United Nations

FCCC/IDR.6/ESP

Framework Convention on Climate Change

Distr.: General
19 August 2014

English only

Report of the technical review of the sixth national communication of Spain

Parties included in Annex I to the Convention are requested, in accordance with decision 9/CP.16, to submit a sixth national communication to the secretariat by 1 January 2014. In accordance with decision 7/CMP.8, Parties included in Annex I to the Convention that are also Parties to the Kyoto Protocol shall include in their sixth national communication 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 technical review of the sixth national communication and supplementary information under the Kyoto Protocol of Spain conducted by an expert review team in accordance with the "Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention" and the "Guidelines for review under Article 8 of the Kyoto Protocol".

GE.14-14223 (E)

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Contents

I. Introduction and summary

A. Introduction

1. For Spain the Convention entered into force on 21 March 1994 and the Kyoto Protocol on 16 February 2005. Under the Convention, Spain made a commitment to contribute to the joint European Union (EU) economy-wide emission reduction target of reducing its greenhouse gas (GHG) emissions by 20 per cent by 2020 below the 1990 level. Under the Kyoto Protocol, Spain committed itself to reducing its GHG emissions by 8 per cent compared with the base year[1] level during the first commitment period, from 2008 to 2012. However, within the burden-sharing agreement of the EU for meeting commitments under the Kyoto Protocol, Spain committed itself to limiting the growth of its GHG emissions to 15 per cent in relation to the base year level during the first commitment period, from 2008 to 2012. For the second commitment period of the Kyoto Protocol, from 2013 to 2020, Spain committed to reduce its GHG emissions by 20 per cent below the base year level; however, together with the other EU member States, Spain will fulfil jointly the EU commitment for the second commitment period to reduce its GHG emissions by 20 per cent below the base year level in accordance with Article 4 of the Kyoto Protocol.[2]

2. This report covers the in-country technical review of the sixth national communication (NC6) of Spain coordinated by the secretariat, in accordance with the "Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention" (decision 23/CP.19) and the "Guidelines for review under Article 8 of the Kyoto Protocol" (decision 22/CMP.1).

3. The review took place from 5 to 10 May 2014 in Madrid, Spain, and was conducted by the following team of nominated experts from the UNFCCC roster of experts: Mr. Emilio Garcia Apaza (Plurinational State of Bolivia), Mr. Luis Cáceres Silva (Ecuador), Mr. Julien Matheys (Belgium) and Ms. Sina Wartmann (Germany). Mr. Cáceres Silva and Ms. Wartmann were the lead reviewers. The review was coordinated by Mr. Javier Hanna (secretariat).

4. During the review, the expert review team (ERT) examined each section of the NC6. The ERT also reviewed the supplementary information provided by Spain as a part of the NC6 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 Spain in its 2013 annual submission and previous submissions under Article 7, paragraph 1, of the Kyoto Protocol.

[1] "Base year" refers to the base year under the Kyoto Protocol, which is 1990 for carbon dioxide, methane and nitrous oxide, and 1995 for perfluorocarbons, hydrofluorocarbons and sulphur hexafluoride. The base year emissions include emissions from sectors/source categories listed in Annex A to the Kyoto Protocol.

[2] The quantified emission limitation or reduction commitments (QELRCs) for the EU and its member States for the second commitment period under the Kyoto Protocol are based on the understanding that these will be fulfilled jointly with the EU and its member States, in accordance with Article 4 of the Kyoto Protocol. The QELRCs are without prejudice to the subsequent notification by the EU and its member States of an agreement to fulfil their commitments jointly in accordance with the provisions of the Kyoto Protocol.

5. In accordance with decisions 23/CP.19 and 22/CMP.1, a draft version of this report was communicated to the Government of Spain, which provided comments that were considered and incorporated, as appropriate, into this final version of the report.

B. Summary

6. The ERT conducted a technical review of the information reported in the NC6 of Spain in accordance 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 on NCs). As required by decision 15/CMP.1, supplementary information required under Article 7, paragraph 2, of the Kyoto Protocol[3] is provided in the NC6 (see para. 127 below). The supplementary information on the minimization of adverse impacts referred to in paragraph 4 above is partially complete and partially transparent.

7. Spain considered part of the recommendations provided in the report on the in-depth review of the fifth national communication (NC5) of Spain.[4] The ERT commends Spain for its improved reporting. During the review, Spain provided further relevant information. This information includes further details of the approaches used in developing GHG emission projections, details of new policies and measures (PaMs) planned and details of financial support provided.

1. Completeness and transparency of reporting

8. Gaps and issues related to the reported information identified by the ERT are presented in table 1 below.

2. Timeliness

9. The NC6 was submitted on 20 December 2013, before the deadline of 1 January 2014 mandated by decision 9/CP.16.

3. Adherence to the reporting guidelines

10. The information reported by Spain in its NC6 is mostly in adherence with the UNFCCC reporting guidelines on NCs as per decision 4/CP.5 (see table 1).

[3] Decision 15/CMP.1, annex, chapter II.
[4] FCCC/IDR.5/ESP.

Table 1
Assessment of completeness and transparency issues of reported information in the sixth national communication of Spain[a]

Sections of national communication	*Completeness*	*Transparency*	*Reference to paragraphs*	*Supplementary information under the Kyoto Protocol*	*Completeness*	*Transparency*	*Reference to paragraphs*
Executive summary	Complete	Transparent		National systems	Complete	Transparent	
National circumstances	Mostly complete	Mostly transparent	12	National registries	Complete	Transparent	
Greenhouse gas inventory	Complete	Transparent		Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	Complete	Transparent	
Policies and measures (PaMs)	Complete	Mostly transparent	34	PaMs in accordance with Article 2	Mostly complete	Mostly transparent	65
Projections and total effect of PaMs	Mostly complete	Transparent	68	Domestic and regional programmes and/or arrangements and procedures	Complete	Transparent	
Vulnerability assessment, climate change impacts and adaptation measures	Complete	Transparent		Information under Article 10	Mostly complete	Mostly transparent	108
Financial resources and transfer of technology	Partially complete	Partially transparent	98–102, 105	Financial resources	Mostly complete	Mostly transparent	98–102
Research and systematic observation	Complete	Transparent		Minimization of adverse impacts in accordance with Article 3, paragraph 14	Partially complete	Partially transparent	128
Education, training and public awareness	Complete	Transparent					

[a] A list of recommendations pertaining to the completeness and transparency issues identified in this table is included in the chapter IV below on conclusions and recommendations.

II. Technical review of the reported information in the national communication and supplementary information under the Kyoto Protocol

A. Information on greenhouse gas emissions and national circumstances relevant to greenhouse gas emissions and removals, including other elements related to the Kyoto Protocol

1. Information on relevant national circumstances

11. In its NC6, Spain has provided a detailed description of the national circumstances and elaborated on the framework legislation and key policy documents on climate change. This information covers government structure, population profile, geographical profile, climate profile, economic profile, energy, transportation, industry, waste, agriculture, forestry and tourism. Further information on the review of the institutional and legislative arrangements for the coordination and implementation of PaMs is provided in chapter II.B below.

12. The NC6 does not include information required by the UNFCCC reporting guidelines on NCs on building stock and urban structure. During the review, Spain provided additional information on the national circumstances, elaborating on the building stock. The ERT recommends that Spain include information on building stock and urban structure in its next national communication (NC) in order to improve completeness.

13. In addition, during the review Spain provided further information on the national circumstances, elaborating on the Spanish cities network on climate change and the Government of Spain's coordination with civil society and the private sector.

14. The ERT noted that during the period 1990–2011, Spain's population and gross domestic product (GDP) increased by 18.3 and 62.0 per cent, respectively, while GHG emissions per GDP decreased by 24.3 per cent and GHG emissions per capita increased by 4.8 per cent. The ERT acknowledges that the population increase was a key factor in the steep economic growth between 2001 and 2007 and both population increase and economic growth were the main drivers of the emissions increase over time. Furthermore, the ERT noted the relation between the recent evolution of the Spanish economy and the global financial and economic crisis that began in 2008. The NC6 highlights the strong decrease in the Spanish GDP in 2009 of 3.7 per cent, which was followed by a slight recovery in 2010 and 2011 of 0.08 per cent and 1.38 per cent, respectively, followed by another decrease in 2012 of around 2 per cent. The ERT noted that despite the economic crisis, GHG emissions per GDP have decreased, as indicated above, by 24.3 per cent since 1990, highlighting that economic growth and GHG emissions have been decoupled in recent years. This decoupling had a direct influence on the evolution of GHG emissions during this period of time.

15. Table 2 illustrates the national circumstances of Spain by providing some indicators relevant to GHG emissions and removals.

Table 2
Indicators relevant to greenhouse gas emissions and removals for Spain

	1990	*2000*	*2005*	*2010*	*2011*	*Change 1990–2011(%)*	*Change 2010–2011 (%)*
Population (million)	39.01	40.26	43.40	46.07	46.13	18.3	0.1
GDP (2005 USD billion using PPP)	768.33	1 012.50	1 188.76	1 239.34	1 244.51	62.0	0.4
TPES (Mtoe)	90.09	121.86	141.91	127.75	125.57	39.4	–1.7
GHG emissions without LULUCF (kt CO_2 eq)	282 788.74	378 775.82	432 834.41	348 641.31	350 483.69	23.9	0.5
GHG emissions with LULUCF (kt CO_2 eq)	263 682.99	355 512.90	408 289.44	319 745.85	321 412.46	21.9	0.5
GDP per capita (2005 USD thousand using PPP)	19.70	25.15	27.39	26.90	26.98	37.0	0.3
TPES per capita (toe)	2.31	3.03	3.27	2.77	2.72	17.7	–1.8
GHG emissions per capita (t CO_2 eq)	7.25	9.41	9.97	7.57	7.60	4.8	0.4
GHG emissions per GDP unit (kg CO_2 eq per 2005 USD using PPP)	0.37	0.37	0.36	0.28	0.28	–24.3	0.0

Sources: (1) GHG emissions data: Spain's 2013 GHG inventory submission; (2) Population, GDP and TPES data: International Energy Agency.

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

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

2. Information on the greenhouse gas inventory, emissions and trends

16. Spain has provided a summary of information on GHG emission trends for the period 1990–2011. This information is fully consistent with and relates to the data of the 2013 national GHG inventory submission. Summary tables, including trend tables for emissions in carbon dioxide equivalent (CO_2 eq) (given in the common reporting format (CRF) tables), are provided in an annex to the NC6. During the review, the ERT took note of the recently submitted 2014 annual submission. Some of the relevant information therein is reflected in this report.

17. Total GHG emissions[5] excluding emissions and removals from land use, land-use change and forestry (LULUCF) increased by 23.9 per cent between 1990 and 2011, whereas total GHG emissions including net emissions or removals from LULUCF increased by 21.9 per cent over the same period. Total GHG emissions increased by 54.1 per cent between 1990 and 2005, driven mainly by expansion of the energy and manufacturing industries and a strong increase in road transportation (both passenger and freight transport). Emissions stabilized between 2005 and 2007, after which they sharply decreased until 2010 (by 19.3 per cent) as a result of the financial and economic crisis, which hit Spain in 2008. Between 2010 and 2011, a slight increase in emissions of approximately 0.5 per cent occurred.

[5] In this report, the term "total GHG emissions" refers to the aggregated national GHG emissions expressed in terms of CO_2 eq excluding land use, land-use change and forestry (LULUCF), unless otherwise specified.

18. Between 1990 and 2011, emissions of carbon dioxide (CO_2) and methane (CH_4) increased by 23.1 and 24.1 per cent, respectively. The increase in CO_2 emissions was mainly due to the increase in emissions from fuel combustion driven by the increased energy demand in energy industries, transport and buildings, while CH_4 emissions were driven by an increase in emissions in the waste sector due to increased volumes of waste being sent to landfills. Nitrous oxide (N_2O) and perfluorocarbon (PFC) emissions decreased by 8.5 and 64.5 per cent, respectively. N_2O emissions peaked in 2001 and continuously decreased until 2008, after which a sharper decrease occurred as a consequence of the reduced emissions from soils in the agriculture sector. Fluctuations in N_2O emissions are mainly linked to the amount of synthetic nitrogen-based fertilizers used. These emissions represent the bulk of N_2O emissions in the country. N_2O emissions originating from industrial processes decreased by more than 90 per cent between 1990 and 2011 owing to emission reductions in the chemical industry. PFC emissions decreased by 62.3 per cent between 1995 and 2011, mainly owing to the substitution and subsequent decommissioning of a production line in an aluminium production plant in 1999. Although fluroform (HFC-23) emissions were significantly reduced through mitigation measures in a chlorodifluoromethane (HCFC-22) production plant in the years 2000–2002, hydrofluorocarbon (HFC) emissions increased by 78.2 per cent between 1995 and 2011. The replacement of ozone-depleting chlorofluorocarbon gases by HFCs in various applications explains this increase. Between 1995 and 2011, sulphur hexafluoride (SF_6) emissions grew by 264 per cent due a steep increase in its use in high-voltage electrical equipment. An analysis of the drivers of GHG emission trends in each sector is provided in chapter II.B below. Table 3 provides an overview of GHG emissions by sector from 1990 to 2011.

19. During the review, Spain provided additional detailed information, elaborating on the drivers behind the evolution of the different types of emissions and of the different sectors. Information was provided on, inter alia, the evolution of the fuel mix used in the energy sector, the building stock and the vehicle fleet between 1990 and 2011. This allowed for a complete and transparent review of the historical emission trends.

Table 3
Greenhouse gas emissions by sector in Spain, 1990–2011

	GHG emissions (kt CO_2 eq)				*Change (%)*		*Share[a] by sector (%)*	
Sector	*1990*	*2000*	*2010*	*2011*	*1990–2011*	*2010–2011*	*1990*	*2011*
1. Energy	210 928.14	289 223.36	266 257.82	271 727.18	28.8	2.1	74.6	77.5
A1. Energy industries	77 655.23	105 368.79	725 51.37	86 526.04	11.4	19.3	27.5	24.7
A2. Manufacturing industries and construction	46 970.52	60 563.26	59 566.28	58 676.62	24.9	–1.5	16.6	16.7
A3. Transport	55 743.06	84 510.70	91 908.62	87 385.45	56.8	–4.9	19.7	24.9
A4.–A5. Other	26 454.48	34 670.68	38 939.77	35 386.22	33.8	–9.1	9.4	10.1
B. Fugitive emissions	4 104.86	4 109.93	3 291.78	3 752.85	–8.6	14.0	1.5	1.1
2. Industrial processes	25 812.58	33 886.32	28 270.82	26 127.68	1.2	–7.6	9.1	7.5
3. Solvent and other product use	1 515.76	1 949.23	1 592.67	1 449.12	–4.4	–9.0	0.5	0.4
4. Agriculture	37 209.46	42 953.67	38 744.04	37 279.06	0.2	–3.8	13.2	10.6
5. LULUCF	–19 105.74	–23 262.92	–28 895.46	–29 071.23	52.2	0.6	–6.8	–8.3
6. Waste	7 322.80	10 763.23	13 775.96	13 900.66	89.8	0.9	2.6	4.0

Sector	GHG emissions (kt CO_2 eq)				Change (%)		Share[a] by sector (%)	
	1990	*2000*	*2010*	*2011*	*1990–2011*	*2010–2011*	*1990*	*2011*
7. Other	NA	NA	NA	NA	NA	NA	NA	NA
GHG total with LULUCF	263 682.99	355 512.90	319 745.85	321 412.46	21.9	0.5	NA	NA
GHG total without LULUCF	282 788.74	378 775.82	348 641.31	350 483.69	23.9	0.5	NA	NA

Note: The changes in emissions and the share 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: NA= not applicable, GHG = greenhouse gas, LULUCF = land use, land-use change and forestry.

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

3. National system

20. Spain provided in its NC6 a description of how its national system is performing the general and specific functions defined in the guidelines for national systems under Article 5, paragraph 1, of the Kyoto Protocol (decision 19/CMP.1). The description includes all the elements mandated by decision 15/CMP.1. The ERT noted that the information includes: (1) name and contact information for the national entity; (2) roles and responsibilities of various agencies and entities in relation to the inventory development process, as well as the institutional, legal and procedural arrangements made to prepare the inventory; and (3) a brief description of the process for collecting activity data.

21. The ERT took note of the review of the changes to the national system as reflected in the report of the individual review of the GHG inventory of Spain submitted in 2013. The ERT found the information related to the national system to be complete and transparent.

22. During the review, Spain provided additional information on its national system, elaborating on (1) the process for the recalculation of previously submitted inventory data; (2) the quality assurance and quality control plan, its implementation and the quality objectives established; and (3) internal and external evaluation and review processes and their results in accordance with the guidelines for national systems carried out by the Dirección General de Calidad y Evaluación Ambiental y Medio Natural (DG-CEAMN) and the Comisión Delegada del Gobierno para Asuntos Económicos del Ministro de Agricultura, Alimentación y Medio Ambiente.

4. National registry

23. In its NC6, Spain has provided information on the characteristics of the national registry, which are linked with the European Union Emissions Trading System (EU ETS). The information is in accordance with the requirements of the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1. The ERT took note of the review of the changes to the national registry as reflected in the report of the individual review of the GHG inventory of Spain submitted in 2013.

24. Spain described the changes to its national registry, specifically due to the centralization of the EU ETS operations into a single EU registry operated by the European Commission called the Consolidated System of European Union Registries (CSEUR). The

CSEUR is a consolidated platform which implements the national registries in a consolidated manner and was developed together with the new EU registry.[6]

25. During the review, despite having provided complete and transparent information on the national registry in its NC6, Spain provided additional information on how the recommendations of the review report of the 2013 annual submission have been implemented to ensure that the national registry fully performs its functions. The ERT commends Spain for providing updated information and encourages the Party to continue to ensure that the Spanish section of the CSEUR continues to perform the functions for national registries set out in the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1.

5. Domestic and regional programmes and/or legislative arrangements and procedures related to the Kyoto Protocol

26. Spain has reported in its NC6 comprehensive and well-organized information on domestic and regional programmes and/or legislative arrangements and procedures related to the Kyoto Protocol.

27. The overall responsibility for climate change policymaking lies within the Ministry of Agriculture, Food and the Environment (MAGRAMA) and the Secretary of State for the Environment. They direct as well as coordinate climate change issues at the highest level of the Government. The responsibility for implementation of the climate change policies in the country lies with the Spanish Climate Change Office (OECC), situated within MAGRAMA.

28. Implementation of the Kyoto Protocol is underpinned by implementation of the EU Climate and Energy Package, which is in turn implemented through Spain's Climate Change and Clean Energy Strategy 2007–2012–2020. More information on Spain's climate policy and the EU Climate and Energy Package can be found in chapter II.B below.

29. Interministerial coordination is ensured through various commissions, including the Interministerial Commission on Climate Change chaired by MAGRAMA, the National Climate Council, in which representatives of civil society participate, and the Climate Change Policy Coordination Commission, chaired by the Secretary of State for the Environment. The implementation of PaMs is monitored by MAGRAMA.

30. Information on PaMs and legislative arrangements is publicly available on the website of MAGRAMA.

31. Spain provided a description of national legislative arrangements and administrative procedures that seek to ensure that the implementation of activities under Article 3, paragraph 3, and elected activities under Article 3, paragraph 4, of the Kyoto Protocol also contribute to the conservation of biodiversity and the sustainable use of natural resources. The ERT noted that Spain elected forest management and cropland management as activities under Article 3, paragraph 4, of the Kyoto Protocol, besides the mandatory activities of afforestation/reforestation and deforestation. In that sense, with regard to forestry, relevant information on legislative arrangements includes the Spanish Forestry Plan and the EU directives 92/43/CEE (habitats directive) and 79/409/CEE (birds directive). Regarding agriculture, Spain has provided relevant information on legislative arrangements related to the requirements of the Common Agricultural Policy (CAP) of the EU.

[6] <http://ec.europa.eu/clima/policies/ets/registry/index_en.htm>.

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

32. Spain has provided in its NC6 comprehensive and well-organized information on its package of PaMs implemented, adopted and planned in order to fulfil its commitments under the Convention and its Kyoto Protocol. Additional comprehensive information on measures developed after the submission of the NC6 was provided during the review.

1. Policies and measures related to implementation of commitments under the Convention

33. In its NC6, Spain reported on its PaMs adopted, implemented and planned in achieving its commitments under the Convention. Spain provided information on PaMs by sector and by gas and a description of the principal PaMs. The NC6 contains a considerably advanced set of PaMs compared with those in the NC5. A list of further PaMs agreed by Spain after submission of the NC6 was presented to the ERT during the review.

34. Information on the modification by PaMs of longer-term trends in GHG emissions is presented implicitly in the NC6 through the description of the PaMs, evaluation of the impacts of PaMs and projections. Explicit information on how PaMs modify longer-term GHG emission trends was not provided. The ERT recommends that Spain present this information in a concise manner and explicitly formulated in its next NC in order to increase transparency.

35. In its NC6, Spain gave priority to those PaMs adopted, implemented and planned that provide the most significant contribution to its emission reduction efforts, including those PaMs that were adopted and implemented at the national, state, provincial, regional and local level. Spain reported on its policy context and national targets set to implement its commitments under the Convention. The NC6 does not include information required by the UNFCCC reporting guidelines on NCs on the costs of implementation of PaMs and a description of how Spain is monitoring and evaluating the progress of its PaMs.

36. During the review, Spain provided further information on these points. The Party explained that information on the costs of implementation of PaMs is currently being prepared, but it had not been developed to a suitable level of detail for inclusion in the NC6. The ERT encourages Spain to continue working on the assessment of costs and include this information in its next NC.

37. During the review, Spain explained that a monitoring and evaluation process of PaMs over time, including a technical and political review of the individual policies, takes place every two years. The process is driven by OECC, and involves ministries, autonomous communities, technical experts, policymakers, the private sector and trade unions. The process takes place under the EU monitoring and reporting regulation (regulation 525/2013), under which reports that include the evaluation of PaMs are provided to the European Commission. These reports are publicly available. In order to increase transparency while avoiding increasing the size of the NC, the ERT encourages Spain to refer to the existing evaluation process and its results under the EU monitoring and reporting regulation in its next NC. The ERT noted that where impacts of PaMs have been evaluated for a group of PaMs to avoid overlaps, information on grouping is not contained in the NC6, but is publicly available on the MAGRAMA website. The ERT further noted that the NC6 does not make any reference to this information. The ERT encourages Spain to include a reference to the sources of information on PaMs grouping in its next NC in order to increase transparency.

38. Most of the recommendations made in the previous review report were taken into consideration in order to improve reporting in the NC6. This includes a much more

transparent presentation of PaMs, information on legislative arrangements related to Article 3, paragraphs 3 and 4, of the Kyoto Protocol and using the UNFCCC terminology related to the status of PaMs (e.g. 'planned' or 'implemented'). The remaining recommendations from the previous review report are reiterated in this report (see paras. 34–37 above).

2. Policy framework and cross-sectoral measures

39. The key climate change and energy policy instrument in Spain is the Climate Change and Clean Energy Strategy 2007–2012–2020, which lays down the principles under which the mitigation of GHG emissions is to be achieved. For the most part, climate change policies in Spain are defined by the EU Climate and Energy Package. As a member State of the EU, Spain is obliged to implement EU policy and legislation, including in the areas of energy and the environment. The 2008 EU Climate and Energy Package sets emission reduction targets for 2020, including targets for the member States for the sectors not covered by the EU ETS (non-EU ETS sectors). Under the EU effort-sharing decision (ESD) (decision 406/2009/EC), Spain has agreed to reduce its emissions from the non-EU ETS sectors by 10 per cent below the 2005 level in 2020. The EU Climate and Energy Package is linked to: (1) the EU directive on the promotion of the use of energy from renewable sources (directive 2009/28/EC), which sets a target of a 20 per cent share of energy from renewable energy sources (RES) in gross final energy consumption by 2020, which also applies for Spain; (2) the EU-wide reduction of primary energy use by 20 per cent compared with projected levels, which is to be achieved through energy efficiency improvements; and (3) the third trading period of the EU ETS (2013–2020), which establishes a single EU-wide cap on emission allowances, reducing the number of allowances to 21 per cent below the 2005 level in 2020. At the highest policy level, implementation of these requirements is addressed through the Spanish Climate Change and Clean Energy Strategy 2007–2012–2020. At the sectoral level, measures are translated into sectoral plans, such as the Waste Management Plan 2012–2020. The ERT noted the information provided during the review that plans are updated periodically as necessary.

40. PaMs considered as most effective include the EU ETS (see para. 41 below), the National Renewable Energy Action Plan (see para. 48 below) and the energy efficiency action plans (EEAPs) (see para. 49 below).

41. The EU ETS plays an important role in Spain's ability to meet its emission limitation commitment for both the first and the second commitment periods of the Kyoto Protocol. Emissions from installations covered under the EU ETS decreased from 189,890 kt CO_2 in 2005 to 135,510 kt CO_2 in 2012. The third implementation phase of the EU ETS (2013–2020) has a reduction target of 21 per cent by 2020 compared with 2005. For this phase the scope of the system has been increased to cover, inter alia, adipic and nitric acid production (related to N_2O emissions), aluminium production (related to CO_2 and PFC emissions) and bulk organic chemical production. In Spain this has led to the inclusion of 160 new installations. The civil aviation sector was included in the EU ETS in 2011, during the second implementation phase, but because of international pressure, the requirement to hand in certificates from emissions stemming from flights ending or starting outside EU territory was cancelled. The European Commission has suggested an amendment to the directive on the EU ETS (directive 2003/87/CE), requiring certificates to be handed in only for intra-EU flights for 2013, while from 2014 onwards, certificates for flights originating in the EU and ending outside the EU should also be included. Furthermore, in the third implementation phase, EU member States have the option to exempt installations with annual emissions of less than 25 kt CO_2 eq from the system if they are placed under alternative measures of equivalent stringency with regard to reductions. In Spain, 167 installations have been exempted from the EU ETS.

42. Projections in the NC6 show a gap of 54,500 kt CO_2 eq towards the effort-sharing target in the non-EU ETS sectors by 2020. In 2013–2014, Spain developed the 2020 Diffuse Sectors Road Map, additional information on which it provided during the review. The road map contains 43 emission reduction measures for the non-EU ETS sectors, which will deliver a total of around 56,000 kt CO_2 eq of reductions between 2013 and 2020. Reductions are projected to amount to 16,000 kt CO_2 eq annually in 2021–2023, slowly decreasing to 8,000 kt CO_2 eq annually by 2030. During the review Spain explained that a comprehensive cost–benefit assessment was carried out for all measures.

43. In 2012, Spain introduced the Carbon Footprint programme. This voluntary programme allows companies, including small and medium-sized enterprises, to calculate their carbon footprint and set voluntary reduction targets. The targets can be achieved by buying certificates from national reforestation projects. As the system is based on voluntary participation, potential emission reductions have not been quantified.

44. Furthermore, the Carbon Fund for a Sustainable Economy (FES CO_2) was introduced in 2012. The fund targets domestic emission reduction projects in selected non-EU ETS sectors, such as residential, agriculture and transport, and pays a fixed price of EUR 7.10 per t CO_2 eq reduced. Projects must fulfil sophisticated monitoring, reporting and verification requirements. Ten methodologies for specific project types have been developed to date. In 2012, 37 projects were approved, which are expected to provide a reduction of 800,000 t CO_2 eq between 2013 and 2017.

45. A significant part of the PaMs is implemented through the autonomous communities. Autonomous communities must implement many of the national measures, for example those related to transport, buildings and waste management, and they have the competency to set up their own additional measures. In this context, nearly all autonomous communities have in place strategies or plans and the necessary administrative arrangements for implementing PaMs. Spain provided comprehensive information on PaMs at the national and regional levels. Table 4 provides a summary of the reported information on the PaMs of Spain.

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

Sectors affected	*List of key policies and measures*	*Estimate of mitigation impact (kt CO_2 eq)*
Policy framework and cross-sectoral measures		
	European Union Emissions Trading System (2013–2020)	28 000
	2020 Diffuse Sectors Road Map	56 000
Energy		
Energy supply	Gas and Electricity Plan 2008–2016	28 000 (during 2008–2012)
Renewable energy	Renewable Energy Action Plan 2005–2010	NE
Energy efficiency	Energy Efficiency Action Plan 2008–2012	
	Energy Efficiency Action Plan 2011–2020	35 000
	Energy Efficiency Action Plan 2014–2020 (under development)	28 600
Residential and commercial sectors	National plan for dwellings and rehabilitation and national plan for the promotion of renting and urban refurbishment, regeneration and renovation (2013–2016)	IE
	Law 8/2013 on urban refurbishment,	

Sectors affected	*List of key policies and measures*	*Estimate of mitigation impact (kt CO_2 eq)*
	regeneration and renovation	
	Technical Building Code	
	Certification of new and existing buildings	
Transport	Sustainable Mobility Plan	IE
	Strategic Plan for Transport and Infrastructure	
	PIVE-Programmes	
	PIMA-Programmes	
Industrial sectors	European Union directive on integrated pollution prevention and control	
	European Union regulation on certain fluorinated greenhouse gases (regulation 842/2006)	
	Tax on fluorinated greenhouse gases	IE
Agriculture	Common Agricultural Policy	
	Fertilizer Use Plan	IE
Forestry	Common Agricultural Policy	
	Sapnish Forestry Plan 2002–2032	IE
Waste management	National Integrated Waste Management Plan 2008–2015	
	State Programme for Waste Reduction 2014–2020	IE

Note: The greenhouse gas reduction estimates given for some measures are reductions in carbon dioxide or carbon dioxide equivalent for 2020.

Abbreviations: IE = included elsewhere, NE = not estimated, PIMA = Plan de Impulso al Medio Ambiente, PIVE = Programa de Incentivos al Vehículo Eficiente.

3. Policies and measures in the energy sector

46. The energy sector is the main sector in terms of GHG emissions, with a share of 77.5 per cent. Between 1990 and 2011, GHG emissions from the energy sector increased by 28.8 per cent (60,799.04 kt CO_2 eq), mainly owing to the increase in economic activity. In this period, the trend in GHG emissions from fuel combustion in transport showed notable increases (56.8 per cent or 31,642.39 kt CO_2 eq), in particular road transportation, and from manufacturing industries and construction (24.9 per cent or 11,706.10 kt CO_2 eq). While emissions from the energy sector rose by 50.7 per cent between 1990 and 2008, they fell by 15.8 per cent between 2008 and 2011 owing to the economic crisis from 2008 onwards.

47. ***Energy supply***. Relevant changes in the energy mix have been taking place in the country since 1990, with decreasing levels of coal and oil consumption and increasing levels of natural gas and renewable energy consumption. For example, the shares of coal and oil in power generation decreased in the period 1990–2011 from 36.0 per cent to 14.6 per cent and 10.1 per cent to 3.5 per cent, respectively. In the same time frame, the share of natural gas increased from 9.0 per cent to 20.0 per cent and the share of RES from 15.4 per cent to 38.9 per cent. Spain provided a detailed description of the developments in energy supply activities during the review. Between 2013 and 2020, a further decrease in the share of oil in primary energy use of around 5.0 per cent, and an increase in the shares of natural gas and renewable energy use of 2.0 per cent each, is expected, with an overall increase in primary energy use of 0.9 per cent for this period. Between 2013 and 2020, the share of oil in final energy consumption will be reduced from 50.0 per cent (2013) to 38.0 per cent (2020), with the majority of the reduction achieved through the replacement

of oil by natural gas. Primary as well as final energy intensity fell from 2004 to 2011 by roughly 15 and 20 per cent, respectively. Construction of power generation capacity through nuclear or coal-fired power plants is not planned for the medium-term future.

48. ***Renewable energy sources***. Renewable energy was promoted in Spain through the National Renewable Energy Action Plan 2005–2010, setting clear targets for RES use by 2010; for example, 12 per cent of primary energy use from RES and a 5.75 per cent share of biofuels in road transportation. The Plan also included a feed-in tariff for power generated from renewable energy. During the review, Spain provided updated information on power generation from renewable energy. In 2013, Spain produced roughly 111,000 GWh from RES, with 50 per cent from wind energy and 33 per cent from hydropower. Energy generation from RES is projected to rise by 1 per cent between 2013 and 2020. Wind energy and hydropower technologies are expected to reduce their contribution to power generation in favour of both photovoltaic and solar thermal technologies as well as biomass, biogas and waste. Use of RES in the country is around 70 per cent in the form of power and 30 per cent as thermal energy. Spain in 2013 exceeds its target under the EU renewable energy directive of a 12.1 per cent share of RES in gross final energy consumption by 4.5 percentage points and plans to reach a share of 20 per cent in 2020 as required under this directive through the implementation of the National Renewable Energy Action Plan 2011–2020.

49. ***Energy efficiency***. Spain has worked with EEAPs since 2004, and currently is implementing the EEAP 2011–2020, which has a savings target of 35.5 Mtoe compared with the national energy consumption in the 'without measures' scenario in 2011–2020. In order to reach, inter alia, the targets of the EU energy efficiency directive (directive 2012/27/EU), the EEAP 2014–2020, with a savings target of 28.6 Mtoe compared with the national energy consumption in the 'without measures' scenario in 2014–2020, is currently under development. During the review, Spain provided updated information on the EEAP 2014–2020. Under this plan, 50.6 per cent of savings in 2020 are to be achieved in the transport sector and 25.2 per cent in the industrial sector, with the remainder in buildings, farming and fishing as well as in public services. The ERT noted that Spain is actively implementing its commitments under the EU energy efficiency directive and during the review, it provided the ERT with a detailed overview of how the targets and deadlines under this directive would be met. The country has a target of a reduction of 15,979 ktoe between 2014 and 2020 compared with the 'without measures' projections for 2014–2020. This target will be achieved through efficiency measures financed with EU funds (29 per cent), alternative measures under Article 7.9 of the EU energy efficiency directive (29 per cent) and an obligation scheme for the energy industry (42 per cent). The specific implementation of the obligation scheme is still under discussion; options include a white certificate scheme, payment into the National Energy Efficiency Fund or a combination of the two.

50. ***Residential and commercial sectors***. The residential and commercial sectors are mainly targeted through the EEAPs, covering a wide range of measures, including increased insulation and increased energy efficiency of heating equipment of existing buildings, lighting, low-energy houses, and increased energy efficiency of commercial cooling equipment and of household appliances. All these actions are integrated and/or implemented through the National Plan for Dwellings and Rehabilitation, the National Plan for the Promotion of Renting and Urban Refurbishment, Regeneration and Renovation (2013–2016), the Law 8/2013 on urban refurbishment, regeneration and renovation, application of the Technical Building Code, and certification of new and existing buildings. The EEAP 2011–2020 anticipates savings of 2,867 ktoe in 2020 compared with the 'without measures' scenario for the residential and commercial sectors in 2020.

51. ***Transport sector***. Transport is the sector mainly responsible for the increase in national energy consumption, accounting for 24.9 per cent of total GHG emissions and 40 per cent of total final energy consumption in 2011. GHG emissions from transport increased by 56.8 per cent since 1990, following the growing demand for transportation of people and goods. More than 80 per cent of the transport of people takes place by car in Spain; the same applies for the transport of goods, which takes place via road transportation. Key PaMs in the transport sector are mostly laid down in the EEAP 2011–2020 and include modal shift measures in people and goods transport (shifting to rail and sea transport), efficiency improvements through the subsidized renewal of the vehicle fleet (Programa de Incentivos al Vehículo Eficiente (PIVE) and Plan de Impulso al Medio Ambiente (PIMA) programmes), promotion of alternative fuels and technologies, and taxation measures. Reductions in the transport sector under the EEAP 2011–2020 are expected to amount to 17,900 kt CO_2 eq in total by 2020 compared with the 'without measures' scenario.

52. ***Industrial sector***. Spain's actions in the industrial sector are driven by the EU directive on integrated pollution prevention and control, which is fostering energy efficiency through requirements on best available technology use, the EU ETS and the EEAPs. The EEAP 2011–2020 aims for reductions in energy consumption of 4,489 ktoe by 2020 compared with the 'without measures scenario for this sector and this time frame. Reductions are to be achieved through measures related to energy audits, process and technical improvements, and energy management systems.

4. Policies and measures in other sectors

53. Between 1990 and 2011, GHG emissions from industrial processes (including solvent and other product use), agriculture and waste increased by 10 per cent (6,895.9 kt CO_2 eq). Information on the drivers of this development is provided in the following paragraphs.

54. ***Industrial processes***. Between 1990 and 2011, GHG emissions from the industrial processes sector increased by 1.2 per cent (315.1 kt CO_2 eq), mainly owing to a strong increase in HFC emissions (5,876 kt CO_2 eq or 244.5 per cent), compensated by decreases in emissions from chemical production (7.1 per cent in 1990–2011), mineral production (15.7 per cent in 1990–2011) and metal production (26.9 per cent in 1990–2011).

55. Process emissions related to heavy industry production such as cement and metal production are covered by the EU ETS. Emissions of fluorinated gases (F-gases) are addressed through the EU F-gas regulation (842/2006), which aims to reduce leakage and restricts the marketing and use of certain products and equipment containing F-gases where cost-effective alternatives are available. The EU mobile air conditioning directive (directive 2006/40/EC) promotes the use of F-gases with low global warming potential (GWP) values as cooling agents in the air conditioning in cars and vans through restrictions on related F-gases with high GWP values. In 2012, the European Commission proposed a revision of the F-gas regulation that would reduce F-gas emissions in the EU by two thirds compared with the member States 'with measures' scenarios. The revision is still under discussion. As a step forwards, Spain introduced a tax on F-gases in 2013. The tax applies to activities where equipment is refilled, and amounts to EUR 20 per F-gas kg CO_2 eq, thus promoting the use of F-gases with lower GWP values. Emission reductions achieved have yet to be quantified.

56. ***Agriculture***. Between 1990 and 2011, GHG emissions from the agriculture sector increased by 0.2 per cent (69.6 kt CO_2 eq), mainly owing to an increase in emissions from manure management of 26.8 per cent (1,748.3 kt CO_2 eq), but compensated for by a decrease in CH_4 emissions from enteric fermentation of 5.4 per cent (604.9 kt CO_2 eq) and a decrease in N_2O emissions from agricultural soils of 5.7 per cent (1,078.3 kt CO_2 eq).

This trend was influenced by a decline in the amount of synthetic nitrogen fertilizer applied to agricultural soils and a fall in the number of bovine livestock, as well as a strong increase in the number of swine and poultry.

57. The EU CAP is the key policy affecting agricultural activities in Spain. PaMs implemented and planned include a broad range of measures: reduction of fertilizer use, biodigestion of slurry (Spain reports a current digestion capacity of 800,000 t annually, equalling a potential for a reduction of 185,000 t CO_2 eq per year), increased fleet efficiency for agricultural machinery, crop rotation on non-irrigated land and promotion of agricultural best practices. Most of these measures are included and intensified in their impacts in the 2020 Diffuse Sectors Road Map (see para. 42 above), where they are expected to provide an emission reduction of 1,840 kt CO_2 eq compared with the 'with measures' scenario for 2013–2020.

58. ***LULUCF***. Net removals from the LULUCF sector amounted to 29,071.23 kt CO_2 eq in 2011 and net GHG removals increased by 52.2 per cent (9,965.49 kt CO_2 eq) since 1990. The trend was mainly driven by increases in removals from forest land (35.2 per cent or 6,550.7 kt CO_2 eq) and cropland (279.5 per cent or 2,597.52 kt CO_2 eq). This trend mainly resulted from forest plantations under the EU CAP.

59. The key policy document in the forestry sector is the Spanish Forestry Plan 2002–2032, which emphasizes the multifunctionality of forests and mountains as one of its basic principles. Its measures include restoration of vegetation cover, increment of the forest area, and sustainable forest management. Two updates are planned over its 30-year lifetime. The first update started recently and aims to improve the contribution of the forest sector to rural development and to the Spanish economy and employment. In the framework of the Spanish Forestry Plan, an initiative for planting 45 million trees between 2008 and 2012 has been developed. Owing to budget cuts because of the economic crisis, this number had to be reduced to 19.5 million trees, which were planted by 2011, leading to reforestation of an area of more than 29,000 ha. The rural development plans of the autonomous communities also include the reforestation of croplands that are no longer cultivated, funded through the EU CAP.

60. ***Waste management***. Between 1990 and 2011, GHG emissions from the waste sector increased by 89.8 per cent (6,577.9 kt CO_2 eq), mainly owing to an increase in emissions from solid waste disposal on land of 89.8 per cent (6,553.6 9 kt CO_2 eq) due to increased amounts of waste resulting from the increase in population and economic growth. This is the largest proportional increase in emissions of all the sectors.

61. In 2011, only 17 per cent of collected waste was recycled and 10 per cent went into composting/anaerobic digestion, while 63 per cent was deposited in landfills and 10 per cent incinerated. Between 2004 and 2011, separate waste collection increased from 9 per cent of the total collected to 19 per cent and waste recycling increased from 19.7 per cent to 27 per cent. The key measure in the waste sector is the National Integrated Waste Management Plan 2008–2015, which addresses waste management, aiming, inter alia, to reduce GHG emissions related to waste. A revision is planned for 2014. Further measures include the recovery of CH_4 from landfills under the Royal Decree 1481/2001 using, for example, subsidies to introduce CH_4 capture to an increasing number of landfills. This initiative allowed around 266,000,000 m^3 of CH_4 to be captured in 2011.

62. Law 22/2011 of 28 July 2011 on polluted waste and soils arises from the implementation of the EU waste directive (directive 2008/98/EC) and for the first time establishes a direct link between waste management and GHG emissions. This law will be complemented by the State Programme for Waste Reduction 2014–2020 currently in the process of approval. The law includes targets for prevention in waste generation (reduction of 10 per cent), preparing for reuse and recycling in municipal waste (50 per cent by 2020)

and preparing for reuse, recycling and recovery in construction and demolition waste (70 per cent by 2020). With regard to the EU landfill directive targets, Spain complied with its targets in 2006 and 2009. However, further measures are required to meet the 2016 target and to meet the 50 per cent recycling target by 2020. For this reason, further measures for the waste sector have been laid down in the 2020 Diffuse Sectors Road Map. These measures focus on the separate collection and recycling of waste. The national strategy "More food, less waste" implements the resolution by the European Parliament to reduce food waste by 50 per cent by 2025. The strategy is mainly based on recommendations from MAGRAMA, voluntary agreements and self-management.

5. Policies and measures related to implementation of commitments under the Kyoto Protocol

63. Spain reported on its package of PaMs adopted and implemented in achieving its commitment under the Kyoto Protocol, as well as those planned for the future. During the review, Spain provided additional information, elaborating in detail on the design of all PaMs included in the NC6. The information presented was transparent and complete.

64. The NC6 includes information on how Spain promotes and implements the International Civil Aviation Organization and International Maritime Organization decisions to limit emissions from aviation and marine bunker fuels.

65. Information on how Spain strives to implement PaMs under Article 2 of the Kyoto Protocol in such a way as to minimize adverse effects, including the adverse effects of climate change and effects on international trade and social, environmental and economic impacts, on other Parties, especially developing country Parties, has been provided through a reference to Spain's 2013 annual submission. While Spain's 2013 annual submission provides ample information on the actions taken in this regard, it does not include information on adverse effects and impacts or how these effects and impacts have been assessed. In order to increase transparency and completeness, the ERT recommends that Spain include such information in its next NC. Further information on how Spain 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, as reported in the 2013 annual submission, is presented in chapter III.B below.

C. Projections and the total effect of policies and measures, including information on supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol

66. In its NC6, Spain reported information on three emission projection scenarios. The 'with measures', 'with additional measures' and 'without measures' scenarios provided in the NC6 were produced by DG-CEAMN of MAGRAMA. The unit responsible for the operational aspects related to projections work is the Subdirección General de Calidad del Aire y Medio Ambiente Industrial of MAGRAMA.

1. Projections overview, methodology and key assumptions

67. The GHG emission projections provided by Spain in the NC6 include a 'with measures', a 'with additional measures' and a 'without measures' scenarios until 2030, presented relative to actual inventory data for 1990. Projections are presented on a sectoral basis, using the more detailed CRF categories of the annual GHG inventory. The projections for the CRF fuel combustion category are disaggregated into the CRF categories of energy industries, manufacturing industries and construction, transport, and

other sectors, which provide more transparency when compared with the projections in the NC5. Projections are also presented on a gas-by-gas basis for the following GHGs: CO_2, CH_4, N_2O, PFCs, HFCs and SF_6 (treating PFCs and HFCs collectively in each case). Projections are also provided in an aggregated format for each sector as well as for a national total, using GWP values. Emission projections related to fuel sold to aircraft engaged in international transport were reported separately and not included in the totals. Projections related to fuel sold to ships engaged in international transport were not reported.

68. As the emission projections related to fuel combustion from ships engaged in international transport were not reported in the NC6, the ERT recommends Spain to report, to the extent possible, emission projections for ships engaged in international transport in its next NC and report them separately from the GHG national totals.

69. During the review, Spain increased the transparency of its NC6 by providing additional information, elaborating on the assumptions made and on the models used to develop the projections. In particular, references to existing public documents (in particular the Spanish communication of March 2013 to the European Commission according Article 3.2(b) of decision 280/2004/CE) increased the understanding by the ERT of the approach followed by the Party. The ERT encourages Spain to clearly refer to this document and other similar sources on the assumptions and models used for the projections in its next NC.

70. In the NC6, the 'without measures' scenario shows the emissions growth that would take place if no PaMs had been applied since the end of the year 2000. The 'with measures' scenario assumes full implementation of policies, plans, measures and legislation adopted by 2012. The 'with additional measures' scenario includes planned PaMs. These last measures are those currently being debated and potentially being implemented in the future. All of these scenarios have been presented with 2010 as the starting point, using actual inventory data from the 2012 GHG inventory submission for the preceding years (emissions for the time series 1990–2010). As an illustration, the 'with measures' scenario includes the introduction of biofuels in road transport as well as the CO_2 emission limits for passenger vehicles and vans while the 'without measures' scenario does not. The 'with additional measures' scenario complements this introduction by further measures such as a shift towards less carbon-intensive transport modes as well as the use of biofuels for aviation.

71. The methodology used for the projections included in the NC6 has been largely maintained from the NC5 with some changes. The methodology is broadly based on sources developed by the European Environment Agency and the UNFCCC secretariat.[7] Spain uses a stepwise projection approach starting with a macroeconomic sectoral Wharton-UAM model managed by the Centro de Predicción Económica. The outputs of this model are used to project the activity data and the GHG emissions induced by such activities in the different sectors using the relevant emission factors. The NC6 describes the methodology and refers to more detailed methodological documents. However, the strengths and weaknesses (and/or potential improvements) compared with other models (including other types of models) have not been presented in the text and could be the topic of a dedicated and succinct subsection in the NC. The ERT encourages Spain to include such a discussion in its next NC.

[7] Some of the important reference documents used in the development of the scenarios are: *EMEP/EEA Air Pollutant Emission Inventory Guidebook – 2009* (chapter 8: Projections); *Recommendations on Developing and Reporting of National Programmes under the National Emission Ceilings Directive* (a report published in 2006 by the Working Group on Implementation of the Clean Air for Europe (CAFE) programme); and "Report on the workshop on emission projections from Parties included in Annex I to the Convention" (FCCC/SBSTA/2004/INF.15).

72. Spain reported on changes to the methodology compared with the NC5 and provided supporting documentation. Further information on these changes was provided during the review. The changes to the methodology include the inclusion of projections for international aviation, increased consistency between projections and PaMs, and greater consideration of policies of the autonomous communities. These reflect Spain's efforts towards continuous improvement of the projection methodology.

73. The NC6 includes quantitative information for 2015, 2020, 2025 and 2030 for a number of key assumptions. These include figures on GDP, population, final consumption expenditure of the population, capital investments in transport equipment, power generation, production levels in some energy intensive industries, transport volumes (in vehicle-km, passenger-km and tonne-km) and livestock numbers. During the review, more detailed information was provided on the assumptions and data sources leading to these figures. The recommendations formulated in the NC5 concerning projections have been considered and implemented. Particularly important among these was the recommendation to avoid the use of different exogenous variables and methods for the different sectors.

74. The ERT noted that an analysis on how the economic crisis faced by the country will affect the emission projections in the future has not been included in the NC6. As it is already apparent that the historical GHG emissions are below the projected emission levels for 2011 and 2012 and would remain below them in the near term, it will be important to analyse how the economic crisis will affect the projections work in the future. The ERT encourages Spain to undertake this updated analysis in its next NC.

75. The NC6 provides a description of the approach used for the quantitative sensitivity analyses of the projections results. It also describes the main sectoral findings when deviating from key assumptions for some important parameters in each sector. As an example, the amount of electricity to be produced has been modified to assess its influence on the emissions by the energy transformation sector. The transparency of these findings could be improved by complementing the textual description by a tabular (or graphical) presentation providing a quicker overview of the sensitivities of the sectoral and total emissions to the identified parameters with most impact. The ERT encourages Spain to explore such ways of presenting results and findings of the sensitivity analysis in its next NC.

2. Results of projections

76. Under the Kyoto Protocol, and within the burden-sharing agreement of the EU for meeting commitments under the Kyoto Protocol, Spain committed itself to limiting the growth in its GHG emissions to 15 per cent in relation to the base year level during the first commitment period (2008–2012). This translates to a 1,666,196 kt CO_2 eq emission limitation over the period 2008–2012, which is equivalent to the assigned amount for Spain, or around 333,240 kt CO_2 eq annually on average. The ERT understands that Spain intended to meet this target by domestic efforts, the use of flexible mechanisms and the use of accounting for activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol.

77. According to the data provided by Spain during the review (2014 GHG inventory submission), Spain's GHG emissions are expected to be higher than its Kyoto Protocol target for the first commitment period, although the country's GHG emissions have decreased sharply since 2008. The gap to reach the Kyoto Protocol target for the first commitment period is estimated to be 125,780 kt CO_2 eq (or an annual average of 25,160 kt CO_2 eq). Therefore, and as additional mitigation measures can no longer apply to the first commitment period, Spain expects to close this gap with the use of carbon credits from flexible mechanisms and accounting for activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol. The exact use of units from the flexible mechanisms remains to be determined once the final inventoried emissions have been validated, but its maximum

average annual use has been set to 20 per cent of the base year emissions at the EU level. This means that up to 58,000 kt CO_2 eq of carbon credits could be used annually, which would be sufficient to close the emission gap. The accounting of activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol will also be used for compliance with the target.

78. For the second commitment period of the Kyoto Protocol (2013–2020), Spain committed to reduce its GHG emissions by 20 per cent below the base year level; however, similarly to the other EU member States, Spain will fulfil jointly the EU commitment for the second commitment period to reduce its GHG emissions by 20 per cent below the base year level in accordance with Article 4 of the Kyoto Protocol.[8] This arrangement also applies to the quantified economy-wide emission reduction target of Spain, as well as that of the EU. The Spanish commitment consequently can be divided into: (1) a target for its emissions falling under the EU ETS, with a target of a 21 per cent reduction in emissions for the covered sectors for the EU as a whole, and for which no country-specific target for the member States is defined; and (2) a target for its emissions falling under the EU ESD for sectors not covered by the EU ETS, with a target of a 10 per cent reduction by 2020 compared with the 2005 level.

79. The ERT noted that none of the projections under the three scenarios described above indicates that Spain could reach the target described under the EU ESD (10 per cent below the 2005 level by 2020). Therefore, Spain intends to increase its domestic action. The most important measure in this regard is the 2020 Diffuse Sectors Road Map, which addresses emissions under the EU ESD. This road map should enable Spain to close an annual emissions gap estimated to reach 19,900 kt CO_2 eq by 2020 and to comply with its targets under the EU ESD. In case the effect of these additional measures proves insufficient to reach this target, Spain plans to use Kyoto Protocol mechanisms to acquire credits through its participation in carbon finance instruments targeting the post-2012 period.

80. Spain's NC6 provides projections by gas in the 'with measures' scenario. For the other scenarios, information by gas was provided during the review. In the 'with measures' scenario, GHG emissions are projected to develop as follows: while the total GHG emissions are projected to increase by 37.2 per cent between 1990 and 2020, and by 62.4 per cent between 1990 and 2030, CO_2 emissions are projected to increase by 37.9 and 70.2 per cent, respectively and CH_4 emissions by 25.2 and 15.3 per cent, respectively. N_2O emissions are expected to decrease by 7.0 and 7.9 per cent, respectively. Concerning F-gases, HFC emissions are projected to increase by 637.7 between 1990 and 2020 and by 689.0 per cent between 1990 and 2030, while SF_6 emissions would increase by 287.0 and 139.1 per cent, respectively and PFCs would decrease by 61.0 and 53.0 per cent, respectively. As indicated above, the highest absolute increases are related to CO_2 and HFC emissions and, correspondingly, their shares in total GHG emissions will increase at the expense of the other gases in the 'with measures' scenario, reaching 80.2 and 4.6 per cent, respectively, between 1990 and 2020 and 83.7 and 4.1 per cent, respectively, between 1990 and 2030.

81. For the energy sector, in the 'with measures' scenario, compared with 1990 the emission levels in 2020 and 2030 correspond to increases of 32.9 and 71.6 per cent, respectively. In the 'with measures' scenario (and also in the 'with additional measures'

[8] The quantified emission limitation or reduction commitments (QELRCs) for the EU and its member States for the second commitment period under the Kyoto Protocol are based on the understanding that these will be fulfilled jointly with the EU and its member States, in accordance with Article 4 of the Kyoto Protocol. The QELRCs are without prejudice to the subsequent notification by the EU and its member States of an agreement to fulfil their commitments jointly in accordance with the provisions of the Kyoto Protocol.

scenario), the emissions of the energy industries CRF category are the ones showing the strongest reduction compared with the 'without measures' scenario. In the 'with measures' scenario, and after a sharp decrease since 2008, the emissions of the energy sector are projected to reach levels comparable with those of the peak period of 2005–2008 by 2030 (136,413 kt CO_2 eq), increasing from 98,676 kt CO_2 eq in 2020. This corresponds to an increase of 36.2 per cent between 2010 and 2020 and an increase of 88.4 per cent between 2010 and 2030. Compared with the relatively high 2005 levels, the emission levels in 2020 and 2030 correspond to a decrease of 21.7 per cent and an increase of 8.2 per cent, respectively.

82. For the manufacturing industries and construction CRF category, the 'with measures' scenario indicates an increase in emissions of 32.0 per cent by 2020 compared with 2010 levels; by 2030, the increase would amount to 50.5 per cent. This increase is induced by the expected recovery of the Spanish economy from 2014 onwards. Compared with the higher emissions from 2005 (pre-economic crisis), the respective increases by 2020 and 2030 amount to 12.4 and 28.1 per cent, respectively. In the transport sector (transport CRF category), emissions decreased by 8.9 per cent between 2005 and 2010. In the 'with measures' scenario, a slow and continuous increase from 2012 onwards leads to 2020 emissions being 60.8 per cent higher than the 1990 emission level, 11.9 per cent lower than the 2005 emission level and 3.3 per cent lower than the 2010 emission level. By 2030, this would lead to emissions being 78.0 per cent higher than in 1990, 2.4 per cent lower than in 2005, but 7.1 per cent higher than in 2010. The 'with measures' scenario for the other sectors CRF category (buildings sector) indicates a slow increase in emissions. The emission level in 2020 would be 2.2 per cent higher than in 2005 and 5.9 per cent higher than in 2010. By 2030, the increase would amount to 10.2 and 14.2 per cent higher than in 2005 and 2010, respectively. The difference with the 'without measures' scenario is mainly due to higher penetration of natural gas and renewable energy as well as higher energy use efficiency due to the implementation of energy standards for buildings and for heating equipment.

83. For the industrial processes sector, the emissions in the 'with measures' scenario increase faster than in the 'without measures' scenario. This is due to replacement of ozone-depleting hydrochlorofluorocarbon (HCFC) gases by HFCs with higher GWP values. In the 'with measures' scenario by 2020, the emissions would increase by 48.0, 12.4 and 32.0 per cent compared with levels in 1990, 2005 and 2010, respectively. By 2030, the increase would amount to 68.7, 28.1 and 50.5 per cent, respectively. The 'with measures' scenario includes a significant recalculation of the emissions of the solvents and other product use sector included in the 2013 GHG inventory submission and starts from a significantly lower emission level in 2010. The 'without measures' scenario does not include this recalculation and therefore starts from a higher emission level in 2010. After 2010, emissions would stabilize until 2030 in both scenarios. This implies that the difference between the two scenarios is small to non-existent should the same level of emissions be used as a starting point for the projections. With the reported emissions for the 'without measures' scenario, the evolution of the emissions by 2020 points at an increase of 2.1 and 19.9 per cent compared with levels in 2005 and 2010, respectively. By 2030, the increase would amount to 19.2 and 40.1 per cent, respectively. Although the ERT understands that using the most recently available data for projections is good practice, it encourages Spain to increase transparency by using the same conditions and assumptions for the starting point of the projection development in both scenarios in its next NC.

84. The 'with measures' scenario for the agriculture sector almost fully coincides with the 'without measures' scenario. This implies a stabilization of the emissions between 2010 and 2020, followed by a reduction in emissions of between 5 and 10 per cent from 2020 to 2030. The evolution of the emissions in the 'with measures' scenario by 2020 result in an increase of 5.6 per cent compared with the 1990 level, and a decrease of 3.0 and 1.0 per

cent compared with levels in 2005 and 2010, respectively. By 2030, the decrease would amount to 1.0, 9.1 and 7.2 per cent compared with levels in 1990, 2005 and 2010, respectively. This slight reduction is mainly due to an upwards update of the cattle numbers for 2011–2020, while the numbers for the period 2020–2030 have not yet been updated. Spain expects the decrease to be more limited once the projected livestock numbers in the period 2020–2030 are updated. The PaMs in this sector, mainly related to manure management, are assumed to have a limited overall effect, which explains the small difference between the 'without measures' and the 'with measures' scenarios.

85. In both the 'without measures' and the 'with measures' scenarios, the carbon sink estimated for the LULUCF sector shows a decreasing trend between 2012 and 2030. The reported evolution of the removals for the 'with measures' scenario by 2020 points to an increase of 52.7, 18.9 and 0.8 per cent compared with levels in 1990, 2005 and 2010, respectively. By 2030, an increase in the removals of 53.0 and 17.2 per cent is projected compared with the 1990 and 2005 levels, respectively, while a decrease of 0.6 per cent is projected compared with the 2010 level. The reduced carbon sink in the LULUCF sector is due to declining subsidies for the establishment of new forests, which leads to reduced absorption in the period after 2010. The difference between the two scenarios by 2030 amounts to approximately 3,000 kt CO_2 eq. The projections for the emissions related to the waste sector in the 'without measures' and the 'with measures' scenarios are identical and differ only very slightly from the emissions in the 'with additional measures' scenario. The emissions in this sector are estimated to decrease to less than 12,000 kt CO_2 eq by 2030 from approximately 14,000 kt CO_2 eq in 2012. In the 'with measures' scenario, the 2020 emissions of the waste sector are expected to be 70.7 and 1.3 per cent higher than in 1990 and 2005, respectively, and 14.5 per cent lower than in 2010. By 2030, the increase of emissions would amount to 53.0 per cent compared with 1990, and the decrease would amount to 9.1 and 23.3 per cent compared with 2005 and 2010, respectively.

86. In the NC6, Spain did not provide information on emission projections divided into EU ETS and non-EU ETS sectors. During the review, Spain provided the ERT with this information. The ERT noted that the 10 per cent emission reduction target of Spain for the non-EU ETS sectors translates into an emission level of 208,590 kt CO_2 eq by 2020. Projections for the non-EU ETS sectors indicate that emissions are expected to increase to 228,460 kt CO_2 eq by 2020 showing a gap of 54,500 kt CO_2 eq over the period 2013–2020. However, Spain intends to increase its domestic action through measures included in the 2020 Diffuse Sectors Road Map, which should enable this gap to be closed with a potential emission reduction of 56,000 kt CO_2 eq between 2013 and 2020. These additional measures could thus set Spain on track to meet its economy-wide emission reduction target by 2020. The ERT encourages Spain to provide emission projections in accordance with the division of the EU ETS and non-EU ETS sectors in its next NC in order to facilitate the assessment of the progress of Spain towards its target for the non-EU ETS sectors by 2020. The projected emission levels under different scenarios and information on the Kyoto Protocol targets and quantified economy-wide emission reduction target are presented in table 5 and the figure.

Table 5
Summary of greenhouse gas emission projections for Spain

	Greenhouse gas emissions (kt CO_2 eq per year)	*Changes in relation to the base year[a] level (%)*	*Changes in relation to the 1990 level (%)*
Kyoto Protocol base year[b]	289 773.21	0.0	2.1
Kyoto Protocol target for the first commitment period (2008–2012)	333 239.19	15.0	17.4
Kyoto Protocol target for the second	Not available yet		

	Greenhouse gas emissions (kt CO_2 eq per year)	*Changes in relation to the base year[a] level (%)*	*Changes in relation to the 1990 level (%)*
commitment period (2013–2020)[c]			
Quantified economy-wide emission reduction target under the Convention[d]	Not available yet		
Inventory data 1990[e]	283 749.22	–2.0	0.0
Inventory data 2012[e]	340 808.59	17.6	20.1
Average annual emissions for 2008–2012[e]	358 396.01	23.7	26.3
'Without measures' projections for 2020[f]	472 592	63.1	66.6
'With measures' projections for 2020[f]	387 834	33.8	36.7
'With additional measures' projections for 2020[f]	378 906	30.8	33.5
'Without measures' projections for 2030[f]	583 706	101.4	105.7
'With measures' projections for 2030[f]	459 326	58.5	61.9
'With additional measures' projections for 2030[f]	444 652	53.4	56.7

[a] "Base year" in this column refers to the base year used for the target under the Kyoto Protocol.

[b] The Kyoto Protocol base year level of emissions is provided in the initial review report contained in document FCCC/IRR/2007/ESP.

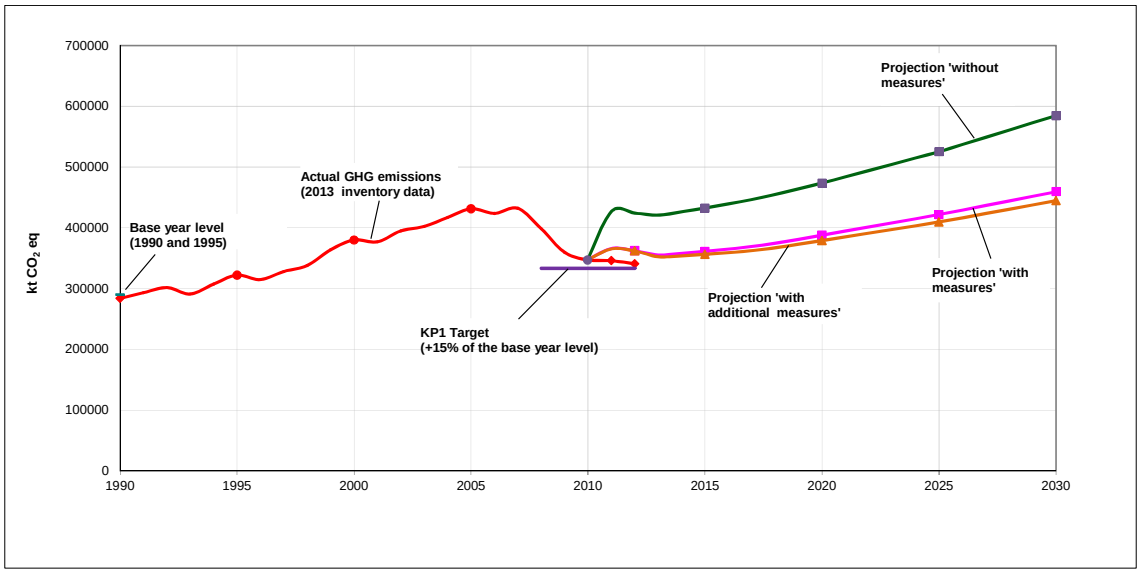
[c] The Kyoto Protocol target for the second commitment period (2013–2020) is a joint target for the European Union and its 28 member States and Iceland. The target is to reduce emissions by 20 per cent by 2020 compared with the base year (1990) level. The target for sectors not covered by the European Union Emissions Trading System is –10 per cent for Spain under the European Union effort-sharing decision.

[d] Quantified economy-wide emission reduction target under the Convention is a joint target for the European Union and its 28 member States. The target is to reduce emissions by 20 per cent by 2020 compared with the base year (1990) level.

[e] Spain's 2014 greenhouse gas inventory submission; the emissions are without land use, land-use change and forestry.

[f] Spain's sixth national communication and/or first biennial report.

Greenhouse gas emission projections



Sources: (1) Data for the years 1990–2012: Spain's 2014 greenhouse gas inventory submission; the emissions are without land use, land-use change and forestry; (2) Data for the years 2010–2030: Spain's sixth national communication and/or first biennial report; the emissions are without land use, land-use change and forestry.

Abbreviations: GHG = greenhouse gas, KP1 = first commitment period of the Kyoto Protocol.

3. Total effect of policies and measures

87. In the NC6, Spain presents the estimated and expected total effect of implemented and adopted PaMs and an estimate of the total effect of its PaMs, in accordance with the 'with measures' definition, compared with a situation without such PaMs. Information is presented in terms of GHG emissions avoided or sequestered, by gas (on a CO_2 eq basis), from 2001 onwards. Spain also presents relevant information on factors and activities for each sector for the years 1990 to 2030 in the NC6.

88. The NC6 does not include tabular information on the overall effect of PaMs by sector. During the review, Spain provided extensive additional information concerning the drivers and assumptions used in its projection work and many additional clarifications. Before the review week, Spain provided an annex to the NC6 containing projected emission reductions for PaMs at the sectoral level. This annex contains information on single PaMs and groups of PaMs, but no aggregated information at the sectoral level. The ERT noted that this aggregated information was contained in other publicly available documents (primarily the Spanish communication of March 2013 to the European Commission according to Art. 3.2(b) of decision 280/2004/CE). In order to increase transparency, the ERT encourages Spain to provide information on projected emission reductions at the sectoral level in its next NC and/or to explicitly refer to publicly available documents providing this information, which also include detailed information on projections developed by Spain.

89. The ERT noted that emission projections for fuels sold to ships engaged in international transport have not yet been performed. While the ERT understands the complexities of providing specific projections for this activity, it recommends that Spain report, to the extent possible, specific emission projections for maritime bunker fuels in its next NC.

90. During the review, Spain provided additional information, elaborating on the decision to increase domestic action through a new set of PaMs under development in its national 2020 climate strategy. This strategy comprises four main focus areas: the third phase of the EU ETS, the 2020 Diffuse Sectors Road Map, the EU energy efficiency directive and the Spanish LULUCF policy, primarily implemented through the Spanish Forestry Plan. Detailed descriptions of these four pillars were provided during the review. The EU ETS is an instrument with a scope covering the entire EU and is described in directive 2003/87/EC. The 2020 Diffuse Sectors Road Map focuses on non-EU ETS sectors and consists of 43 new measures that are currently in different stages of implementation. The EU energy efficiency directive sets an obligation for member States to achieve final energy savings over the obligation period (2014–2020). It includes energy efficiency obligation schemes and targeted policy measures to drive energy consumption reductions in households, industry and transport. The Spanish Forestry Plan stimulates activities increasing CO_2 storage in forests and includes research and follow-up of the condition of forests.

91. Spain reported that the total estimated effect of adopted and implemented PaMs is 84,758 kt CO_2 eq by 2020 and 124,380 kt CO_2 eq by 2030. According to the information reported in the NC6, PaMs implemented in the energy sector will deliver the largest emission reductions, followed by the effect of PaMs implemented in the transport and building sectors. The most effective PaMs and drivers behind GHG emission reductions are

described in chapter II.B above. Table 6 provides an overview of the total effect of PaMs as reported by Spain.

Table 6
Projected effects of planned, implemented and adopted policies and measures in 2020 and 2030

Sector	*Effect of implemented and adopted measures (kt CO_2 eq)*	*Relative value (% of 1990 emissions)*	*Effect of planned measures (kt CO_2 eq)*	*Relative value (% of 1990 emissions)*	*Effect of implemented and adopted measures (kt CO_2 eq)*	*Relative value (% of 1990 emissions)*	*Effect of planned measures (kt CO_2 eq)*	*Relative value (% of 1990 emissions)*
	2020				*2030*			
Energy (without transport)	75 545	26.6	5 373	1.9	95 857	33.8	8 933	3.1
Transport	12 866	4.5	2 449	0.9	31 660	11.2	4 585	1.6
Industrial processes[a]	–3 740	–1.3	879	0.3	–3 224	–1.1	880	0.3
Agriculture	87	0.0	0	0.0	87	0.0	0	0.0
Land use, land-use change and forestry	2 335	0.8	0	0.0	2 748	1.0	0	0.0
Waste management	0	0.0	226	0.1	0	0.0	276	0.1
Total (excluding LULUCF)	**84 758**	**29.9**	**8 928**	**3.1**	**124 380**	**43.8**	**14 674**	**5.2**

Source: Spain's sixth national communication and/or first biennial report.

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

[a] Emission projections for this sector are higher in the 'with measures' and 'with additional measures' scenarios than in the 'without measures' scenario, thus indicating negative impacts of policies and measures. This result is explained by the fact that Spain considered the replacement of ozone-depleting hydrochlorofluorocarbons (HCFCs) by hydrofluorocarbons (HFCs) with higher global warming potentials as a measure included in the 'with measures' and 'with additional measures' scenarios but not in the 'without measures' scenario.

4. Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol

92. Spain in its NC6 provided information on how its use of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol is supplemental to domestic action.

93. Spain explained that supplementarity of the use of the Kyoto Protocol mechanisms was demonstrated by comparing the emission levels in a 'without measures' scenario with the projected emissions for the first commitment period of the Kyoto Protocol in its Plan Nacional de Asignación de derechos de emisión de gases de efecto invernadero 2008–2012 (hereinafter referred to as the Plan). The emission levels in a 'without measures' scenario would correspond to an average increase of about 73 per cent in the period 2008–2012 compared with the base year levels; in contrast, an increase of about 37 per cent was estimated based on PaMs included in the Plan. These figures and Spain's target of 15 per cent above the base year allows the comparison of the Party's internal mitigation effort (36 per cent of emissions decrease) and its use of flexible mechanisms. Spain intends to fill the gap of 22 percentage points between its target and the emissions included in the Plan by using the activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol (making up for 2 percentage points) and flexible mechanisms (making up for a maximum of 20 percentage points).

94. The Spanish Council of Ministers approved the use of flexible mechanisms corresponding to approximately 20 per cent of the base year emissions (289,773 kt CO_2 eq). Of these 289,773 kt CO_2 eq, 55 per cent (159,375 kt CO_2 eq) over the five-year commitment period are related to the non-EU ETS sectors and therefore this amount had to be acquired by the Government of Spain. Taking the latest macroeconomic developments and mitigation policies in Spain into consideration, the emission level over the commitment period is projected to reach not 37 per cent above the base year's emission level in 2012 as indicated in the Plan, but rather 25 per cent above this level. Therefore, the expected use of flexible mechanisms is lower than the above-mentioned value of 289,773 kt CO_2 eq.

95. The use of flexible mechanisms by the Government of Spain is related to the acquisition of carbon credits through: participation in clean development mechanism (CDM) and joint implementation (JI) projects (mainly through international financial institutions and involving an investment of more than EUR 400 million) on the one hand and purchasing assigned amount units (through bilateral agreements linked to Green Investment Schemes) on the other hand. Carbon credits contributing to meeting the target are also provided through the private sector, where installations use credits for compliance under the EU ETS. Over the period 2008–2012, the Spanish EU ETS installation operators made use of 107,062,337 certified emission reductions/emission reduction units.

96. Concerning the second commitment period of the Kyoto Protocol, Spain is currently implementing its 2020 Diffuse Sectors Road Map and considers that flexible mechanisms will not be needed to reach its non-EU ETS target. Nevertheless, Spain is already participating in some CDM and JI projects through international financial institutions. These projects target the post-2012 period and will deliver credits which could be used if needed to comply with Spain's commitment, up to the limits established in the ESD. Concerning the emissions under the EU ETS, installations covered are permitted to use flexible mechanisms for compliance to a limited extent as laid down in EU directive 2003/87/EC and as described in the European Commission regulation No 1123/2013 on determining international credit entitlements pursuant to directive 2003/87/EC.

D. Provision of financial resources and technology transfer to developing country Parties, including information under Articles 10 and 11 of the Kyoto Protocol

1. Financial resources, including 'new and additional' resources and resources under Article 11 of the Kyoto Protocol

97. In its NC6, Spain provided information on provision of support required under the Convention and its Kyoto Protocol.

98. The information provided in the NC6 covers the requirements of the UNFCCC reporting guidelines on NCs; however, some information on 'new and additional' financial resources (see para. 100 below) and identification of particularly vulnerable developing countries that receive assistance from Spain (see para. 101 below) was partially missing. Spain in general adhered to the UNFCCC reporting guidelines on NCs.

99. During the review, Spain provided additional information, elaborating on its definition of "activities that are new and specific on climate change", and on identification of the most vulnerable countries and/or the most vulnerable sector in developing countries, and providing the ERT with the document "Summary of Climate Finance (ODA and OOF) during the period 2008 and 2012". This information improved the transparency and completeness of the information included in the NC. The ERT recommends that Spain report such information in its next NC in order to enhance its completeness.

100. In its NC6, Spain provided details of measures taken to give effect to its commitments under Article 4, paragraphs 3, 4 and 5, of the Convention as required by the UNFCCC reporting guidelines on NCs and under Article 11 of the Kyoto Protocol, as required by the "Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol". Spain has indicated what 'new and additional' financial resources it has provided pursuant to Article 4, paragraph 3, of the Convention and has indicated that financial resources are 'new and additional' when support is given to activities that are new and specific to climate change. During the review, Spain provided additional information, elaborating on its definition of activities that are new and specific to climate change. The ERT recommends that Spain report detailed information on its definition of the activities that are new and specific to climate change in its next NC.

101. Spain has reported information on the assistance it has provided to developing country Parties that are particularly vulnerable to the adverse effects of climate change to help them to meet the costs of adaptation to those adverse effects. Nevertheless, the ERT noted that the NC6 does not clarify how Spain identified the "most/particularly vulnerable" countries. Also, the information provided is at the regional level rather than at the country level. The ERT recommends that Spain include this more detailed information in its next NC.

102. Furthermore, Spain has provided additional information on other financial resources related to the implementation of the Convention provided through bilateral, regional and other multilateral channels. In particular, the Party provided information on financial resources related to the implementation of the Convention through multilateral channels, including the Global Environment Facility, and through other official flows (OOF) not related to official development assistance (ODA). The ERT encourages Spain to continue including detailed information on OOF in its next NC.

103. Spain has also provided information on its financial contribution to the Adaptation Fund, established in accordance with decision 10/CP.7. With regard to the most recent financial contributions (fast-start finance) to enhance the implementation of the Convention by developing countries, Spain has provided USD 171, 145 and 183 million during 2010, 2011 and 2012, respectively (fast-start period). These contributions include both ODA and OOF. Table 7 summarizes information on financial resources.

Table 7
Summary of information on financial resources for 2008–2012
(Millions of United States dollars[a])

Allocation channel of public financial support	*Years of disbursement*				
	2008	*2009*	*2010*	*2011*	*2012*
Total official development assistance	7 133	6 984	6 317	4 458	2 123
Climate change official development assistance, including:	106	298	310	174	77
Contributions to the UNFCCC and Kyoto Protocol funds	9	5	69	0	0
Contributions to the Global Environment Facility	0	0	17	0	0
Contributions through other multilateral channels	69	67	118	153.82	2.55
Contributions through bilateral and regional channels	29	226	106	20.09	74.71

Allocation channel of public financial support	*Years of disbursement*				
	2008	*2009*	*2010*	*2011*	*2012*
Fast-start finance[b]			171	145	183
Other official flows				159.18	187.10

[a] For United States dollar exchange rates, both real exchange rates and annual average dollar exchange rates for Organisation for Economic Co-operation and Development – Development Assistance Committee members have been used.

[b] Fast-start finance is only part of the Spanish climate change contributions.

2. Technology transfer, including information under Article 10 of the Kyoto Protocol

104. Spain has provided in its NC6 information on activities related to the transfer of technology and global activities by the public and private sectors. A detailed review of reported information is provided in chapter II.D.3 of the report of the technical review of the first biennial report of Spain.

105. Spain implemented most of the recommendations provided in the previous review report, except the following: providing a clear distinction between activities undertaken by the public sector and those undertaken by the private sector; providing information on activities for financing access by developing countries to 'hard' and 'soft' environmentally sound technologies; and providing information, in textual format, on steps taken by the Government of Spain to promote, facilitate and finance transfer of technology, and to support the development and enhancement of endogenous capacities and technologies of developing countries. The ERT noted that this information was not included in the NC6. The ERT reiterates the recommendation that Spain include this information in its next NC in order to enhance its completeness.

106. During the review, Spain provided additional information, elaborating on private flows leveraged by public instruments related to the projects included in table 7(b) of the first biennial report (BR1) common tabular format (CTF), such as the Spanish Foreign Investment Insurance Instruments and the Fund for Spanish Internationalization; amounts of resources provided as "grants" or "equities" in the multilateral contributions presented in CTF table 7(a) of the BR1; and details of initiatives implemented by the following relevant institutions: Instituto para la Diversificación y Ahorro de la Energía, Centro para el Desarrollo Tecnológico Industrial, Agencia Estatal de Meteorología (AEMET), Oficina Española de Patentes y Marcas, OECC y Agencia Española de Cooperación Internacional al Desarrollo. Spain also stated that it does not have specific systems for tracking and monitoring projects that would allow the amounts used for capacity-building to be distinguished from those used for technology transfer in bilateral projects. The ERT encourages Spain to increase transparency of the information provided in this regard in its next NC by possibly designing and implementing a specific system for tracking and monitoring activities and amounts of financial flows on technology transfer.

107. Spain also provided information on activities related to technology transfer, including examples of success and failure stories; however, the ERT found this information to be of limited detail. Furthermore, Spain reported in textual format on governmental support for facilitating and financing the transfer of technology that takes place through contributions to bilateral and multilateral funds and projects, and also through the Spanish Carbon Funds, which support private-sector initiatives for low-carbon activities for a sustainable and innovative economy, including the development of clean technologies. With regard to activities related to technology transfer, Spain's activities seem to be focused on Latin America; for example, the Ibero-American Network of Climate Change Offices (RIOCC) and the regional gateway for technology transfer and climate change

action in Latin America and the Caribbean (REGATTA) project managed by the United Nations Environment Programme and financed mainly by Spain.

108. Spain has not provided a specific chapter in its NC6 on the fulfilment of its commitments under Article 10 of the Kyoto Protocol. The information provided has a limited amount of detail and is placed in different sections of the NC6 related to PaMs, financing, research and systematic observation, and education, training and public awareness. Spain did not provide information on national or regional programmes aiming to improve the quality of local emission factors and activity data for the preparation and periodic updating of national GHG inventories. The ERT recommends that Spain include detailed and specific information required under Article 10 of the Kyoto Protocol in its next NC in order to enhance its completeness and transparency.

E. Vulnerability assessment, climate change impacts and adaptation measures

109. In its NC6, Spain has provided the required information on the expected impacts of climate change in the country and on adaptation options.

110. Table 8 summarizes the information on vulnerability and adaptation to climate change presented in the NC6.

Table 8
Summary of information on vulnerability and adaptation to climate change

Vulnerable area	*Examples/comments/adaptation measures reported*
Agriculture and food security	*Vulnerability*: effects of high temperatures and low precipitation in the arid and semi-arid regions may be partially compensated for by higher photosynthetic rates and milder winters; expected increased need for irrigation; further impacts of pest and disease on crops; significant impacts on animal health and decreased productivity in the Mediterranean region
	Adaptation: research on this area, which includes: development of climate change scenarios on temperature and precipitation pattern changes; irrigation demands; identification of long-term adaptation strategies for fruit trees and determinant crops; and livestock sector
Biodiversity and natural ecosystems	*Vulnerability*: loss of biodiversity, variability in taxa distribution and assessment of the effect of actual climatic behaviour
	Adaptation: assessment of impacts, vulnerability and adaptation to climate change of Spanish biodiversity; monitoring global change network in Spanish national parks made by the Rhododendron Species Conservation Group; and research on sectoral, climate change and invasive species relationships
Coastal zones	*Vulnerability*: sea level rise and flooding risk
	Adaptation: activities performed by the Environmental Hydraulics Institute of Cantabria (e.g. the surf-zone mid-term morphodynamics project in which numeric models were used to understand the influence of coastal variation), and research on climate change on the coasts and implementation of the adaptation strategy for the Spanish coasts
Forests	*Vulnerability*: change in behaviour patterns of pests and diseases; changes in fire regimes; modification of the physiology of most forest species
	Adaptation: evaluation and review of forest management practices for adaptation of Spanish forestry against climate change; and sectoral assessment report of the impacts of climate change on forestry and biodiversity
Human health	*Vulnerability*: heatwaves, air quality and vector diseases

Vulnerable area	*Examples/comments/adaptation measures reported*
	Adaptation: climate change health policies applied at the national and subnational levels and development of the Spanish Government's information system on impacts of climate change on human health
Infrastructure and economy	*Vulnerability*: no clear relationship between the effects of climate change and current urban planning; need for intensive development of green areas and parks and habitability of buildings
	Adaptation: development of and participation in international projects dealing with urban development to confront climate change effects
Water resources	*Vulnerability*: variation of precipitation
	Adaptation: assessments of impacts of climate change on water resources and water bodies made by Centro de Estudios y Experimentación de Obras Públicas
Tourism	*Vulnerability:* problems with functionality or viability of certain tourist destinations due to water shortages; modification of activity schedules due to increasing temperatures; alteration of tourist settlements and their infrastructure due to rising sea levels
	Adaptation: utilization of tourism comfort index in related studies

111. The ERT found that the NC6 addresses both vulnerability and adaptation in a balanced way. Spain has provided comprehensive information on the continuous and diverse work on both vulnerability and adaptation, particularly on water-related issues and coastal zone management, which are given a high priority. Spain has carried out comprehensive research to assess potential impacts and vulnerability and to define adaptation actions in these areas, with key issues related to vulnerability being: drought, temperature increases and rising sea levels.

112. The ERT acknowledges that Spain took action to implement Article 4, paragraph 1(b) and (e), of the Convention with regard to adaptation through the formulation, implementation, publishing and updating of national and regional programmes and cooperation with developed country Parties in preparing plans and actions for adaptation to the impacts of climate change.

113. During the review, Spain provided additional information on how it formulated, implemented and published national and regional programmes through its national research programme (carried out by Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT) and AEMET, among others) and the Ministry of Economy and Competitiveness (through the State Secretariat for Research, Development and Innovation (I+D+I)). Spain also provided information on the expected impacts of climate change included in studies such as the Preliminary Assessment of the Impacts in Spain due to the Effects of Climate Change project, and in the National Plan for Adaptation to Climate Change (PNACC). Further information was provided on Spain's actions aiming to implement Article 4, paragraph 1(b) and (e), of the Convention with regard to adaptation, which include the Climate Change on the Spanish Coast programme as well as the I+D+I programmes. Spain also informed the ERT that steps taken in preparing for adaptation took place through the integration of adaptation into sectoral regulations by MAGRAMA.

114. According to the NC6, cooperation with developing country Parties in preparing for adaptation takes place through the activities for information, communication and awareness under PNACC. These activities include meetings and workshops, for example under RIOCC.

115. The ERT commends the actions taken by Spain to identify vulnerability, climate change impacts and adaptation, and the actions taken under the adaptation strategy for the Spanish coast.

F. Research and systematic observation

116. Spain has provided information on its actions relating to research and systematic observation, and addressed both domestic and international activities, including activities related to the Global Climate Observing System (GCOS) and the Intergovernmental Panel on Climate Change. The NC6 also reflects action taken to support related capacity-building in developing countries. Furthermore, Spain has provided a summary of information on GCOS activities carried out by AEMET.

117. Spain provided information on research related to: (1) climate process and climate system studies, including paleoclimate studies; (2) modelling and prediction, including general circulation models; (3) research on the impacts of climate change; and (4) research and development on mitigation and adaptation technologies under projects such as the European Climate Research Alliance and the Influencia de la Estructura de los Aerosoles de Combustión sobre el Cambio Climático, a combined laboratory and model study of organic surfactants to understand cloud droplet formation in the Arctic summer and Arctic summer cloud formation at low altitude. Spain also provided information on systematic observation and support to developing countries related to atmospheric climate observing systems; ocean climate observing systems; and terrestrial climate observing systems.

118. The NC6 provides information on actions taken by Spain to support related capacity-building in developing countries. This includes capacity-building in developing countries through the RIOCC programme,[9] international programmes such as the REGATTA project, and projects within the CIEMAT research centre. During the review, Spain provided further information on domestic and international actions related to research and systematic information. The ERT noted a decline in support provided by Spain for developing countries since 2009 due to the economic crisis. During the review, Spain explained how the economic crisis affected this support and various other programmes.

119. The ERT noted that information on financial support provided to maintain observation systems in developing countries was not included in the NC6. The ERT encourages Spain to include this information in its next NC.

120. According to the NC6, a public research organization is located in the Ministry of Economy and Competitiveness under the State Secretariat for Research, Development and Innovation, focusing on energy and environment. The activity of this organization is structured around projects that form a bridge between research, development and innovation (RDI) and social interest goals.

121. The NC6 reported that responsibility for atmospheric monitoring systems in Spain lies with AEMET and for oceanic monitoring systems with Instituto Español de Oceanografia and Ente Público Puertos de Estado. Terrestrial observation related to water is carried out by Variables Climáticas Esenciales monitoring projects. Satellite observation data required for modelling climate and climate change impacts in the country are available through Spain's participation in the European Space Agency and the European Organization for the Exploitation of Meteorological Satellites.

122. RDI activities in Spain are framed in national and international settings, and are complemented by activities such as education, technology transfer and technical services as well as advising the administrations and representing Spain in diverse international forums. Collaboration takes place with other RDI institutions, universities and businesses in the relevant sector to transfer the knowledge and technology that it has generated, supporting and encouraging innovation and changing the economic model.

[9] <http://www.lariocc.es/es/cambio-climatico-iberoamerica/impactos-vulnerabilidad/default.aspx>.

G. Education, training and public awareness

123. In the NC6, Spain has provided information on its actions relating to education, training and public awareness. Spain's approach to education, training and public awareness rests on the Strategy for Science and Technology and Innovation 2013–2020 and the National Plan for Scientific and Technological Research and Innovation 2013–2016, both approved in 2013.

124. Compared with the NC5, Spain provided more extensive information in the NC6 on: (1) general policy for education, training and public awareness; (2) primary and higher education; (3) public information campaigns; (4) training programmes; (5) resource centres; and (6) involvement in climate change activities of the public and non-governmental organizations (NGOs). During the review, Spain provided further information on activities related to education and communication carried out by the National Centre for Environmental Education and Awareness Activities under MAGRAMA. According to the NC6, the existing training programmes are administrated by MAGRAMA. In Spain, efforts in education, training and public awareness, as well as sharing information and public participation in activities related to climate change, are conducted by a comprehensive group of public and private institutions, including the central government, autonomic governments, municipalities, NGOs, mass media and private enterprises. One of the more significant efforts in public participation on climate change issues in the country is the establishment of the Climate National Council, a collegial body that channels all the public participation in climate change initiatives.

125. The ERT commends the support provided to education, training and public awareness on climate change in Spain.

126. The ERT noted that the NC6 does not provide detailed information on secondary education and participation in international activities related to climate change education, training, and public awareness. However, this information was provided during the review. The ERT encourages Spain to include this information in its next NC.

III. Summary of reviewed supplementary information under the Kyoto Protocol

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

127. Supplementary information provided by Spain under Article 7, paragraph 2, of the Kyoto Protocol in its NC6 is mostly complete and transparent. The supplementary information is located in different sections of the NC6. Table 9 provides an overview of supplementary information under Article 7, paragraph 2, of the Kyoto Protocol as well as references to the NC6 chapters in which this information is provided. The technical assessment of the information reported under Article 7, paragraph 2, of the Kyoto Protocol is contained in the relevant sections of this report.

Table 9
Overview of supplementary information under Article 7, paragraph 2, of the Kyoto Protocol

Supplementary information	*Reference to the sixth national communication*
National registry	Chapter 3, section 3

Supplementary information	*Reference to the sixth national communication*
National system	Chapter 3, section 4
Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	Chapter 4, section 3.2
Policies and measures in accordance with Article 2	Chapter 4, section 6
Domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures	Chapter 4, section 1
Information under Article 10	
Article 10(a)	Chapter 3, section 3
Article 10(b)	Chapter 4, sections 4 and 6
Article 10(c)	Chapter 7
Article 10(d)	Chapter 8
Article 10(e)	Chapter 9
Financial resources	Chapter 7

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

128. Spain reported the information requested in section 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 2013 annual submission. In its NC6, Spain provided a reference to its 2013 annual submission for this information. The reference relates to the "Evaluation of the social and economic impacts of response measures", which in the view of the ERT is not sufficiently precise and transparent. The ERT encourages Spain to include a summary of the information on the minimization of adverse impacts as well as a more precise reference to the full information located in its annual submission in its next NC. During the review, Spain 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. This additional information together with the information in the national inventory report (NIR) of the 2013 annual submission is in line with the supplementary information on minimization of adverse impacts in accordance with Article 3, paragraph 14, required under Article 7, paragraph 1, of the Kyoto Protocol. Taking this into account, the ERT considers this information to be complete and transparent. The ERT commends Spain for the additional information provided. The ERT noted that Spain could continue exploring and reporting in a more transparent and complete way on the adverse impacts of the response measures.

129. The NIRs of the 2013 and previous annual submission, and the additional information provided during the review highlighted a number of actions on cooperation in the development of technologies and conducting relevant research undertaken to minimize adverse impacts in accordance with Article 3 paragraph 14, of the Kyoto Protocol, which include funding through the Spanish Strategy for Science and Technology and Innovation 2013–2020 and transfer of technology through the Spanish National Plan for Scientific and Technological Research and Innovation 2013–2016.

IV. Conclusions and recommendations

130. The ERT conducted a technical review of the information reported in the NC6 of Spain according to the UNFCCC reporting guidelines on NCs. The ERT concludes that the NC6 provides a good overview of the national climate policy of Spain. The information provided in the NC6 includes all elements of the supplementary information under Article 7 of the Kyoto Protocol. During the review, Spain provided additional information, including details of approaches used in developing projections, details of new PaMs planned and details of financial support provided.

131. Spain's emissions for 2011 were estimated to be 23.9 per cent above its 1990 level excluding LULUCF and 21.9 per cent above including LULUCF. The increases in GHG emissions between 1990 and 2007 were driven by strong economic and demographic growth, while the financial and economic crisis was one of the important factors inducing a decrease in emissions between 2008 and 2011. The carbon intensity of the Spanish economy also decreased from around EUR 0.46 million per kt CO_2 eq in 2002 to EUR 0.30 million per kt CO_2 eq in 2012. A longer period of economic recovery will be necessary to enable a more thorough assessment of the relative contributions of mitigation measures and of the economic crisis in the evolution of the carbon intensity and overall GHG emissions in Spain.

132. In the NC6, Spain presents GHG projections for the period from 2010 to 2020 and 2030. Three scenarios are included: baseline ('without measures'); 'with measures'; and 'with additional measures'. The projected GHG emissions in 2020 under the baseline scenario, in relation to the base year, and under the 'with measures' and 'with additional measures' scenarios, are 63.4, 33.8 and 30.8 per cent, respectively. The projected GHG emissions in 2030 under the baseline scenario, in relation to the base year, and under the 'with measures' and 'with additional measures' scenarios, are 101.8, 58.5 and 53.4 per cent, respectively. Based on the comparison of the target (333,239 kt CO_2 eq) and the average annual emissions (358,396 kt CO_2 eq) for the first commitment period (2008–2012), Spain would not meet its Kyoto Protocol target for the first commitment period (15 per cent increase above the base year level). Thus, domestic actions alone would not allow Spain to meet this target. Therefore, Spain intends to supplement these domestic actions with the use of Kyoto Protocol mechanisms and the accounting of activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol.

133. Spain participates in and contributes to the EU target of a 20 per cent reduction in emissions by 2020 under the Convention and the second commitment period of the Kyoto Protocol and therefore does not have a specific national target. The EU ETS sectors have an EU-wide emission cap (effort-sharing target of 21 per cent below the 2005 level by 2020). For the non-EU ETS sectors (excluding LULUCF), projections indicate that Spain most likely would not be able to meet its 2020 target of a 10 per cent decrease in emissions by 2020 compared with the 2005 level. Therefore, Spain intends to increase its domestic actions through the implementation of its 2020 Diffuse Sectors Road Map with the aim of reaching its non-EU ETS sectors target by 2020.

134. The NC6 contains information on how Spain's use of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol is supplemental to domestic action. As indicated in paragraph 132 above, Spain is planning to make use of the Kyoto Protocol mechanisms to meet its Kyoto Protocol target.

135. Spain has implemented PaMs that address all relevant sectors and GHGs in the country. Key PaMs in Spain are based on the EU climate change policy and include the EU ETS, the EU energy efficiency directive, the EU renewable energy directive and the EU ESD. These are implemented through, inter alia, the EU ETS in Spain, the National

Renewable Energy Plan 2005–2010 and EEAPs. For implementation of the EU ESD, Spain has developed the 2020 Diffuse Sectors Road Map, which will play a key role in Spain meeting its 2020 target of reducing emissions in the sectors not covered by the EU ETS by 10 per cent compared with the 2005 level.

136. The information reported in the NC6 covers most issues concerning financial resources and technology transfer that are required under the Convention and its Kyoto Protocol. Spain's key route for providing financial support has traditionally been ODA. During recent years, OOF has become an equally relevant channel, even exceeding ODA related to climate change in 2012. Spain has provided financial contributions to the Adaptation Fund and to fast-start finance to enhance the implementation of the Convention by developing countries. This last contribution reached USD 145 and 183 million during 2011 and 2012, respectively. With regard to activities related to technology transfer, Spain's activities seem to be focussed on Latin America; for example, through RIOCC and the REGATTA project.

137. Spain has provided comprehensive information on the continuous and diverse work on both vulnerability and adaptation, particularly on water-related issues and coastal zone management, which are given a high priority. Spain has carried out comprehensive research to assess potential impacts and vulnerability and to define adaptation actions in these areas, with key issues related to vulnerability being: drought, temperature increases and rising sea levels. Spain's strategy related to adaptation is laid down in its PNACC.

138. Spain's approach to education, training, public awareness and in research and systematic observation rests on the Spanish Strategy for Science and Technology and Innovation 2013–2020 and the Spanish National Plan for Scientific and Technological Research and Innovation 2013–2016, both approved in 2013. Efforts in education, training and public awareness, as well as sharing information and public participation in activities related to climate change, are conducted by a comprehensive group of public and private institutions. One of the more significant efforts in public participation is the establishment of the Climate National Council, a collegial body that channels all the public participation in climate change initiatives.

139. 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 is provided by the Party in its 2013 annual submission. This and the additional information provided during the review highlighted a number of actions related to the minimization of adverse impacts on cooperation in the development of technologies and conducting relevant research, which include funding through the Spanish Strategy for Science and Technology and Innovation 2013–2020 and transfer of technology through the Spanish National Plan for Scientific and Technological Research and Innovation 2013–2016.

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

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

(i) Report, to the extent possible, emission projections for ships engaged in international transport and report them separately from the GHG national totals;

(ii) Information on building stock and urban structure;

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

(iii) Detailed information on its definition of the activities that are new and specific to climate change with regard to provision of 'new and additional' financial resources;

(iv) A clear distinction between activities undertaken by the public sector and those undertaken by the private sector;

(v) Information on activities for financing access by developing countries to 'hard' and 'soft' environmentally sound technologies;

(vi) Information, in textual format, on steps taken to promote, facilitate and finance transfer of technology, and to support the development and enhancement of endogenous capacities and technologies of developing countries;

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

(i) Concise and explicit information on how PaMs modify longer-term GHG emission trends;

(ii) More detailed information on how it identified the most vulnerable countries and/or the most vulnerable sector in developing countries with regard to provision of assistance, if possible, including distinction of assistance provided to developing countries and to the most vulnerable of them, and methodologies and/or principles used for that differentiation.

V. Questions of implementation

141. During the review, the ERT assessed the NC6, 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, transparency and adherence to the reporting guidelines on NCs. No question of implementation was raised by the ERT during the review.

Annex

Documents and information used during the review

A. Reference documents

"Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC". Available at <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02003L0087-20090625&from=EN>.

"Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications". FCCC/CP/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>.

"Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention". Annex to decision 23/CP.19. Available at <http://unfccc.int/resource/docs/2013/cop19/eng/10a02.pdf#page=20>.

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/ARR/2013/ESP. Report of the individual review of the annual submission of Spain submitted in 2013. Available at <http://unfccc.int/resource/docs/2014/arr/esp.pdf>.

FCCC/IRR/2007/ESP. Report of the review of the initial report of Spain. Available at <http://unfccc.int/resource/docs/2007/irr/esp.pdf>.

FCCC/IDR.5/ESP. Report of the in-depth review of the fifth national communication of Spain. Available at <http://unfccc.int/resource/docs/2011/idr/esp05.pdf>.

Sixth national communication of Spain. Available at <http://unfccc.int/files/national_reports/annex_i_natcom/submitted_natcom/application/pdf/131220_6cn[1].pdf>.

Annexes to the sixth national communication of Spain. Available at <http://unfccc.int/files/national_reports/non-annex_i_natcom/submitted_natcom/application/pdf/131220_6cn_anexos[1].pdf>.

2013 GHG inventory submission of Spain. Available at <http://unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/esp-2013-nir-15apr.zip>.

2014 GHG inventory submission of Spain. Available at <http://unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/esp-2014-nir_main-15apr.zip>.

B. Additional information provided by the Party

Responses to questions during the review were received from Ms. Sara Aagesen (Spanish Climate Change Office, Ministry of Agriculture, Food and the Environment), including additional material on updated policies and measures, greenhouse gas projections, the national registry and recent climate policy developments in Spain. The following documents[1] were also provided by Spain:

Agencia española de cooperación internacional para el desarrollo – Ministerio de asuntos exteriores y de cooperación. 2009. *Plan Director de la Cooperación Española 2009–2012*. Madrid: AECID.

Agencia española de cooperación internacional para el desarrollo – Ministerio de asuntos exteriores y de cooperación. 2011. *Plan de actuación sectorial de medio ambiente y cambio climático*. Madrid: AECID.

Agencia española de cooperación internacional para el desarrollo – Ministerio de asuntos exteriores y de cooperación. 2012. *Plan Director de la Cooperación Española 2013–2016*. Madrid: AECID.

Felicísimo A. 2011. *Impactos, vulnerabilidad y adaptación al cambio climático de la biodiversidad española*. Oficina Española de Cambio Climático, Ministerio de Medio Ambiente y Medio Rural y Marino. Madrid: Grupo Kraken de la Universidad de Extremadura y Real Jardín Botánico (CSIC). Available at <http://www.ibiochange.mncn.csic.es/atlascc>.

Ministry of Agriculture, Food and the Environment. 2013. *Comunicación de España a la Comisión Europea. Art. 3.2.(b) de la Decisión 280/2004/CE: Proyección de emisiones de gases de efecto invernadero 2011–2030 (Spanish Communication of March 2013 to the EU Commission according to Art. 3.2(b) of Decision 280/2004/CE)*. Available at <http://www.magrama.gob.es/es/calidad-y-evaluacion-ambiental/temas/sistema-espanol-de-inventario-sei-/decision_280_art_32b_npr_tcm7-1742.pdf>.

[1] Reproduced as received from the Party.

Ministry of Environment. 2002. *Plan Forestal Español (Spanish Forestry Plan)*. Available at <http://www.magrama.gob.es/es/desarrollo-rural/temas/politica-forestal/pfe_tcm7-30496.pdf>.

Ribalaygua J. 2002. *Aplicación de un método de regionalización estadístico, con metodología analógica en dos pasos, para la generación de escenarios climáticos locales sobre España*. Fundación para la Investigación del Clima. Available at <http://www.clivar.es/files/abstracts/sesion5/11--Ribalaygua_Seminario-CLIVAR-Madrid-2009-02-13-FIC.ppt>.