/5888.php>.

Standard independent assessment report of France 2010. Available at
<http://unfccc.int/kyoto_protocol/registry_systems/independent_assessment_reports/items/4061.php>.

B. Additional information provided by the Party

Responses to questions during the review were received from Ms. Frédérique Millard, Mr. Yann Ménager, Mr. Nicolas Barber, Ms. Sabine Bataille, Ms. Domitille Bonnefoi, Mr. Daniel Delalande, Mr. Aurélien Million, Ms. Diane Simiu, Mr. Dimitar Nikov, Mr. Bertrand Reysset, Ms. Marie Jaudet, Ms. Marie-Christine Roger, Ms. Emma Bredin, Mr. Kovarik Jean-Bernard, Mr. Julien Rude, Mr. Guillaume Coron, Ms. Anne-Luce Zahm, Ms. Murielle Trouillet (Ministry of Ecology, Sustainable Development, Transport and Housing), Ms. Maryline Loquet, Mr. Ludovic Larbodière (Ministry for Agriculture, Food, Fisheries, Rural Development and Spatial Planning), Ms. Nadine Allemand, Mr. Jean-Pierre Fontelle, Mr. Jean-Pierre Chang (Centre for Interdisciplinary Air Pollution Studies), Mr. Régis Juvanon du Vachat, Ms. Pascale Delecluse (Météo-France), Mr. Olivier Grandvoinet (French Development Agency), Ms. Pascale Scapecchi (Ministry for the Economy, Finance and Industry), Ms. Noam Boussidan (Ministry for Foreign Affairs), Mr. Olivier Guittet and Mr. Yves André (Caisse des Dépôts), and included additional material on updated policies and measures, greenhouse gas projections, provision of financial resources, vulnerability and adaptation, research, the national registry and recent climate policy developments in France.
