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Climate Change

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


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 Norway 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”.

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I. Introduction and summary

A. Introduction

1. For Norway, the Convention entered into force on 21 March 1994 and the Kyoto Protocol on 16 February 2005. Under the Convention, Norway made a commitment to reducing its greenhouse gas (GHG) emissions by 30.0 per cent by 2020 below the 1990 level. Under the Kyoto Protocol, Norway committed itself to limiting the growth in its GHG emissions to 1.0 per cent in relation to the base year¹ level during the first commitment period, from 2008 to 2012. For the second commitment period of the Kyoto Protocol, from 2013 to 2020, Norway committed to reduce its GHG emissions by 16 per cent below the 1990 level.

2. This report covers the in-country technical review of the sixth national communication (NC6) of Norway, 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 6 to 10 October 2014 in Oslo, Norway, and was conducted by the following team of nominated experts from the UNFCCC roster of experts: Ms. Sarah Baashan (Saudi Arabia), Mr. Gilles Croquette (France), Mr. Maosheng Duan (China) and Mr. Erik Rasmussen (Denmark). Mr. Duan and Mr. Rasmussen were the lead reviewers. The review was coordinated by Mr. Bernd Hackmann (secretariat).

4. During the review, the expert review team (ERT) reviewed each section of the NC6. The ERT also reviewed the supplementary information provided by Norway 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 Norway in its 2014 annual submission and previous submissions under Article 7, paragraph 1, 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 Norway, 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 Norway 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

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

Article 7, paragraph 2, of the Kyoto Protocol² is provided in the NC6 (see paras. 202–204 below).

7. Norway considered most of the recommendations provided in the report of the in-depth review on the fifth national communication (NC5) of Norway.³ The ERT commended Norway for its improved reporting.

8. During the review, Norway provided further relevant information, including on: national circumstances; the national system; the national registry; domestic and regional programmes and/or legislative arrangements; policies and measures (PaMs); projections; finance; technology transfer; and minimization of adverse impacts.

1. Completeness and transparency of reporting

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

2. Timeliness

10. The NC6 was submitted on 10 March 2014, after the deadline of 1 January 2014 mandated by decision 9/CP.16. Norway informed the secretariat about its difficulties with the timeliness of its NC6 on 3 March 2014 in accordance with decision 23/CP.19, annex, paragraph 79, and decision 22/CMP.1, annex, paragraph 139. As the NC6 was not submitted within six weeks after the due date (15 February 2014), the delay was brought to the attention of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol and the Compliance Committee and made public. The ERT noted with great concern the delay in the submission of the NC6 and strongly recommends that Norway submit its next national communication (NC) on time.

11. Norway submitted a revised version of its NC6 on 2 July 2014. The ERT took note of the revised version of the NC6.

3. Adherence to the reporting guidelines

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

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

³ FCCC/IDR.5/NOR.

Table 1

Assessment of completeness and transparency issues of reported information in the sixth national communication of Norway^a

<i>Sections of national communication</i>	<i>Completeness</i>	<i>Transparency</i>	<i>Reference to paragraphs</i>	<i>Supplementary information under the Kyoto Protocol</i>	<i>Completeness</i>	<i>Transparency</i>	<i>Reference to paragraphs</i>
Executive summary	Complete	Transparent		National systems	Complete	Transparent	
National circumstances	Complete	Transparent		National registries	Mostly complete	Transparent	41
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	51	PaMs in accordance with Article 2	Complete	Transparent	
Projections and total effect of PaMs	Mostly complete	Transparent	134	Domestic and regional programmes and/or arrangements and procedures	Mostly complete	Transparent	48
Vulnerability assessment, climate change impacts and adaptation measures	Complete	Transparent		Information under Article 10 ^b	Complete	Transparent	
Financial resources and transfer of technology	Mostly complete	Partially transparent	145, 159, 168, 174, 175, 177	Financial resources	Mostly complete	Transparent	147
Research and systematic observation	Mostly complete	Transparent	190	Minimization of adverse impacts in accordance with Article 3, paragraph 14	Mostly complete	Transparent	207
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 on conclusions and recommendations.

^b For the purposes of reporting information in this table, this assessment refers to information provided by the Party on the provisions contained in Article 4, paragraphs 3, 5 and 7, of the Convention reported under Article 10 of the Kyoto Protocol, which is relevant for developed country Parties and other developed Parties included in Annex II to the Convention only. Assessment of the information provided by the Party on the other provisions of Article 10 of the Kyoto Protocol is provided under the relevant substantive headings under the Convention, for example, research and systematic observation.

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

13. In its NC6, Norway has provided a detailed description of the national circumstances and elaborated on the framework legislation and key policy documents on climate change. 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.

14. Information was provided by Norway in its NC6 on: the government structure; geographic, land-use, population and urban profiles; the economic profile and industry; the petroleum sector; energy use and electricity production; transport; manufacturing industries and construction; agriculture and forestry; and fisheries and aquaculture (see paras. 15–22 below). Norway's total GHG emissions without land use, land-use change and forestry (LULUCF) in 2012 were 52,733.24 kt of carbon dioxide equivalent (CO₂ eq), an increase of 4.6 per cent compared to the 1990 level.

15. Norway's energy and emission profile is quite unique compared to that of other developed countries: nearly all of its electricity production is based on hydropower, which is emission free, and the proportion of energy use accounted for by electricity is higher than that in most other countries. The ERT noted that the main drivers of emission trends in Norway include: strong economic growth; rapid population growth due to immigration; high energy costs (e.g. as a result of taxes or quotas on emissions); and decentralized settlement patterns.

16. Norway is a constitutional monarchy with a democratic parliamentary system of governance. Although it is not a member of the European Union (EU), Norway has, since 1994, been part of the EU internal market through the agreement on the European economic area (EEA agreement), which institutionalizes a regular consultation process with the member countries of the European Free Trade Association and gives them opportunities to influence EU policymaking of environmental policies. The Storting (Norwegian Parliament) determines Norway's overall climate policy and the Government implements and administers the most important PaMs. The Ministry of Climate and Environment has the main cross-sectoral responsibility for coordination and implementation of the Norwegian climate policy, and other ministries are responsible for implementation in their respective sectors.

17. The mainland of Norway is 1,752 km from north to south, spanning about 13° of latitude. Most of Norway has a maritime climate with mild winters and cool summers. During the period 1900–2012, the annual mean temperature in Norway increased by about 0.9 °C. With a total area of almost 324,000 km² and only 5.1 million inhabitants, Norway has a very low population density. Norway is a small but open economy, with more than 40 per cent of gross domestic product (GDP) exported, with production of crude oil and natural gas and foreign shipping accounting for some 25 per cent of GDP. The service sector accounts for more than 50 per cent of GDP and over 75 per cent of employment.

18. Norway's emission intensities of the whole economy and the mainland economy fell by 2.3 per cent and 3.1 per cent, respectively, annually from 1990 to 2012. GHG emissions relative to GDP normally decline as scarce resources are utilized more efficiently. Higher energy costs (e.g. as a result of taxes or quotas on emissions) reinforce this trend. From 2013, more than 80 per cent of all GHG emissions in Norway are subject to economic instruments.

19. Petroleum-related activities, such as petroleum production, have been crucial for Norway's economic growth, and petroleum production on the shelf has added more than Norwegian kroner (NOK) 9,000 billion to the country's GDP over the last 40 years. In 2013, the petroleum sector (not including services) represented more than 22 per cent of the country's total value creation. Petroleum activities accounted for about 29 per cent of CO₂ emissions in 2011, which corresponds to some 13,000 kt CO₂ eq. It is projected that emissions from the petroleum sector are estimated to increase until about 2017, and then gradually decrease.

20. From 1990 to 2011, CO₂ emissions from energy use and electricity production in Norway increased by 8.4 per cent, a much lower rate than the economic growth. The total installed electricity production capacity in Norway was 31,814 MW in 2012, of which hydropower plants accounted for 30,172 MW, wind farms for 512 MW, and gas-fired and other thermal power plants for 1,130 MW. Norway is part of the Nordic power market, and has transmission interconnectors to Denmark, Finland, Netherlands, Russian Federation and Sweden.

21. Norway's decentralized settlement pattern causes a relatively high demand for transport. In addition, the Norwegian economy is largely based on the extraction of raw materials and the export of goods, which means that there is a large volume of goods transport. The demand for rapid transport and more frequent deliveries of goods has also been increasing. The proportion of passenger transport by cars and the proportion of goods transport by road and air have increased since 1990.

22. Approximately 3 per cent of Norway's land area is cultivated soil, and approximately 37 per cent of the land area is forested. The area under agricultural cultivation has declined by approximately 2 per cent during the last decade. There has also been a shift from harvested land to grazing land. In 2012, agriculture accounted for 8.5 per cent of Norway's emissions of GHGs. Fishing and aquaculture industries are among Norway's most important export industries today, making Norway the second largest exporter of seafood globally.

23. During the review, Norway provided additional information on the national circumstances, elaborating on the coordination mechanisms between different governmental agencies involved in the climate decision-making process.

24. Although in its NC6, Norway provides a detailed description of its national circumstances and how these circumstances affect its GHG emissions and removals as suggested in the UNFCCC reporting guidelines on NCs, the ERT noted that some of the data (e.g. population, GDP and emissions) are not presented for the same year, creating difficulties in data processing. To further enhance the transparency of its reporting, the ERT suggests that all data, factors and indicators may be reported for the same, most recent, year selected.

25. The ERT noted that during the period 1990–2012, Norway's population and GDP increased by 18.4 and 73.7 per cent, respectively, while GHG emissions per GDP and GHG emissions per capita decreased by 39.8 and 11.6 per cent, respectively. Table 2 illustrates the national circumstances of Norway by providing some indicators relevant to GHG emissions and removals.

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

	1990	2000	2005	2010	2012	Change ^a 1990–2012 (%)	Change 2011–2012 (%)
Population (million)	4.24	4.49	4.62	4.89	5.02	18.4	1.4
GDP (2005 USD billion using PPP)	137.27	197.49	220.19	228.69	238.47	73.7	2.9
TPES (Mtoe)	21.00	26.09	26.77	32.37	29.19	39.0	4.3
GHG emissions without LULUCF (kt CO ₂ eq)	50 409.35	54 058.49	54 469.02	54 346.95	52 733.24	4.6	-1.1
GHG emissions with LULUCF (kt CO ₂ eq)	40 262.41	30 152.00	29 321.77	27 576.55	26 055.57	-35.3	1.5
GDP per capita (2005 USD thousand using PPP)	32.38	43.98	47.66	46.77	47.50	46.7	1.5
TPES per capita (toe)	4.95	5.81	5.79	6.62	5.81	17.4	2.8
GHG emissions per capita (t CO ₂ eq)	11.89	12.04	11.79	11.11	10.50	-11.6	-2.4
GHG emissions per GDP unit (kg CO ₂ eq per 2005 USD using PPP)	0.37	0.27	0.25	0.24	0.22	-39.8	-3.8

Sources: (1) GHG emission data: Norway's 2014 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

26. Norway has provided a summary of information on GHG emission trends for the period 1990–2011. Summary tables, including trend tables for emissions in CO₂ eq (given in the common reporting format (CRF) tables), are provided in annex I to the NC6.

27. The text, tables and figures presented in the NC6 are consistent with the submission of the national GHG inventory in April 2013. In November 2013, Norway resubmitted its CRF tables. The reported summary tables are consistent with the resubmitted CRF tables. During the review, the ERT took note of the 2014 annual submission. The relevant information therein is reflected in this report.

28. The ERT noted that Norway reports in its NC6 on the resubmission of its 2013 national GHG inventory and states that there are therefore some minor differences compared with the numbers in the resubmitted CRF tables. The ERT further noted that, according to the UNFCCC reporting guidelines on NCs, the information provided in the NC should be consistent with that provided in the annual inventory submission of the year in which the NC is submitted and any differences should be fully explained. During the review, Norway provided information on the categories concerned and clarified that the differences were minor. Because the differences concerning some numbers reported in the resubmission of Norway's 2013 national GHG inventory and the NC6 are not fully explained (e.g. no indication about the categories concerned and the amounts of emissions

involved), the ERT encourages Norway to enhance the transparency of its reporting and provide full information on any differences between NCs and the relevant national GHG inventory submissions, in its future NCs.

29. Total GHG emissions⁴ excluding emissions and removals from LULUCF increased by 4.6 per cent from 50,409.35 kt CO₂ eq in 1990 to 52,733.24 kt CO₂ eq in 2012, whereas total GHG emissions including net emissions or removals from LULUCF decreased by 35.3 per cent from 40,262.41 kt CO₂ eq in 1990 to 26,055.57 kt CO₂ eq in 2012.

30. After a decrease in 1991, the trend for total GHG emissions excluding LULUCF generally increases, with small interruptions in 1995, 2000 and 2002. A peak of emissions was attained in 2007 at 56,006.29 kt CO₂ eq, followed by a significant decrease in 2008 and 2009 (–7.5 per cent for these two years), partly caused by the international economic crisis. Total GHG emissions including LULUCF decreased by 35.3 per cent between 1990 and 2012 due to the large increase in LULUCF net removals of 162.9 per cent between 1990 and 2012.

31. Emission increases were driven by growth in GDP and population, mainly owing to increasing emissions from energy industries (in particular, oil and gas extraction) by 102.4 per cent between 1990 and 2012 and transport (in particular, road traffic, civil aviation and coastal traffic/fishing) by 36.6 per cent between 1990 and 2012.

32. CO₂ emissions, which represented 83.6 per cent of total GHG emissions in 2012, increased by 26.6 per cent between 1990 and 2012. After a decrease between 1990 and 1991, CO₂ emissions increased until 1996 by 17.8 per cent compared to 1990, with a slower growing trend afterwards.

33. In 2012, methane (CH₄) emissions accounted for 8.0 per cent of total GHG emissions. After a growing trend until 1994 (+4.3 per cent compared to 1990), CH₄ emissions decreased until 2012 by 14.8 per cent below the 1990 level. Nitrous oxide (N₂O) emissions in 2012 accounted for 6.1 per cent of total GHG emissions, showing a generally decreasing trend until 2012 by 36.5 per cent below the 1990 level, mainly since 2005 due to reductions in emissions from nitric acid production. Emissions of perfluorocarbons (PFCs) and sulphur hexafluoride (SF₆) were reduced by 94.9 per cent and 97.3 per cent, respectively, between 1990 and 2012, and together represented only 0.4 per cent of total GHG emissions in 2012. Hydrofluorocarbon (HFC) emissions were insignificant in 1990, and represented 1.8 per cent of total GHG emissions in 2012. 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 2012.

⁴ In this report, the term “total GHG emissions” refers to the aggregated national GHG emissions expressed in terms of CO₂ eq excluding LULUCF, unless otherwise specified.

Table 3
Greenhouse gas emissions by sector in Norway, 1990–2012

Sector	GHG emissions (kt CO ₂ eq)				Change (%)		Share ^a by sector (%)	
	1990	2000	2011	2012	1990–2012	2011–2012	1990	2012
	1. Energy	29 488.28	35 595.05	39 706.84	39 186.25	32.9	–1.3	58.5
A1. Energy industries	6 949.94	10 738.00	14 460.28	14 066.29	102.4	–2.7	13.8	26.7
A2. Manufacturing industries and construction	3 567.79	3 834.51	3 333.79	3 112.16	–12.8	–6.6	7.1	5.9
A3. Transport	11 101.51	12 900.49	15 041.17	15 163.35	36.6	0.8	22.0	28.8
A4.–A5. Other	4 806.23	3 625.62	3 527.78	3 514.10	–26.9	–0.4	9.5	6.7
B. Fugitive emissions	3 062.80	4 496.43	3 343.83	3 330.36	8.7	–0.4	6.1	6.3
2. Industrial processes	13 809.05	11 779.67	7 667.57	7 673.50	–44.4	0.1	27.4	14.6
3. Solvent and other product use	191.18	181.74	171.04	177.61	–7.1	3.8	0.4	0.3
4. Agriculture	5 057.21	5 000.89	4 519.40	4 501.55	–11.0	–0.4	10.0	8.5
5. LULUCF	–10 146.94	–23 906.48	–27 611.96	–26 677.67	162.9	–3.4	–20.1	–50.6
6. Waste	1 863.64	1 501.14	1 229.18	1 194.32	–35.9	–2.8	3.7	2.3
GHG total with LULUCF	40 262.41	30 152.00	25 682.07	26 055.57	–35.3	1.5	NA	NA
GHG total without LULUCF	50 409.35	54 058.49	53 294.03	52 733.24	4.6	–1.1	100.0	100.0

Source: Norway's 2014 GHG inventory submission (for GHG emission data).

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

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

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

3. National system

34. Norway 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 most of the elements mandated by decision 15/CMP.1. The NC6 also contains a reference to the description of a national system provided in the national inventory report of the 2014 annual submission. The ERT took note of the review of the changes to the national system as reflected in the report of the individual review of GHG inventory of Norway submitted in 2014.

35. During the review of its NC6, Norway provided additional information on the national system, elaborating on different roles and responsibilities, as well as the cooperation between relevant institutions, the legal basis for access to data for the inventory, responsibilities of the national entity, annual production cycle of the inventory, quality control responsibilities and overall quality control procedures.

36. The NC6 includes general information required by the UNFCCC reporting guidelines on NCs regarding the description of the process for the recalculation of

previously submitted inventory data. The ERT noted that in 2013, the Norwegian GHG emissions inventory was recalculated for the entire time series from 1990 to 2011 for all sectors and gases.

4. National registry

37. In its NC6, Norway has provided information on the national registry in accordance with 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 Norway submitted in 2014.

38. Norway described the changes specifically due to the centralization of the European Union Emissions Trading System (EU ETS) operations into a single EU registry operated by the European Commission and 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.

39. During the review, Norway provided additional information, elaborating on its previous registry, Norwegian access to the CSEUR and some features of the EU registry.

40. The NC6 does not include information required by the UNFCCC reporting guidelines on NCs regarding a description of the database structure and capacity of the national registry. However, during the review, Norway provided additional information referring to the NC6 of the EU, where a description of the database structure and capacity of the CSEUR is provided.

41. The ERT recommends that Norway report information on the capacity of its national registries in its next NC, as required by decision 15/CMP.1, guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol. The ERT also notes that considering the specific situation of Parties utilizing the CSEUR, it may be useful to provide consolidated and consistent information on the joint registry in line with the UNFCCC reporting guidelines on NCs.

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

42. Norway 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.

43. The overall responsibility for climate change policymaking lies with the Ministry of Climate and Environment of Norway, and a number of national institutions are involved in the implementation of this policy. Norway has several legislative arrangements in place to help reduce emissions of GHGs, such as the Pollution Control Act, the Greenhouse Gas Emissions Trading Act, the CO₂ Tax Act and the Petroleum Act, as well as requirements under the Planning and Building Act, underpinning the implementation of the Convention and the Kyoto Protocol.

44. The Ministry of Climate and Environment has cross-sectoral responsibility for the coordination and implementation of Norwegian climate policy. The Ministry of Finance is responsible for the collection of direct and indirect taxes. Other ministries are responsible for implementation in their respective sectors. In addition, municipalities and local governments are responsible for the implementation of PaMs and climate action plans at the local level.

45. Norway reports in its NC6 on extensive provisions that it has undertaken to make climate change related information publicly available. The Environmental Information Act, which entered into force on 1 January 2004, provides all citizens with a legal right to obtain

environmental information, both from public authorities and from public and private enterprises. The Ministry of Climate and Environment works through many channels to enhance public awareness of issues related to climate change, and has built up extensive information resources on the Internet. News, publications, press releases and other relevant information are published on the ministry's website.⁵ Another important website is State of the Environment Norway,⁶ and Statistics Norway⁷ publishes statistics on important natural resources, different types of environmental pressure, pollution such as releases to air and water, and waste management.

46. In its NC6, Norway provided a description of the current Forestry Act, which was adopted by the Parliament in 2005 and came into force in 2006. The main objectives of the Forestry Act (promote sustainable management of forest resources with a view to promoting local and national economic development and secure biological diversity, consideration for the landscape, opportunities for outdoor recreation and preservation of cultural values associated with the forest) are described and it is highlighted that the Forestry Act, through measures in the forestry sector, will also influence CO₂ sequestration. The broad political agreement on climate of June 2012 states that measures to increase the forest carbon stocks will be pursued.

47. During the review, Norway provided additional information, confirming that the Forestry Act and its implementation in Norway's 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.

48. To enhance the completeness of its reporting, the ERT recommends that Norway include the reported information that its Forestry Act also contributes to the conservation of biodiversity and the sustainable use of natural resources, in its next NC.

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

49. Norway 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.

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

50. In its NC6, Norway reported on its PaMs adopted, implemented and planned in achieving its commitments under the Convention. Norway provided information on PaMs by sector. For each sector, the gas affected is described, and a description of the principal PaMs is provided. Norway has also provided information on how it believes its PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals in accordance with the objective of the Convention. The NC6 contains, with a few exceptions, a set of PaMs similar to those in the NC5.

51. In its NC6, Norway does not organize its reporting of PaMs with a clear subdivision by gas for all sectors, as required by the UNFCCC reporting guidelines on NCs. The ERT

⁵ Available at <<http://www.regjeringen.no/en/dep/kld.html?id=668>>.

⁶ Available at <<http://www.environment.no/>>.

⁷ Available at <<http://www.ssb.no/en>>.

recommends that Norway improve the transparency of its reporting by organizing its reporting of PaMs by sectors, subdivided by greenhouse gas, in its next NC.

52. In its NC6, Norway 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 state level. Local involvement was reported in relation to the transport sector where action has been promoted through a reward scheme established for the largest cities in 2004 (see also paras. 68 and 81 below). In the agriculture sector, action was also reported as being carried out at regional, local and individual levels in different parts of Norway. Norway reported on its policy context and national targets and objectives set to implement its commitments under the Convention.

53. The ERT noted that, overall, Norway has a comprehensive set of PaMs designed to mitigate GHG emissions. The NC6 provides both ex post (1995, 2000, 2005, 2010 and 2011) and ex ante (2020 and 2030) assessments of the mitigation effects for a subset of domestic PaMs (section 4 of the NC6) and for an aggregated total effect of PaMs (section 5.3 of the NC6). However, the ERT noted that the transparency of the reporting on PaMs and their estimated effects could be further improved, for example, by including more information on how these estimates were calculated.

54. During the review, Norway provided additional information, elaborating on how the ex post and ex ante estimated effects of PaMs were estimated in different ways, depending on the type of measure (e.g. substitution calculations in the energy sector, empirically based elasticities for economic measures and expert judgements where no relevant or useful methodology exists).

55. The ERT noted that the NC6 does not include some of the non-mandatory parts of the information, as required by the UNFCCC reporting guidelines on NCs, for some of the PaMs reported, on quantitative estimates of impacts of individual PaMs or collections of PaMs, or in cases where estimates are given, a brief description of the estimation methodology used. The ERT encourages Norway to report in more detail on the quantitative estimates of the impacts of individual PaMs or collections of PaMs, to include quantitative estimates for all individual PaMs, as appropriate, and to include a brief description of the estimation methods used, in its future NCs.

56. In its NC6, Norway reported the following two measures that were discussed in its NC5 as not being in place any more: two arrangements to reduce emissions in the processing industry, one in 2004 for the period 2004–2007 and one in 2009 for the period 2008–2012 (agreement with the aluminium industry and agreement on SF₆ reductions from the electronics industry). As stated in the NC6, nearly all emissions from the processing industry and the aluminium industry were covered by the EU ETS from 2013 onwards and an agreement with the electro industry ended in 2010. Norway reported that the decrease in SF₆ emissions from the electro industry continued in 2011 and 2012.

57. Some of the recommendations made in the previous review report were taken into consideration in order to improve reporting in the NC6, including the provision of summary tables containing information on the domestic PaMs for all sectors, estimates of the effects for 19 out of 48 PaMs reported, and, in the description of cross-sectoral policies, summary information on the assessment of costs of emission reductions contained in the Klimakur 2020 report from 2010.⁸ The ERT commends Norway for its improved reporting.

⁸ Available at <<http://www.miljodirektoratet.no/english/>>.

2. Policy framework and cross-sectoral measures

58. In its NC6, Norway reported that the key framework for Norway's climate policy is founded on the objective of the Convention and the Kyoto Protocol and the scientific understanding of the greenhouse effect set out in the reports from the Intergovernmental Panel on Climate Change (IPCC). Climate change and GHG emissions have been a concern of Norwegian policy since the late 1980s. Previously relying to a large extent on voluntary agreements and actions, most sources of GHG emissions are nowadays addressed through economic and fiscal instruments (taxes and emissions trading) that put a price on emissions.

59. The ERT noted that the combination of the comprehensive coverage of sectors and the considerable level of taxation in Norway is unique in the world. Norway has advocated cost-effectiveness across emissions sources, sinks, sectors and GHGs, both domestically and internationally. The ERT further noted that high political attention given to climate change, together with the comprehensive policymaking process put in place in Norway, gives the Party a leading role in combating climate change.

60. **Policy targets.** Norway adopted an ambitious set of emission reduction targets, based on the objectives set in the Convention and its Kyoto Protocol. During the first commitment period of the Kyoto Protocol, Norway was committed to limiting the increase in its annual average emission level to no more than 1.0 per cent above the 1990 level, including credits for the Kyoto Protocol mechanisms. In addition, a political agreement on climate change from June 2012 states that Norway will surpass its Kyoto Protocol commitment by 10 percentage points, equivalent to 9 per cent below the 1990 level. Norway stated that it will be carbon neutral by 2050. As part of an ambitious global climate agreement where other developed country Parties also undertake ambitious commitments, Norway aims at achieving carbon neutrality by 2030, meaning that it plans to commit to achieving emission reductions abroad equivalent to Norwegian emissions in 2030.

61. **Carbon taxes.** Beginning in 1991, Norway started to implement a comprehensive system of carbon taxes on fuels and industrial processes. In combination with other environmental taxes (e.g. on sulphur content), these taxes represent the main policy instruments used to control the growth in the Party's GHG emissions and currently cover sectors accounting for approximately 60 per cent of Norway's total emissions.

62. The ERT noted that Norway, in response to the encouragement made in the previous review report in section 4 of its NC6, has provided further information on the estimated effect of these tax schemes. The mitigation effect of taxes on the onshore and offshore economic sectors in 2000 is estimated at almost 4,000 kt CO₂ eq and further projected to grow to nearly 9,000 kt CO₂ eq in 2020. Given the unique nature of this policy approach in terms of coverage and level of taxes, the ERT encourages Norway to continue making every effort to estimate and communicate the mitigation effect of its tax system.

63. **Carbon equivalent taxes.** The increasing trend in HFC and PFC emissions from product use was slowed after a tax on import and production of HFCs and PFCs was introduced in 2003. As of 2004, this tax was refunded when the gases were destroyed. Since 2005, increased use of these gases due to regulation of ozone-depleting substances has once again led to increased emissions.

64. **EU ETS.** Norway established its first national emissions trading scheme in 2005. In 2008, Norway joined the EU ETS, which broadened the scheme to cover nearly 40 per cent of Norwegian GHG emissions. N₂O emissions from the production of nitric acid and CO₂ emissions from the aviation sector were included from 2009 and 2012, respectively. In phase III (2013–2020), the coverage of the EU ETS was further expanded, covering both new sectors and gases. Since 2013, about 50 per cent of the Norwegian emissions have been covered by the EU ETS. Altogether, over 80 per cent of the domestic emissions will be subject to mandatory allowances or a CO₂ tax, or both.

65. **Pollution Control Act.** This act applies also to GHG emissions. Hence, technological requirements relevant to GHG emissions can be included as conditions for obtaining the permit (e.g. requirement to implement carbon capture and storage (CCS)). This is currently a prerequisite for all new gas-fired power plants. The ERT noted the additional information provided by Norway that no new gas-fired power plants have been built after this prerequisite entered into force.

66. **Environmental technology scheme.** In 2010, Norway established an environmental technology scheme with a view to encouraging the Norwegian industry to bring the results from more projects on environmental technology to the market. The scheme aims to promote Norwegian environmental technology in national and international markets and to strengthen the competitiveness of Norwegian industry.

67. **CCS.** Owing to costs and uncertainties, the development of large-scale CCS at the Technology Centre Mongstad was discontinued in 2013, although the Technology Centre will be continued. Through the broad agreement on climate, the Norwegian Parliament has called for an ambition of realizing at least one full-scale CCS pilot plant by 2020. It is stated in the NC6 report that the Norwegian Government is committed to further developing and contributing to widespread dissemination of CCS technologies.

68. With regard to the role of regions and municipalities in climate change policy in Norway, the NC6 reports that in 2004, Norway established a reward scheme for the largest cities to provide grants to local governments for increasing shares of public transport and committing to zero growth in traffic over a period of four years. Since 2004, this scheme has grown, both in the number of cities included and with respect to the total grant. The broad agreement on climate of 2012 set as a goal to absorb the growth in passenger transport in major urban areas through public transportation, cycling and walking.

69. Table 4 provides a summary of the reported information on the PaMs of Norway.

Table 4

Summary of information on policies and measures reported by Norway

<i>Sectors affected</i>	<i>List of key policies and measures</i>	<i>Estimate of mitigation impact (1000 kt CO₂ eq) for 2010/2011/2020/2030</i>
Policy framework and cross-sectoral measures		
	CO ₂ tax (except CO ₂ tax offshore) ^a	0.85/0.85/0.9/0.9 ^b
	Emissions trading (2008–2012) ^a	0–0.3/0–0.3/0–0.3/0–0.3
	Emissions trading (2013–2020) ^a	NE
	Regulation by the Pollution Control Act	NE
	Tax and recycling schemes for HFCs ^a	0.6/0.7/0.7/0.5
Energy	CO ₂ tax offshore and EU ETS ^{a, c}	>5/>5/7/7
Energy supply	NMVOC regulation offshore ^a	0.26/0.24/0.23/0.20
	NMVOC regulation land terminals ^a	0.02/0.02/0.02/0.02 ^b
	Electricity tax ^a	NE
	Base tax on mineral oils ^a	IE
	Norwegian energy fund, Enova ^a	0.6/0.6/1.5/1.5 ^b
Renewable energy	Green certificates ^a	NE
	Bioenergy programmes	NE

<i>Sectors affected</i>	<i>List of key policies and measures</i>	<i>Estimate of mitigation impact (1000 kt CO₂ eq) for 2010/2011/2020/2030</i>
	Improve incentives for the use of bioenergy derived from wood, with particular emphasis on forest residues	NE
Energy efficiency	Measures in the greenhouse sector	NE
Residential and commercial sectors	Energy requirement in the building code ^a	IE
	Low-energy programmes	NE
	Norwegian State Housing Bank: grants and loans	NE
	Ban use of fossil fuels for heating in households and for base load in other buildings	NE
	Phase out use of fossil fuels for base load in government buildings	NE
	Tighten building regulations to passive house levels in 2015 and next to zero energy use in 2020	NE
	Introduce component requirements for existing buildings	NE
Transport	CO ₂ -dependent registration tax for new passenger cars ^a	0.05/0.10/0.50/1.00
	Tax exemptions for electric and hybrid cars and	-/-/0.4-0.6/0.6
	EU emission standards for passenger cars ^a	(-/-/NE/NE) ^d
	Requirement of 3.5 per cent biofuels of fuel consumption in road transport ^a	0.40/0.46/0.50/0.60
Industrial sectors	Emissions trading (2008–2012) ^{a, e}	IE
	Climate change agreement with aluminium industry ^a	1.8–4.1/1.8–4.1/1.8–4.3/ 1.9–4.3
	Agreement on SF ₆ reductions from electro industry ^a	0.09/0.1/0.1/0.1
	F-gas regulation ^a	NE
	SF ₆ reduction, production of magnesium	NE ^f
	N ₂ O reduction, production of nitric acid ^a	2.2/2.3/2.3/2.3
	Use of biocarbon in the production of cement ^{a, g}	0.13/0.13/0.13/0.13
	Use of biocarbon in the production of ferroalloys ^{a, h}	0.22/0.20/0.20/0.20
	Consensus with the process industry, 2004 ^a	IE
	Consensus with the process industry, 2009 ^a	-/-/0.2/0.2
Agriculture	Regional agri-environmental programmes	NE
	Biogas	NE
Forestryⁱ	Forestry, climate and energy funding programme, the Forest trust fund	NE
	Genetical improvements in tree breeding	NE
	Wood building programmes	NE
	Reduce deforestation through land-use planning by inter alia strengthening efforts in forest plant breeding, increasing seedling density and reintroducing prohibition against cutting of young forest stands	NE
	Reinforce forest conservation	NE

<i>Sectors affected</i>	<i>List of key policies and measures</i>	<i>Estimate of mitigation impact (1000 kt CO₂ eq) for 2010/2011/2020/2030</i>
	Consider policy instruments to increase afforestation and to establish “climate forests”	NE
	Increase sequestration through fertilization	NE
Waste management	Requirements to collect landfill gas ^a	0.3/0.4/0.3/0.2
	Prohibition of depositing waste ^a	0.1/0.1/0.3/0.5
	Agreements with industry to minimize waste	NE
	Measures to increase waste recycling	NE

Note: The greenhouse gas reduction estimates given for some measures are reductions in carbon dioxide or carbon dioxide equivalent emissions reported in Norway’s sixth national communication and in Norway’s first biennial report.

Abbreviations: EU = European Union, EU ETS = European Union Emissions Trading System, F-gas = fluorinated gas, HFC = hydrofluorocarbon, IE = included elsewhere, NE = not estimated, NMVOC = non-methane volatile organic compounds.

^a The PaM is included in the ‘with measures’ projection.

^b The calculations by Statistics Norway did not cover 2030. For this reporting, the effect in 2030 is set equal to the effect of 2020.

^c Information from Norway’s first biennial report.

^d Sum of carbon dioxide tax and EU ETS, see section 4.3.2 of the sixth national communication (NC6) for an overview of included measures.

^e The effect of the EU ETS on the industry is included under cross-sectoral policies and measures, see table 4.3 of the NC6.

^f The plant producing magnesium was closed down in 2006, and emission reductions are not included in the estimated effects of PaMs after this.

^g The effects for cement were estimated by the producers and reported in Norway’s fifth national communication. For 2010, 2011, 2020 and 2020, the effect has been assumed to be equal to the effect for 2005.

^h The effects for ferroalloys are based on the plants’ annual reporting to the Norwegian Environmental Agency. For 2020 and 2020, the effect has been assumed to be equal to the effect for 2011.

ⁱ According to Klimakur 2020 (Climate Cure 2020), total long-term mitigation potential in the forestry sector has been estimated to be in the range 5.9–12.3 Mt carbon dioxide equivalent per year, depending on the level of ambition.

3. Policies and measures in the energy sector

70. The energy sector is the largest source of GHG emissions in Norway, representing 74.3 per cent of the Party’s total emissions in 2012. Between 1990 and 2012, GHG emissions from the energy sector increased by 32.9 per cent (9,697.98 kt CO₂ eq). The trend in GHG emissions from fuel combustion showed a notable increase in transport (36.6 per cent or 4,061.84 kt CO₂ eq) and a decrease in energy use in other sectors (25.3 per cent or 1,097.49 kt CO₂ eq).

71. **Energy supply.** In Norway, 97 per cent of electricity is generated by hydropower; therefore, the substantial increase in GHG emissions from energy industries is largely due to the increase in emissions associated with the extraction of oil and natural gas. Norway’s oil and natural gas industry accounts for 25 per cent of GDP (2013), with around 4 per cent of the labour force (2013) and some 33 per cent of its total GHG emissions (2012). The emission intensity in this sector was broadly stable throughout the 1990s, but has been increasing steadily since 2000 owing primarily to increased production and the increasing maturity of the fields.

72. Since its introduction in 1991, the CO₂ tax for the offshore petroleum sector has been changed several times to a rate of NOK 420/t CO₂ as of 1 January 2014. More than 90 per cent of the emissions from this sector in 2012, without fugitive emissions, has been

covered by the EU ETS since 2008. The CO₂ tax on petroleum activities has so far been the most important instrument for reducing emissions in the petroleum sector, and has had a significant impact. The CO₂ tax and regulations under the Pollution Control Act have resulted in improvements in technology and emission-reducing measures, since 1991. Several energy conservation measures have been carried out.

73. Other important mitigation actions are the CO₂ storage projects (CCS) at Sleipner and Snøhvit, and the replacement of gas turbines by electricity from the onshore power grid. Power supply from the mainland gives lower emissions compared with using offshore gas turbines. Norway estimates the total mitigation effect in 2020 of these sectoral PaMs to be 7,000 kt CO₂ eq.

74. Fugitive emissions from oil and natural gas extraction are also significant, accounting for 3,330.36 kt CO₂ eq (from fuel combustion and fugitive emissions) or 6.3 per cent of Norway's total GHG emissions in 2012, with CO₂ emissions being included under the EU ETS.

75. The ERT noted that the offshore petroleum sector is regulated through a subset of PaMs (CO₂ tax, EU ETS, the Petroleum Act, the Pollution Control Act, energy efficiency measures, CCS, combined heat and power, and power from the onshore electrical grid), which makes it difficult to assess which of these underlying measures has the most significant impact. The ERT encourages Norway, in its next NC, to include, as appropriate, more estimates of the effects of individual PaMs or clearly defined collections of PaMs, as well as brief descriptions of the estimation methods used, and information on costs of individual PaMs, or groups of PaMs, where available, in order to improve the transparency of the reporting.

76. **Renewable energy sources.** The EU promotion of the use of energy from renewable sources directive (2009/28/EC) was incorporated into the EEA agreement between the EU and Norway. The Norwegian target for the renewable energy share is 67.5 per cent by 2020. A common Norwegian–Swedish market for electricity certificates was established on 1 January 2012. The electricity certificate system is a market-based support scheme with the objective of increasing renewable electricity production.

77. **Energy efficiency.** The state enterprise Enova manages the Government's energy fund owned by the Ministry of Petroleum and Energy and has been in full operation since 1 January 2002. The objective of the fund is to ensure a long-term, predictable and stable source of finance to promote an environmentally friendly change in the consumption and production of energy, and the development of energy and climate technologies. The extension to also promote energy and climate technologies was introduced in 2012. The energy fund is financed by means of a levy on the electricity grid tariff, as well as through the annual returns from the fund for climate mitigation measures, renewable energy and energy transition.

78. **Residential and commercial sectors.** Residential and commercial/institutional sectors accounted for 0.9 and 1.3 per cent of Norway's total GHG emissions, respectively, in 2012. This represents 17 and 68 per cent decreases, respectively, from 1990 to 2012. Through the broad political agreement on climate of 2012, the Norwegian Parliament has asked for a ban on the use of fossil oils in households and for base load in other buildings from 2020. During the review, the ERT was informed about the Government's proposal to implement such a ban from 2016 for public buildings. The Norwegian technical building regulation code under the Planning and Building Act contains specific energy demand requirements for all new buildings.

79. **Transport sector.** Domestic transport accounted for 15,163.35 kt CO₂ eq or 28.8 per cent of Norway's total GHG emissions in 2012. This represents a 36.6 per cent increase

from 1990 to 2012, attributed mainly to the decentralized pattern of settlement, increasing economic growth and associated increases in living standards.

80. The tax system is the main instrument for limiting CO₂ emissions from the transport sector, including domestic air traffic. In Norway, a CO₂ tax is levied on mineral products. This entails that petrol and diesel oil are subject to CO₂ tax, while bioethanol, biodiesel and hydrogen are not subject to this tax. Currently, biodiesel that meets the sustainability criteria is subject to a reduced road usage tax, corresponding to half of the rate for automobile diesel oil. To increase the use of biofuels, there is also a mandatory biofuel turnover in Norway. A blending obligation was introduced in 2009 and since April 2010, 3.5 per cent of the total yearly amount of fuel sold for road transport has had to be biofuels. As of 1 January 2014, sustainability criteria for biofuels must be met by all biofuels and bioliquids that are counted towards the renewable energy targets or part of government support schemes.

81. Other measures in the transport sector are a reward scheme for the largest cities established in 2004 and the Transnova scheme for demonstration projects and market introduction of climate-friendly transport technologies established in 2009. The reward scheme provides grants for those local governments that achieve positive results by increasing shares of public transport at the same time as managing traffic with private cars by including a goal of zero growth over a period of four years. Since 2004, the scheme has grown both in the number of cities included and with respect to the total grant. With the 2012 agreement on climate, a goal to absorb the growth in passenger transport in major urban areas through public transportation, cycling and walking was set. The 2012 agreement on climate also gives high priority to developing a competitive railway transport system for passengers and freight and investments in railways. With the white paper on climate policy from 2012, the Norwegian Government adopted a target where the average emissions from new passenger cars in 2020 shall not exceed an average of 85 g CO₂/km, which the Parliament took note of in the 2012 agreement on climate.

82. The ERT commended Norway for its effort in promoting low- and zero-emission vehicles. However, the ERT also noted that the challenges in reducing the transport sector emissions appear to be difficult to achieve with the existing PaMs and the estimated effects of these PaMs. The ERT encourages Norway to include more information on the methods used for estimating the effects of these policies in its next NC to improve transparency.

83. Norway has a comprehensive strategy for addressing emissions associated with international shipping and aviation. The Party is supporting international emissions trading schemes through the International Maritime Organization (IMO) and the European Civil Aviation Conference to mitigate emissions from the shipping and aviation sectors, respectively. In addition, Norway has worked through IMO to facilitate the development of energy-efficient design schemes and operational indicators for the shipping industry, and is working with its maritime fleet to increase the voluntary usage of these tools. The ERT commends Norway for its efforts in these sectors.

84. The ERT noted that domestic PaMs have helped to restrain, to some extent, the increase in emissions in the energy and transport sectors; however, the ERT could not assess whether the PaMs currently in place are sufficient to curb enough future growth in emissions in order to meet Norway's ambitious reduction targets. The ERT noted that the projected reduction in energy demand in these two sectors as presented in the NC6 section on projections seems not to correspond with the mitigation effects of planned PaMs expected to be implemented before 2020. Given the importance of the energy and transport sectors to Norway's overall level of GHG emissions, the ERT encourages Norway to improve the transparency of its reporting on these sectors and include information on the methods used for estimating the effects of these policies in its next NC.

85. **Industrial sector.** Energy use by industry in Norway is mainly based on electricity. Of the total electricity production in Norway, 97 per cent is from hydropower. Electricity also accounts for the largest share of stationary energy consumption, around 70 per cent. An important reason for the high percentage of electricity in the overall energy consumption is the large energy-intensive industry in Norway.

4. Policies and measures in other sectors

86. Between 1990 and 2012, GHG emissions from industrial processes (including solvent and other product use), agriculture and waste decreased by 35.2 per cent (7,374.08 kt CO₂ eq), mainly driven by significant decreases in emissions from industrial processes (44.4 per cent) and the waste sector (35.9 per cent), but emissions from the agriculture sector also decreased (11.0 per cent).

87. **Industrial processes.** Emissions from industrial processes amounted to 7,673.50 kt CO₂ eq in 2012, which represented 14.6 per cent of Norway's total GHG emissions. Between 1990 and 2012, GHG emissions from the industrial processes sector decreased by 44.4 per cent (6,135.54 kt CO₂ eq), mainly driven by decreases in emissions in the aluminium sector, owing to a combination of sectoral restructuring, technological improvements and voluntary agreements, and decreases in emissions from the magnesium industry, as a result of the closure of cast magnesium plants in Norway.

88. The PaMs in Norway focusing on reducing emissions from industry are a combination of taxes, the EU ETS and voluntary agreements. In its NC6, Norway reports on a number of agreements concerning the reduction of GHG emissions that have been concluded between the industry and the Norwegian Government in specific sectors of industry not covered by the EU ETS or other economic incentives. Since 2013, emissions from processes in the manufacturing industries have been, to a large extent, covered by the EU ETS. Norway has established a new CO₂ compensation scheme for the manufacturing industry. The purpose of the scheme is to prevent carbon leakage resulting from increased electricity prices due to the EU ETS.

89. Norway reports on its implementation of EU regulation no. 842/2006 on certain fluorinated GHGs (F-gases). Measures following the regulation comprise containment of gases and proper recovery of equipment; training and certification of personnel and of companies; labelling of equipment; reporting on imports, exports and production of F-gases; and restrictions on the marketing and use of certain products and equipment containing F-gases.

90. The ERT noted that the transparency of the reported impact of PaMs on emissions from industry could be improved. The ERT encourages Norway to improve the transparency of its reporting and include more information on the methods used for estimating the effects of these policies in its next NC.

91. **Agriculture.** Between 1990 and 2012, GHG emissions from the agriculture sector decreased by 11.0 per cent (555.65 kt CO₂ eq), to a level of 4,501.55 kt CO₂ eq, and accounting for approximately 8.5 per cent of Norway's total GHG emissions in 2012.

92. Few new PaMs have been implemented in the sector since the preparation of the Party's NC5. As part of the Klimakur 2020 process, the Norwegian Government has identified potential ways of reducing GHG emissions in the sector, including through the generation of biogas from approximately 30 per cent of the nationally produced manure. During the review, the ERT has been informed about the Government's proposal in the 2015 national budget to spend NOK 10 million on biogas through contributions to pilot plants and research. As was the case with the NC5, the NC6 did not contain any information on the estimated mitigation effects associated with the PaMs in this sector.

93. The ERT encourages Norway, in its next NC, to include, as appropriate, more estimates of the effects of individual PaMs or clearly defined collections of PaMs, as well as a brief description of the estimation methods used, and information on costs of individual PaMs, or groups of PaMs, where available, in order to improve the transparency of the reporting.

94. **LULUCF.** In 2012, the LULUCF sector had a net CO₂ removal of 26,677.67 kt CO₂ eq/year, approximately half of Norway's total GHG emissions. The emission trend appears to have had two distinct phases: a relatively constant annual increase in removals during the period 1990–2003, followed by an almost constant level a little below 30,000 kt CO₂ eq of the net removals during the period 2000–2012. The trend was mainly driven by a combination of wood prices and age distributions of the forests in Norway.

95. During the review, Norway provided updated estimates of historic and projected emissions and removals based on data for increments, harvest and changes in area. In general, the growth in net removals appears to be the result of tree-planting policies since the 1950s.

96. The current Forestry Act was adopted by the Storting in 2005 and came into force in 2006. Its main objectives are to promote sustainable management of forest resources with a view to promoting local and national economic development, and to secure biological diversity, consideration for the landscape, outdoor recreation and the cultural values associated with forests.

97. A regulation under the Forestry Act requires forest owners to set aside between 4.0 and 40.0 per cent of the revenues from harvested timber into a government administered fund, the Forest trust fund. This fund was established to secure long-term investment in sustainable forestry. The Forest trust fund is the property of the forest owners, but the use of the fund is regulated, allowing only for specific purposes such as planting, road building, management planning, non-commercial thinning and other activities. When used, the money is treated as income for the forest owner. Part of it is, however, exempt from taxation. In addition to the tax relief granted through the Forest trust fund, economic support is given for a similar range of activities that support sustainable forestry.

98. The ERT noted that the description of specific PaMs in the LULUCF sector in Norway's NC6 is somewhat general, although some details are given for six existing measures and five potential additional measures. However, with no estimated effects on GHG emissions of these measures, it is difficult to draw any conclusions on these measures regarding their effectiveness and replicability.

99. Given the large size of the Party's forest sink in comparison with its total GHG emissions, the ERT encourages Norway, in its next NC, to include, as appropriate, more estimates of the effects of individual PaMs or clearly defined collections of PaMs, as well as brief descriptions of the estimation methods used and information on costs of individual PaMs, or groups of PaMs, where available, in order to improve the transparency of the reporting.

100. **Waste management.** Between 1990 and 2012, GHG emissions from the waste sector decreased by 35.9 per cent (669.32 kt CO₂ eq), mainly driven by the ban on landfilling of biodegradable waste.

101. Final disposal of waste has been subject to taxation since 1999. In 2014, the tax rate for landfilling is NOK 488 per tonne of biodegradable waste in contrast with NOK 294 per tonne of other waste to landfills. The EU landfill directive (1999/31/EC) was implemented in Norway in 2002. In 2009, Norway banned the disposal of any biodegradable waste in landfills. As a result of these measures, CH₄ production from biodegradable waste deposited before 2009, which will be declining over the next decades, is flared (53 per cent

in 2011) or used for energy purposes (in 2011, 26 and 21 per cent was used for heat and electricity production, respectively). In 2010, the incineration tax for waste was abolished. Overall, PaMs in the waste sector are expected to deliver reductions of 600 kt CO₂ eq in 2020.

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

102. Norway reported on its package of PaMs adopted, implemented and elaborated in achieving its commitment under the Kyoto Protocol.

103. The NC6 includes information on how Norway promotes and implements the International Civil Aviation Organization/IMO decisions to limit emissions from aviation and marine bunker fuels (see para. 83 above).

104. In its NC6, Norway reported information on how it strives to implement PaMs under Article 2 of the Kyoto Protocol in such a way as to minimize adverse effects, including the adverse effects of climate change and effects on international trade and social, environmental and economic impacts, on other Parties, especially developing country Parties. Further information on how Norway 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 2014 annual submission, is presented in chapter III.B below.

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

105. The GHG emission projections provided by Norway in the NC6 include a ‘with measures’ scenario until 2030, presented relative to actual inventory data for 2011.

1. Projections overview, methodology and key assumptions

106. In its NC6, Norway’s projections are presented on a sectoral basis. The sectoral categories used are similar to the ones used for PaMs, but with slight differences, such as such as categories used for energy (petroleum activity and energy and transformation for PaMs, electricity and heat production, petroleum refining, oil and gas extraction and fugitives for projections) and without a presentation of the sector forestry and CO₂ sequestration. Projections are presented on a gas-by-gas basis for all the following GHGs: CO₂, CH₄, N₂O, PFCs, HFCs and SF₆. Projections are also provided in an aggregated format for each sector, as well as for a national total, using global warming potential (GWP) values. Emission projections related to fuel sold to ships and aircraft engaged in international transport were reported separately and not included in the totals.

107. The ERT noted that projections do not include CO₂ sequestration from LULUCF but that projected emission data for forestry and LULUCF is available in the first biennial report common tabular format (CTF) table 6(a). The ERT encourages Norway to present its projections, to the extent possible, using the categories in such a way as to ensure consistency between categories in its NC6 section 4 on PaMs and section 5 on projections, including information on projected emissions for LULUCF in the NC.

108. The ERT noted that Norway’s reporting of projections in its NC6 would benefit from including projections using ‘without measures’ and ‘with additional measures’ scenarios. The ERT therefore encourages Norway to include projections using ‘without measures’ and ‘with additional measures’ scenarios in its next NC.

109. The NC6 of Norway does not include information on projections for 2015 in a tabular form. The ERT noted that the transparency of Norway's reporting on projections would have been improved by providing this information, as it would have been especially useful to aid in understanding the mitigation effects in the short term, for example, the projected emission trend related to the petroleum sector, which is expected to increase until about 2017 and which should decrease thereafter (see section 2.5 of the NC). The ERT encourages Norway to enhance the transparency of its reporting by including in its next NC projections in a tabular format for all the years mentioned in the UNFCCC reporting guidelines on NCs.

110. **Scenario definitions.** The 'with measures' scenario is called the baseline scenario and was first presented in the white paper on long-term perspectives for Norwegian economy published in January 2013.⁹ It is based on a macroeconomic model that calculates annual GHG emissions. The projections are updated every second year, and presented either in the national budget or in the white paper on long-term perspectives (issued every four years). The modelled scenario is based on current PaMs as implemented in the fourth quarter of 2012.

111. **Methodology.** Norway provided supporting documentation on the main model used, its multisectoral growth model. In its NC6, Norway did not provide information on the eventual changes to the methodology compared to its NC5. However, during the review, Norway explained that there was no specific change in the models used since the last NC. The ERT encourages Norway to enhance the transparency of its reporting and provide in its next NC information on the differences in the methods employed in comparison with earlier NCs, or to indicate that there are no such changes if this is the case.

112. **Key assumptions.** For the 'with measures' scenario, the underlying key assumptions included GDP, with an expected annual growth of 2.9 per cent in 2020 and 1.8 per cent in 2030, and population, with an annual growth of 1.2 per cent in 2020 and 0.9 per cent in 2030. These assumptions are important drivers for projected emissions. For oil prices, the assumption made for 2020 and 2030 (NOK 505) is significantly lower than the price in 2011 (NOK 621).

113. **Sectoral assumptions.** Information on factors and activities are presented for each sector for the years 1990–2030. Nevertheless, the ERT noted that this information is mainly of qualitative nature with often little detail on assumptions made for each sector. For example, in the transport sector, which is a major emitting sector, section 5.2.1 states that "the low growth is expected to continue". In annex 3, it is mentioned that "emissions from road traffic are based on information from Statistics Norway's road traffic model" and that "per capita traffic growth will be positive but declining during the projection period". There is neither an indication on the growth rates, nor on the date of the tipping point. For agriculture, the information available is very limited. Annex 2 mentions that "the number of animals is stable except for poultry and swine that is assumed will increase". For HFCs, annex 2 only mentions that "emission projections of HFCs are based on the HFC emissions inventory, historical import statistics for chemicals and current regulations", with no further information on assumptions being made.

114. During the review, Norway provided additional information on expected traffic growth for transport and additional assumptions for LULUCF until 2030. The information given was relevant and complete for the provided factors and for these specific sectors.

⁹ Available at http://www.regjeringen.no/pages/38323623/PDFS/STM201220130012000EN_PDFS.pdf.

115. The ERT noted that additional information on sectoral assumptions and the underlying factors and activities for each sector, especially quantitative information, would enhance the transparency of the reporting on projections and help the reader to obtain a better understanding of the projections made for each sector.

116. The ERT further noted that an encouragement had already been made in the previous review report of the NC5 to better explain key assumptions and how these were developed and incorporated into the macroeconomic model for calculating emissions. The ERT reiterates the encouragement to Norway to provide such information, including quantitative information, which may be presented in tabular format, in its next NC, in order to enhance the transparency of the reporting on projections and to allow the reader to understand emission trends in the projections.

117. *Sensitivity analysis.* Norway provides in section 5.2.2 of its NC6 qualitative information on uncertainty in the results of its projections. Norway reports especially on demography and petroleum activities as two factors of uncertainty. The transparency of the reporting could be further enhanced by providing an evaluation of the possible impact on GHG emissions. During the review, Norway indicated that the emissions of oil and gas extraction for the next few years were uncertain. The ERT encourages Norway to enhance the transparency of its reporting by providing additional quantitative information, where possible, when discussing the sensitivity of its projections to underlying assumptions, in its next NC.

2. Results of projections

118. The target for Norway under the Kyoto Protocol's first commitment period (2008–2012) is to limit its emissions to 101.0 per cent of its base year emissions (1990), which is limiting it to 50,115.36 kt CO₂ eq. Between 2008 and 2012, average annual emissions excluding the LULUCF sector were 53,321.54 kt CO₂ eq. Thus, the difference between average emissions and the assigned amount is about 3,206.18 kt CO₂ eq annually. The ERT noted that this amount is calculated on the basis of the 2014 annual inventory submission and is slightly smaller than the estimation given by Norway in its NC6.

119. In its NC6, Norway reported that it does not plan to use removal units (RMUs) pursuant to Article 3, paragraph 3, of the Kyoto Protocol for compliance. Norway is expecting to issue 1.5 million RMUs under Article 3, paragraph 4, of the Kyoto Protocol, mainly owing to forest management being calculated as an annual average. However, in its NC6, Norway reports that it is not intending to use these RMUs to meet its commitment under Article 3, paragraph 1, of the Kyoto Protocol. For the attainment of its target under the Kyoto Protocol's first commitment period, Norway will use international credits only.

120. Installations in Norway are covered by the EU ETS. During the first commitment period (2008–2012), Norwegian installations under the EU ETS have, on average, delivered 4.1 million more units (assigned amount units (AAUs), emission reduction units and certified emission reductions) annually to the Norwegian Government than quotas allocated free of charge or sold by Norway. The ERT noted that the number of credits acquired in the framework of the EU ETS is already higher than the gap to be filled for the attainment of the Norwegian target under the Kyoto Protocol's first commitment period. The ERT further noted that Norway is in a position to meet its Kyoto Protocol commitment for the period 2008–2012 without having to purchase additional Kyoto Protocol units.

121. In addition to the target defined for Norway under the Kyoto Protocol first commitment period, Norway has voluntarily chosen to overachieve its Kyoto Protocol target by 5 Mt CO₂ eq per year (equivalent to some 10 per cent of the annual average of the assigned amount). Moreover, Norway decided to compensate for the emissions caused by governmental employees' international air travel in the period 2008–2012 and for their

travel in and out of the European economic area during 2012, as well as for emissions related to the CCS Technology Centre in Mongstad. To achieve these voluntary objectives, Norway estimates in its NC6 the total need for Kyoto Protocol units to be acquired by the Government (in addition to credits available from the EU ETS) to be 4.2 million units per year. Taking into account the latest figures available for 2012, the annual average need can be estimated at around 3,900 kt CO₂ eq. Since 2007, Norway has put in place a programme for Kyoto Protocol unit procurement. By the end of December 2013, 22 million units were delivered, which exceeded the volume needed for the attainment of the Norwegian voluntary additional goals.

122. For the second commitment period of the Kyoto Protocol, Norway's commitment is to limit average annual emissions to 84.0 per cent of 1990 emissions. The ERT noted that the exact number of the AAUs that Norway can issue for the period 2013–2020 pursuant to the commitment under Article 3, paragraph 1, of the Kyoto Protocol has not yet been calculated. Norway estimates in its NC6 the level of 1990 emissions to be about 51,600 kt CO₂ eq when taking into account the GHG inventory figure of 2011 and the new GWP values consistent with the new reporting guidelines¹⁰ under the Convention. Norway's AAUs would, in that case, be equal to an annual average of about 43,300 kt CO₂ eq.

123. Considering the projected emissions for 2020 (total GHG emissions excluding LULUCF are projected to remain relatively stable during the period), Norway is planning to take additional domestic measures, use Kyoto Protocol mechanisms and account for LULUCF activities, in order to achieve its target. In its NC6, Norway reported that RMUs corresponding to 3.5 per cent of total GHG emissions in 1990 from forest management (Article 3, paragraph 4, of the Kyoto Protocol) or approximately 14,000 kt CO₂ eq for the second commitment period could be issued. Concerning net changes in GHG emissions by sources and removals by sinks resulting from land-use change under Article 3, paragraph 3, of the Kyoto Protocol, Norway reports that it is uncertain as to whether this contribution will lead to a net reduction or a net increase of emissions.

124. On the basis of the reported projections for 2020, which do not include either the effects of policies adopted after 2012 or the planned PaMs, the ERT noted that achieving the target under the second commitment period of the Kyoto Protocol may require either additional domestic PaMs or the acquirement of international credits through the Kyoto Protocol mechanisms.

125. Norway's commitment under the Convention is a reduction in total GHG emissions of 30.0 per cent by 2020. This target is consistent with the one defined for the second commitment period of the Kyoto Protocol. Similar to achieving the target under the second commitment period of the Kyoto Protocol, the ERT noted that achieving the target under the Convention may eventually require additional domestic efforts or the use of the Kyoto Protocol mechanisms.

126. Norway's reported projections of total GHG emissions for 2020 show a slightly increasing emission trend in the 'with measures' scenario. Total emissions in 2020 are projected to reach 54,400 kt CO₂ eq, a level that is 7.9 per cent above the 1990 level. Reported projections of total GHG emissions for 2030 show a decreasing trend between 2020 and 2030 in the 'with measures' scenario. Total emissions in 2030 are projected to reach 52,200 kt CO₂ eq, a level that is 3.6 per cent above the 1990 level.

127. According to the NC6, there was a start of reduction in emissions to be seen in 2012 (see section 3.1.1 of the NC6). The ERT noted that this decreasing trend is not reflected in

¹⁰ "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories".

the ‘with measures’ scenario, which however does not include either the effects of policies adopted after 2012 or planned PaMs.

128. On a gas-by-gas basis, Norway reported that CO₂ emissions in 2012 were 44,101.23 kt CO₂. According to the projections, CO₂ emissions are expected to increase by some 8 per cent to 46,200 kt CO₂ eq by 2020 compared to 1990 under the ‘with measures’ scenario. Projected non-CO₂ emissions are expected to decrease by some 47 per cent by 2020 to 8,300 kt CO₂ eq compared to 1990 under the ‘with measures’ scenario. From 2020 to 2030, CO₂ and non-CO₂ emissions are both projected to decrease to 44,500 and 7,600 kt CO₂ eq, respectively.

129. When considering total GHG emissions excluding LULUCF, the main emitting sectors in Norway are oil and gas extraction, transport and industrial processes. These three sectors represented 64.6 per cent of the total GHG emissions in 2011 (start year for projections). For oil and gas extraction, projections for 2020 show a significant increase in emissions (+13.0 per cent compared to 2011) and then a decreasing trend (–16.2 per cent between 2020 and 2030). Excluding oil and gas extraction and LULUCF, the other sectors are estimated to be rather stable until 2020 (+0.8 per cent compared to 2011) and then decrease (–7.5 per cent between 2020 and 2030). Emissions from the transport sector are predicted to increase during the whole period (+4.6 per cent between 2011 and 2020, and +4.4 per cent between 2020 and 2030). The ERT noted that this trend does not seem to correspond with the reported stabilization of emissions by Norway in its NC6. Emissions from industrial processes are projected to increase between 2011 and 2020 (+3.8 per cent) and then decrease over the next decade (–4.9 per cent).

130. Concerning the other sectors (excluding oil and gas extraction, transport, industrial processes and LULUCF), emissions are projected to remain relatively stable or decrease between 2011 and 2020 and between 2020 and 2030, apart from manufacturing industry and construction, which is projected to increase its emissions by 6.1 per cent between 2011 and 2020 and by 5.7 per cent between 2020 and 2030. The main reductions of emissions are projected to occur in the waste sector (–41.7 per cent between 2011 and 2030) and in electricity and heat production (–19.0 per cent between 2011 and 2030).

131. During the review, Norway provided a revised table 5.1 for the NC6, which was completed with projections for LULUCF. This additional information is consistent with the information already available in the first biennial report. For LULUCF, Norway is projecting a decline in the net CO₂ sequestration due to an assumed increase in logging and ageing of the Norwegian forests. The estimation for net removals is a decrease of about 23,800 kt CO₂ eq in 2020 and 19,800 kt CO₂ eq in 2030 (which represent, respectively, reductions of net removals of 13.7 per cent in 2020 and 28.2 per cent in 2030 compared to 2011).

132. 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 Norway

	<i>Greenhouse gas emissions (kt CO₂ eq per year)</i>	<i>Changes in relation to the base year^a level (%)</i>	<i>Changes in relation to the 1990 level^b (%)</i>
Kyoto Protocol base year ^c	49 619.17	0	-1.6
Kyoto Protocol target for the first commitment period (2008–2012)	50 115.36	1.0	-0.6
Kyoto Protocol target for the second commitment period (2013–2020) ^d	Not available yet 43 300 ^e	-16.0	NA
Quantified economy-wide emission reduction target under the Convention ^e	Not available yet 36 100 ^e	-30.0	NA
Inventory data 1990 ^b	50 409.35	1.6	0
Inventory data 2012 ^b	52 733.24	6.3	4.6
Average annual emissions for 2008–2012 ^b	53 321.54	7.5	5.8
‘With measures’ projections for 2020 ^f	54 400.00	9.6	7.9
‘With measures’ projections for 2030 ^f	52 200.00	5.2	3.6

^a “Base year” in this column refers to the base year used for the target under the first commitment period of the Kyoto Protocol, while for the targets under the first commitment period of the Kyoto Protocol and under the Convention it refers to the base year used for that target.

^b Norway’s 2014 greenhouse gas inventory submission; the emissions are without land use, land-use change and forestry.

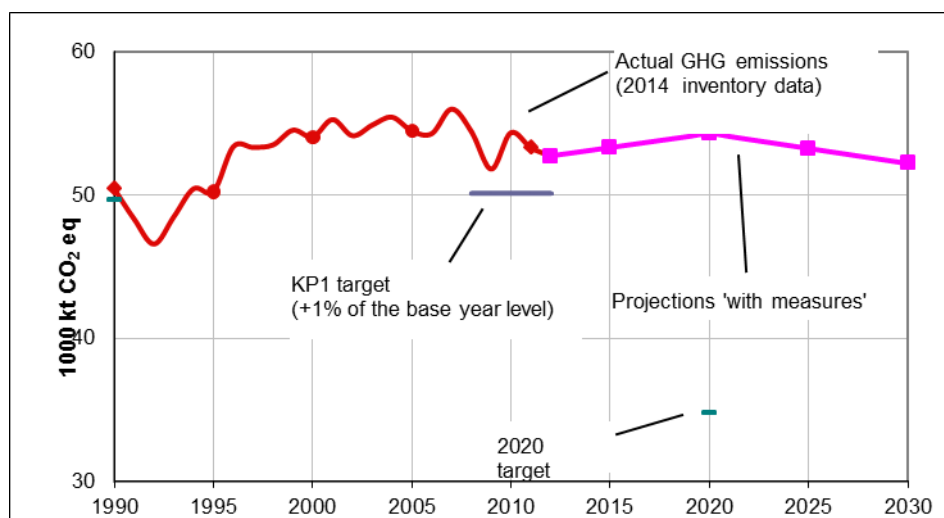
^c The Kyoto Protocol base year level of emissions is provided in the initial review report contained in document FCCC/IRR/2007/NOR.

^d The initial assigned amount for the second commitment period will be established after the initial review for the second commitment period of the Kyoto Protocol.

^e In its sixth national communication, Norway reports that based on figures from the latest greenhouse gas inventory and applying the new global warming potential values consistent with the new reporting guidelines (“Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories”) under the Convention, Norway’s emissions in 1990 can be roughly estimated to amount to 51.6 Mt of carbon dioxide equivalent.

^f Norway’s sixth national communication and/or first biennial report.

Greenhouse gas emission projections



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

Note: The target under the Convention to reduce GHG emissions by 30.0 per cent by 2020 compared to the 1990 level is based on preliminary estimates of the base year emissions for the first commitment period of the Kyoto Protocol and quantified emission limitation or reduction objective included in annex I to decision 1/CMP.8. The initial assigned amount for the second commitment period will be established after the initial review for the second commitment period of the Kyoto Protocol.

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

3. Total effect of policies and measures

133. In the NC6, Norway 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 CO₂ eq basis), in the years 1995, 2000, 2005, 2010, 2011, 2020 and 2030.

134. In its NC6, Norway did not report on the total effect of its PaMs presented in terms of GHG emissions avoided or sequestered by gas, as required by the UNFCCC reporting guidelines on NCs. To enhance the completeness of its reporting, the ERT recommends that Norway provide this information in its next NC.

135. In its NC6, Norway did not report on the total expected effect of planned PaMs. The ERT therefore suggests Norway to report on the total expected effect of planned PaMs in its next NC.

136. Norway reported that the total estimated effect of adopted and implemented PaMs is estimated to be in the range 12,600–15,200 kt CO₂ eq in 2010, and 17,100–20,100 kt CO₂ eq in 2020 and 17,700–20,400 kt CO₂ eq in 2030. According to the information reported in the NC6, PaMs implemented in the energy industries sector, related to petroleum activities, will deliver the largest emission reductions, followed by the effect of PaMs implemented in the industry and transport 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 Norway.

137. In its NC6, Norway did not report the level of emissions in 1990 for the categories used for the presentation of the total estimated effect of adopted and implemented measures. The ERT noted that it is therefore not possible to assess the effects of PaMs for each sector. Only the total effect of PaMs can be assessed and compared to the total emission level of 1990. To enhance the transparency of the reporting, the ERT noted that the reporting would benefit if Norway would provide either the level of emissions in 1990 for the different categories used for the presentation of the total effect of PaMs in order to allow such a comparison or if Norway would report the same categories as for the presentation of projections.

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

Sector	Effect of implemented and adopted measures		Effect of implemented and adopted measures	
	(kt CO ₂ eq)	Relative value (% of 1990 emissions)	(kt CO ₂ eq)	Relative value (% of 1990 emissions)
	2020		2030	
Cross-sectoral policies	1 600–1 900	NA	1 400–1 700	NA
Petroleum activity	7 300	NA	7 200	NA
Energy	1 500	NA	1 500	NA
Transport	1 400–1 600	NA	2 200	NA
Industry	4 700–7 200	NA	4 700–7 100	NA
Waste	600	NA	700	NA
Total	17 100–20 100	31.4–36.9	17 700–20 400	34.1–39.3

Source: Norway's sixth national communication.

Note: The total effect of implemented and adopted policies and measures is defined as the aggregated effects of individual policies and measures.

Abbreviation: NA = not available.

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

138. Norway 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. The ERT took note of the information provided by Norway for the first and the second commitment periods of the Kyoto Protocol.

139. For the first commitment period (2008–2012), average annual emissions excluding LULUCF were 53,321.54 kt CO₂ eq. The target for Norway under the first commitment period was to limit emissions to 50,115.36 kt CO₂ eq (101.0 per cent of its base year emissions). To complete the gap of 3,206.18 kt CO₂ eq annually, Norway is planning to use the market-based mechanisms. Norway is expecting to get an average 4.1 Mt CO₂ eq per year from the international transfers within the EU ETS, which are part of the emissions trading scheme under the Kyoto Protocol.

140. On the basis of the reported total estimated effect of adopted and implemented PaMs in the range 12,600–15,200 kt CO₂ eq in 2010, the ERT noted that the total effect of PaMs in 2010 accounted for more than 50 per cent of the total difference between the target and the emissions in 2010 if no PaMs had been adopted. This indicates that the use of market-based mechanisms under the Kyoto Protocol is supplemental to the domestic actions of Norway in meeting its Kyoto Protocol target.

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**

141. In its NC6, Norway provided information on provision of support required under the Convention and its Kyoto Protocol. Norway provided details on measures taken to give effect to its commitments under Article 4, paragraphs 3, 4 and 5, of the Convention as required by the UNFCCC reporting guidelines on NCs and under Article 11 of the Kyoto

Protocol, as required by the “Guidelines for the preparation of information required under Article 7 of the Kyoto Protocol”.

142. Furthermore, Norway has provided information on its provision of financial resources related to the implementation of the Convention provided through bilateral, regional and other multilateral channels, including the Global Environment Facility (GEF).

143. In its NC6, Norway reported information on its financial resources related to the implementation of the Convention provided through bilateral, regional and other multilateral channels using tables from the first biennial report (CTF tables 7, 7(a) and 7(b)) instead of the NC tables 4 and 5 as required by the UNFCCC reporting guidelines on NCs, resulting in some missing information and a lack of transparency, including that Norway did not report information on the breakdown of support under the listed sectors for both mitigation and adaptation as per table 5 of the UNFCCC reporting guidelines on NCs.

144. In addition, the ERT also noted a consistency issue with the figures reported on the financial contribution to the GEF in NC6 table 7.1 and the textual input that provides a sum for those figures.

145. The ERT recommends that Norway follow the UNFCCC reporting guidelines on NCs more closely when reporting on any financial resources related to the implementation of the Convention provided through bilateral, regional and other multilateral channels, in particular by using tables 4 and 5 as per the UNFCCC reporting guidelines on NCs, ensuring consistency, to enhance the transparency of its reporting in its next NC.

146. The ERT noted that Norway, in its NC6, did not report information on how it has taken into account the need for adequacy and predictability of its financial resources, in accordance with the implementation of Article 11 of the Kyoto Protocol. During the review, Norway provided additional information stating that while adequacy is an ongoing discussion under the UNFCCC with no agreed definition, Norway considers that many of its actions have contributed to providing predictability towards its climate finance because Norwegian total official development assistance (ODA) exceeded 0.7 per cent of gross national income (GNI) for many years, and has also been valued at around 1 per cent in the last few years. Norway also considers that other actions enhance the predictability, for example, the Government announcement to support climate and forest initiatives. Norway also noted that this is closely linked to the budget process.

147. The ERT reiterates the recommendation from the previous review report that Norway report information on how it has taken into account the need for adequacy and predictability in the flow of resources, in its next NC.

148. The ERT noted that Norway used some negative values when reporting information in NC6 table 7.3B on its provision of public financial support related to the implementation of the Convention. During the review, Norway provided additional information elaborating on the use of the negative values reported in NC6 table 7.3B as normally reimbursements of unused funds or sales from previous years’ investment. Norway also explained that these negative values will be then subtracted from the following year’s reported funds, or the next NC.

149. During the review, Norway provided updated information on the financial support that it has provided to developing countries to mitigate GHG emissions and to adapt to the adverse effects of climate change for the years 2010–2012. The ERT welcomed this information.

150. According to the updated information, in 2012, Norway provided financial resources related to climate change of USD 513.2 million through bilateral and regional channels and USD 337.7 million through multilateral channels to developing country Parties. Between 2010 and 2012, Norway provided financial resources related to climate change of a total of

USD 1,092.9 million through bilateral and regional channels and a total of USD 792.3 million through multilateral channels to developing country Parties. The ERT noted that the share of climate-specific support has increased between 2010 and 2012 from around 11 per cent of the total ODA in 2010 to around 18 per cent of the total ODA in 2012.

151. In its NC6, Norway has indicated what “new and additional” financial resources it has provided pursuant to Article 4, paragraph 3, of the Convention and clarified how it has determined such resources as being “new and additional”. Norway has stated that as ODA has been increasing steadily over the period under review, as has its funding to climate change actions, this is considered to be “new and additional”.

152. Norwegian total ODA exceeded 0.7 per cent of GNI for many years, and has also been valued at around 1 per cent in the last few years. Moreover, Norway has steadily increased the volume of ODA budget as the economy has been growing, so that the increase in climate finance has not reduced other ODA. The ERT commended Norway for ranking among the countries with the highest ODA/GNI ratio (1.07 per cent in 2013).

153. In its NC6, Norway indicated that the main priorities for Norwegian public climate finance in recent years have been on reducing emissions from deforestation and forest degradation, and promotion of renewable energy, energy conservation and energy efficiency. It also indicated that adaptation to climate change is another priority, with particular focus on food security and disaster risk reduction.

154. With regard to bilateral channels, Norway stated that Norwegian bilateral finance directed at climate change covers a wide variety of areas and sectors. Norway offers development cooperation in areas where it has particular expertise: renewable energy (especially hydropower), long-term management of natural resources, and competence and capacity-building in the field of environmental policy.

155. A large share of Norway’s bilateral climate finance is directed towards reducing emissions from deforestation and forest degradation in developing countries (REDD) activities, which makes it one of the leading actors in international efforts to reduce deforestation and forest degradation in developing countries. The Government of Norway’s international climate and forest initiative constitutes by far the largest part of Norway’s mitigation assistance. During the period 2010–2012, Norway committed a total of approximately USD 1.227 billion to REDD-plus¹¹ and disbursed a total of USD 745 million. The remaining USD 482 million committed for the period 2010–2012 was disbursed in 2013.

156. Norway’s international climate and forest initiative has, for example, provided in 2012, NOK 540,000 to Myanmar to finance a preliminary initiative that will form the basis of a future United Nations REDD programme in Myanmar.

157. Norway 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 meet the costs of adaptation to those adverse effects. During the review, Norway provided additional information, explaining that Norway is especially focusing on least developed countries, as well as small island developing States and countries that are heavily exposed to natural disasters associated with climate change (e.g. cyclones or flooding) or long-term impacts such as drought and food insecurity. For the period 2010–2013,

¹¹ In decision 1/CP.16, paragraph 70, the Conference of the Parties encouraged developing country Parties to contribute to mitigation actions in the forest sector by undertaking the following activities: reducing emissions from deforestation; reducing emissions from forest degradation; conservation of forest carbon stocks; sustainable management of forests; and enhancement of forest carbon stocks.

contributions to the Least Developed Countries Fund and the Special Climate Change Fund were USD 20 and 20.33 million, respectively.

158. With regard to support for adaptation, the areas where assistance has increased most are related to disaster risk reduction and food security. Developing countries in Africa received the largest share of this support, about 40 per cent of the total adaptation budget in 2012.

159. The ERT noted that, although adaptation to climate change is a priority for Norway's climate change related support, detailed information on assistance provided to developing country Parties in meeting the cost of adaptation is difficult to assess. The ERT therefore recommends that Norway enhance the transparency of its reporting on its assistance to developing countries in meeting the cost of adaptation in its next NC, by providing detailed information and by following the UNFCCC reporting guidelines on NCs more closely.

160. In its NC6, Norway reported on difficulties in quantifying the contribution to adaptation, stating that there is a clear need for better guidance on what to include under adaptation. During the review, Norway further elaborated that it proved difficult to accurately report values for adaptation due to lack of clear criteria for when a specific development assistance project should be counted as an adaptation project, although much effort is being put into work on this. Norway further explained that its approach in addressing adaptation to a changing climate is to aim at sustainable development that takes the environment, poverty reduction and economic development into account. Hence, adaptation efforts should be, to the extent possible, integrated into the development process. Norway further clarified, during the review, to prepare its experts for better understanding and for the use of the markers, and that the increase in funds used for disaster risk reduction adaptation projects during the period 2010–2012 gives an indication of a more conscious use of the adaptation policy marker when running projects.

161. The ERT noted Norway's efforts for providing clarity on the definition of contribution to adaptation, which is an important part of the NC, and has also noted its efforts for working towards better understanding and guidance on how to accurately report values for adaptation. The ERT encourages Norway to continue these efforts and to provide transparent information on the distinction between support provided for adaptation and mitigation, in its next NC.

162. In its NC6 and during the review, Norway elaborated that the core funding to multilateral organizations is not earmarked to target climate change mitigation or adaptation, as the main idea is to provide pooled, un-earmarked funding. Likewise, shares devoted to climate change mitigation and adaptation are not consistently reported on by the organizations.

163. Norway, in its NC6, provided some examples of its contribution to multilateral development institution with relevant adaptation projects, which include the World Bank, the Consultative Group on International Agricultural Research Global Crop Diversity Trust and the Global Framework for Climate Services (World Meteorological Organization).

164. Norway has provided information on its contribution to the supplementary funding to the secretariat for activities not covered by the core budget and for developing country participation in the process. The ERT noted that over the last few years, Norway has been one of the largest contributors in absolute figures. For the period 2010–2013, the actual contributions amounted to NOK 145 million.

165. With regard to the most recent financial contributions, Norway has referred in its NC6 to its contribution to fast-start finance and to its fast-start finance report, which was submitted to the secretariat in August 2013 but which has not indicated clear numbers. The

ERT noted that the reporting would benefit from additional information in this context and encourages Norway to provide clear information on this matter its next NC. Table 7 summarizes information on financial resources and technology transfer.

Table 7

Summary of information on financial resources and technology transfer for 2010–2012

(Millions of United States dollars)

<i>Allocation channel of public financial support</i>	<i>Years of disbursement</i>		
	<i>2010^a</i>	<i>2011</i>	<i>2012</i>
Official development assistance	4 372	4 756	4 753
Contributions through multilateral channels, including:	247.5	207.1	337.7
Contributions to the Global Environment Facility	9.05	18.97	18.29
Contributions through United Nations bodies	79.5	50.6	75.2
Contributions to the Green Climate Fund ^b			1.04
Contributions through bilateral and regional channels	229.4	350.3	513.2

Source: Updated information provided by Norway during the review.

^a The conversion rate used for 2010 is USD 1 = Norwegian kroner 6.0445.

^b Norway has so far contributed USD 1.037 million to the administrative budget of the Green Climate Fund, which covers the entire reporting period 2010–2012.

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

166. Norway has provided in its NC6 well-organized information on activities related to the transfer of technology and notable 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.

167. The NC6 does not include information required by the UNFCCC reporting guidelines on NCs by reporting activities related to technology transfer, including success and failure stories, using table 6 of the UNFCCC reporting guidelines on NCs. The ERT notes that as a result, specific required information was not reported with regard to years of operation, success factors, identification of technology transferred and any optional assessment of the impact of the project on the GHG emissions/sinks.

168. During the review, Norway provided additional information stating that table 6 has not been used as it would have increased the size of the document because the portfolio of projects is very large. During the review, Norway also referred to CTF table 8 of its first biennial report that contains relevant information. The ERT recommends that Norway, when reporting on technology transfer activities, follows the UNFCCC reporting guidelines on NCs more closely, by reporting activities related to technology transfer, providing information as required in table 6 of the reporting guidelines, including success and failure stories.

169. Norway has reported in its NC6 that its activities on technology transfer and capacity-building are framed within integral elements of its ODA, which considers transfer of technology and know-how, in order to promote development, availability and efficiency of energy, to be important. Norway has provided information on different programmes to transfer technology including: the Norwegian clean energy for development initiative, Energy+, International Renewable Energy Agency, INTPOW and EnDev. Norway further provided examples of its activities on financing access to technologies that include programmes which are focused on the area of renewable energy, especially hydropower,

and on improved utilization of petroleum resources. In addition, Norway pointed out its partnerships with other Parties, including developing country Parties, in projects pertaining to CCS.

170. In its NC6, Norway also included information on recipient countries and regions. For example, core recipient countries for the oil for development programme are: Angola, Bolivia, Ghana, Mozambique, South Sudan, Sudan, Timor-Leste and Uganda. In the period 2010–2012, Norway contributed NOK 767 million to oil for development.

171. Another example for technology transfer, highlighted in NC6, is the Norwegian clean energy for development initiative, where Norway contributes to the international transfer of energy-related technology by supporting investment in infrastructure and production capacity in the energy sector of developing countries, which mainly aims to facilitate access to energy in the targeted countries (listed in-process projects are in Mozambique, Nepal and Uganda).

172. Norway has reported a number of projects directed to promote, facilitate and finance transfer of technology and to support development and enhancement of endogenous capacities and technologies of developing countries. In that regard, Norway stated in its NC6 how it considers the endogenous capacities and technologies of developing countries by supporting investments in energy technologies that are given political priority by the recipient country and are economically viable and competitive. The ERT noted that Norway has also included examples of projects directed towards Parties other than Parties not included in Annex I to the Convention, but has not further explained how these projects contribute to fulfilling the required actions towards developing country needs.

173. The ERT noted, also due to the missing information as required in table 6 (see para. 167 above), that Norway has not identified specific steps that explain how the activities achieve their aim in most of the projects in developing countries.

174. The ERT recommends that Norway report transparently on relevant information in accordance with the UNFCCC reporting guidelines on NCs with regard to specific steps taken by governments to promote, facilitate and finance transfer of technology and to support development and enhancement of endogenous capacities and technologies of developing countries, in its next NC.

175. In its NC6, Norway has not reported on its activities for financing access by developing countries to ‘hard’ or ‘soft’ environmentally sound technologies. During the review, Norway provided additional information explaining that the Norwegian approach related to financing access to ‘soft’ and ‘hard’ technologies is an holistic one since both are closely related. Some of the programmes, such as oil for development, focusing more on ‘soft’ technologies and building government abilities to manage their natural resources, while other programmes focus on ‘hard’ technology after building ‘soft’ skills. The ERT recommends providing transparent information on specific activities for financing access by developing countries to ‘hard’ or ‘soft’ environmentally sound technologies in its next NC.

176. In its NC6, Norway reported on the significance of involving the private sector, but did not provide a clear distinction between activities undertaken by the public sector and those undertaken by the private sector or provide information on policies and actions put in place to encourage private sector activities. During the review, Norway provided additional information explaining that incentivizing the private sector is related to the country budget, and that while there are no specific policies or legislation to regulate private sector involvement, specific projects that include partnerships with developing countries do influence the private sector’s involvement to a significant extent.

177. Norway further provided additional information, clarifying that all programmes mentioned in the NC6 are supported by public money. At the same time, the projects might be directed at the private sector, with private sector investments in the recipient countries or in-kind public investments in recipient countries, not only as grants, but also as concessional loans and equities. Norfund's activities are mainly equities or equity financing, which, following the Organisation for Economic Co-operation and Development/Development Assistance Committee reporting directive, means that equities can be reported as ODA as long as the main criteria for foreign assistance are fulfilled. The ERT noted that providing this information in the next NC would contribute to enhancing the transparency of Norway's reporting on activities undertaken by the private sector, and recommends that Norway clearly distinguishes between activities undertaken by the public sector and those undertaken by the private sector in its next NC.

178. During the review, Norway provided additional information, elaborating in more detail, on capacity-building elements and has indicated that in general, Norway's development cooperation programmes contain elements of capacity-building, stating that preparedness is an integral part of receiving funding from Norway. For example, clean energy, CCS, climate smart agriculture and forest programmes contain major capacity-building components.

E. Vulnerability assessment, climate change impacts and adaptation measures

179. In its NC6, Norway has provided the required information on expected impacts of climate change in the country and on adaptation options, including: climate change projections and impacts on the Norwegian mainland; vulnerability to climate change of and expected impacts on biodiversity and natural ecosystems; vulnerability to climate change of and expected impacts on society; adaptation measures; and projected climate change, vulnerability to and impacts of climate change and adaptation measures in the Norwegian Arctic.

180. 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

<i>Vulnerable area</i>	<i>Examples/comments/adaptation measures reported</i>
Biodiversity and natural ecosystems	<p><i>Vulnerability:</i> some alpine and tundra species will have difficulties in finding new areas of habitat with suitable climates and may disappear</p> <p><i>Adaptation:</i> climate change adaptation is one of the elements of the management plans that are being drawn up for the protected areas in Svalbard; important measures have already been introduced in Svalbard in response to more accessible areas, for example, carrying heavy bunker oil is prohibited</p>
Coastal zones	<p><i>Vulnerability:</i> a combination of higher water temperature, eutrophication and sediment deposition may cause loss of sugar kelp forests (important as nursery areas for coastal cod and other species) from many coastal areas of Norway; ocean acidification resulting from increasing levels of CO₂ in the atmosphere is a concern for Norway's marine ecosystems and fisheries</p> <p><i>Adaptation:</i> the Ministry for Fisheries and Coastal Affairs has elaborated a climate strategy to maximize the ability of the coastal and fisheries administration to inter alia meet the challenges of climate change</p>

<i>Vulnerable area</i>	<i>Examples/comments/adaptation measures reported</i>
Human life and health	<p><i>Vulnerability:</i> the quality of drinking water may become poorer, increasing the risk of waterborne infections; the prevalence of communicable diseases may increase as conditions become more suitable for infective agents such as ticks and mosquitoes</p> <p><i>Adaptation:</i> a new Public Health Act was adopted in January 2012 that addresses climate change; a precautionary principle and emergency preparedness should be the basis for incorporating climate change into risk and vulnerability assessments and into emergency plans</p>

181. Compared to its NC5, more detailed information is provided in its NC6 on all aspects of Norway’s vulnerability assessment, climate change impacts and adaptation measures, especially with regard to adaptation measures taken or planned to be taken at different levels and by different stakeholders in Norway. In addition, information related to the Norwegian Arctic has been provided in a more systematic method in section 6.6 of the NC6.

182. Projections indicate warming in all parts of Norway and during all seasons. The annual mean temperature for Norway is estimated to increase by 3.4 (2.3–4.6) °C up to year 2100. The growing season is projected to increase by one to two months over large parts of the country. Annual precipitation averaged over the Norwegian mainland is projected to increase by 18 (5–31) per cent up to year 2100. The snow season is projected to become shorter throughout all of Norway towards the end of this century, with two to three months less per year for low-elevation areas. Medium climate projections for the period 2071–2100 indicate that 90 per cent of all the glaciers in Norway may melt completely, and 30–40 per cent of the total glaciated area may be gone by the year 2100.

183. In its NC6 Norway reported that in 2009, an independent review of Norway’s vulnerability to climate change was initiated, which resulted in the publication of the official Norwegian report (2010) *Adapting to a Changing Climate: Norway’s Vulnerability and the Need to Adapt to the Impacts of Climate Change*.¹² Following the official Norwegian report, the Ministry of Climate and Environment published, in May 2013, a white paper on climate change adaptation in Norway,¹³ focusing on the challenges associated with climate change and on how Norway can become more resilient in the face of climate change. Moreover, extensive targeted research relevant for climate change adaptation has been carried out. In 2013, climate research received NOK 400 million in funding, which was twice the amount of the public funds allocated in this regard in 2005.

F. Research and systematic observation

184. Norway has provided comprehensive information on its actions relating to research and systematic observation, and addressed both domestic and international activities, including the Global Climate Observing System (GCOS) and the IPCC. Furthermore, Norway has provided a summary of information on GCOS activities.

185. As part of the GCOS, the Norwegian Meteorological Institute operates 10 existing meteorological surface observing stations and 1 upper air station, which report to the World Meteorological Organization international data exchange according to standard procedures. The ERT acknowledged a number of large-scale and long-term projects, such as

¹² Available at http://www.regjeringen.no/pages/36782608/PDFS/NOU201020100010000EN_PDFS.pdf.

¹³ Available at <http://www.regjeringen.no/pages/38318903/PDFS/STM201220130033000DDDPDFS.pdf>.

NORKLIMA, KLIMAFORSK, POLARFORSKNING, ENERGIX and CLIMIT, which are important parts of Norway's climate change research.

186. The ERT noted that the Research Council of Norway, as the national strategic and funding agency for research activities and channelling nearly one third of Norway's public funding for research in 2012, plays an important role in supporting climate change research, both in terms of financial support and overall direction.

187. In Norway's NC6, it is reported that Norwegian climate researchers are active in international research cooperation, for example, under the Nordic framework programmes, EU framework programmes, initiatives and programmes related to the European research area and the new future earth initiative. International collaboration outside these frameworks is also important, and bottom-up international and bilateral cooperation is quite common. For instance, projects within the national climate research programme NORKLIMA (2004–2013) have included partners from 34 countries. The Research Council has several programmes to facilitate bilateral cooperation, two of which have been established to facilitate cooperation with China and India.

188. The ERT noted a new climate research programme, called KLIMAFORSK (2014–2023), being both a successor and an expansion of NORKLIMA (2004–2013) and having an annual budget of approximately NOK 130 million, was initiated at the end of 2013 with the aim of providing new, future-oriented knowledge of national and international significance.

189. The Research Council of Norway established a programme on polar research (POLARFORSKNING) in 2011 to help safeguard Norway's special responsibility for the research-based knowledge necessary for exercising policy, management and business activity in the polar regions. Within the polar research programme, it is estimated that approximately 80 per cent of the projects are within climate research.

190. In its NC6, Norway did not provide the following reporting element required by the UNFCCC reporting guidelines on NCs: action taken to support capacity-building in developing countries. The ERT recommends that Norway incorporate information on support provided for research and systematic observations related capacity-building in developing countries in its next NC.

191. The ERT also noted that information on the opportunities for and barriers to free and open international exchange of data and information and action taken to overcome barriers have not been included in the NC6. During the review, Norway provided additional information clarifying that all data generated by activities financed through public resources shall be made publicly available and all relevant data can be accessed for free. The ERT encourages Norway to provide this information in its next NC.

G. Education, training and public awareness

192. In the NC6, Norway has provided information on its actions relating to education, training and public awareness at both the domestic and international levels. Compared to the NC5, the Party provided more extensive information on Statistics Norway's role in promoting public awareness and inclusion of non-governmental organizations (NGOs) in the policymaking, but less information on actions relating to higher education.

193. Depending on the targeted audience, different agencies are in charge of the administration and organization of relevant education or training programmes. Awareness of issues related to sustainable development and climate change has long been embedded in the Norwegian system of education.

194. The curriculum for primary and secondary schools has recently been revised and strengthened with regard to sustainable development. Nature schoolbag is an initiative between the Ministry of Education and Research and the Ministry of Climate and Environment in order to better implement sustainable development into mainstream education at schools. Extensive support material has been developed to give teachers the best possible guidelines for their work in this area, in particular, through the Norwegian Environmental Education Network.

195. The Norwegian Ministry of Climate and Environment launched a public awareness campaign on climate change, Klimaløftet, in March 2007, with the aim of spreading information on climate issues. The campaign is in partnership with several stakeholders, such as enterprises and businesses, NGOs and the civil society, and the target groups are the general public and the 15–25 age group, in particular.

196. In its NC6, Norway reported information about the Environmental Information Act that entered into force on 1 January 2004. The act provides all citizens with a legal right to obtain environmental information, both from the public authorities and from public and private enterprises.

197. Statistics Norway annually compiles an air emissions inventory in close collaboration with the Norwegian Environment Agency. Statistics Norway publishes all statistics on its website. New statistics are analysed and presented as soon as they are published, and detailed figures are available to the public in an interactive database, free of charge.

198. The Centre for International Climate and Environmental Research, Oslo, is an independent research institute with a specific focus on climate change, and plays a key role in providing information about climate change and climate policy. It is a private, non-profit organization founded by the University of Oslo. Norway aims to achieve a high degree of transparency in environmental policymaking and implementation of regulations. Norwegian environmental authorities have a long tradition of including civil society in environmental policymaking. Norway provides annual financial support to a number of NGOs listed in the Government's annual budget. The Ministry of Climate and Environment also provides financial support for NGOs to participate in different international meetings. Norway also aims to involve NGOs in the preparations for such meetings, and to enable them to contribute actively during the meetings. NGOs have also been effectively influencing Norway's climate policymaking through various means.

199. The ERT noted that information on higher education on climate change is not presented in the NC6, although it was reported in the NC5. The ERT considers it useful for Norway to report in future NCs information on higher education on climate change.

200. During the review, representatives from environmental and business NGOs were invited to submit their views on their involvement in climate policymaking in Norway and on the current climate policies, as well as to learn about their involvement in the preparation of the NC6. The ERT noted that NGOs expressed strong willingness to be involved in the preparation process of NCs.

201. The ERT encourages Norway to report, if relevant, the extent of public participation in the preparation or domestic review of NCs, 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 (lead reviewers)

202. Supplementary information provided by Norway 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 sections in which this information is provided.

203. Norway has not reported the following elements of the supplementary information required under Article 7, paragraph 2, of the Kyoto Protocol: information on description of its national registry's capacity (see para. 40 above); information on any linkages between Norway's efforts regarding implementation of activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol and conservation of biodiversity and sustainable use of natural resources (see para. 47 above); and information on how it has taken into account the need for adequacy and predictability of its financial resources, in accordance with the implementation of Article 11 of the Kyoto Protocol (see para. 147 above). 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.

204. The ERT recommends that Norway include in its next NC: a description of its national registry's capacity; information on how the implementation of activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol also contributes to the conservation of biodiversity and sustainable use of natural resources (see paras. 47 and 48 above); and information on how it has taken into account the need for adequacy and predictability of its financial resources, in accordance with the implementation of Article 11 of the Kyoto Protocol (see para. 147 above).

Table 9

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

<i>Supplementary information</i>	<i>Reference to the sixth national communication</i>
National registry	Section 3.3
National system	Section 3.2
Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	Section 5.5
Policies and measures in accordance with Article 2	Section 4
Domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures	Section 4.2
Information under Article 10	Section 7
Financial resources	Sections 7.2, 7.3 and 7.4

B. Minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol (cross-cutting areas expert)

205. Norway 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 2014 annual submission. It has not reported, however, how it gives priority to the actions taken in cooperating in the technological development of non-energy uses of fossil fuels, and supporting developing country Parties to this end in implementing its commitments under Article 3, paragraph 14, of the Kyoto Protocol. During the review, Norway provided the ERT with additional information on how it strives to implement its commitments under Article 3, paragraph 1, of the Kyoto Protocol in such a way as to minimize adverse social, environmental and economic impacts on developing country Parties, particularly those identified in Article 4, paragraphs 8 and 9, of the Convention. The ERT considers the reported information to be transparent. The ERT commends Norway for the additional information provided and advises it to continue exploring and reporting on the adverse impacts of the response measures.

206. The 2014 and previous national inventory reports and the additional information provided during the review presented several initiatives of Norway aimed at minimizing adverse impacts, including: setting a price for GHG emissions through levies and participation in an emissions trading scheme; conducting CCS projects and disseminating information and lessons learned; cooperating with developing countries related to fossil fuels through the oil for development initiative, assisting developing Parties that are highly dependent on the export of fossil fuels in diversifying their economies; cooperating with developing countries related to renewable energy through the clean energy for development initiative; and initiating the international energy and climate initiative Energy+ to increase the use of renewable energy resources and energy efficiency in developing countries.

207. The ERT recommends that Norway report on how it gives priority to the actions taken in cooperating in the technological development of non-energy uses of fossil fuels and in supporting developing country Parties in implementing its commitments under Article 3, paragraph 14, of the Kyoto Protocol.

IV. Conclusions and recommendations

208. The ERT conducted a technical review of the information reported in the NC6 of Norway according to the UNFCCC reporting guidelines on NCs. The ERT concludes that the NC6 provides a good overview of the national climate policy of Norway. The information provided in the NC6 includes most elements of the supplementary information under Article 7 of the Kyoto Protocol, with the exception of information related to its national registry (see para. 40 above), PaMs in accordance with Article 2 (see para. 47 above) and financial resources (see para. 147 above).

209. Norway's total GHG emissions excluding LULUCF for 2012 increased by 4.6 per cent from 50,409.35 kt CO₂ eq in 1990 to 52,733.24 kt CO₂ eq in 2012, whereas total GHG emissions including net emissions or removals from LULUCF decreased by 35.3 per cent over the same period, from 40,262.41 kt CO₂ eq in 1990 to 26,055.57 kt CO₂ eq in 2012.

210. Emission increases were driven by growth in GDP and population, mainly owing to increasing emissions from energy industries (in particular, oil and gas extraction) by 102.9 per cent between 1990 and 2012 and transport (in particular, road transport, civil aviation and coastal traffic/fishing) by 36.6 per cent between 1990 and 2012. These factors outweighed improvements in the efficiency of energy use and technological developments. In recent years, after a peak in 2007, total GHG emissions have decreased (by 5.8 per cent in 2012 compared to 2007), mainly driven by decreasing emission trends in energy and industrial processes.

211. In the NC6, Norway presents GHG projections for the period 2012–2030 for a 'with measures' scenario. Total GHG emissions are projected to increase by 7.9 per cent from

1990 to 2020, and to decrease by 4 per cent from 2020 to 2030, to reach 52,200 kt CO₂ eq, a level that is 3.6 per cent above the 1990 level.

212. The Kyoto Protocol targets for Norway are, in relation to the 1990 level, to limit the growth in GHG emissions to 1.0 per cent during the first commitment period from 2008 to 2012 and to reduce emissions by 16.0 per cent during the second commitment period from 2013 to 2020. Thus, the reported data indicate that Norway does not expect to meet its Kyoto Protocol targets through domestic action only. Nevertheless, for the period between 2008 and 2012, the net import of quotas from the EU ETS is expected to exceed the gap between the total GHG emissions and the target under the Kyoto Protocol. The ERT noted that Norway is in a position to meet its Kyoto Protocol commitment for the period 2008–2012 without having to purchase additional Kyoto Protocol units.

213. For the second commitment period of the Kyoto Protocol, Norway is planning to use market-based mechanisms, either within the framework of the EU ETS or from other international mechanisms.

214. Norway's commitment under the Convention is to reduce its emissions by 30.0 per cent below the 1990 level by 2020. This target is consistent with the target for the second commitment period under the Kyoto Protocol. Norway has also reported domestic long-term targets, to achieve carbon neutrality by 2050. As part of an ambitious global climate agreement where other developed country Parties also undertake ambitious commitments, Norway aims at achieving carbon neutrality by 2030, meaning that it plans to commit to achieving emission reductions abroad equivalent to Norwegian emissions in 2030.

215. The NC6 contains information on how its use of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol is supplemental to domestic action. The effects of domestic actions are approximately estimated to be in the range 12,600–15,200 kt CO₂ eq in 2010 and in the range 17,100–20,100 kt CO₂ eq in 2020. The ERT noted that this will constitute the main part of the effort in reducing the emissions.

216. Norway 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. With its PaMs, Norway has advocated cost-effectiveness across emissions sources, sinks, sectors and GHGs, both domestically and internationally. Norway is giving high political attention to climate change, together with the comprehensive policymaking process put in place in Norway, which gives the Party a leading role in combating climate change. The ERT noted that the combination of the comprehensive coverage of sectors and the considerable level of taxation in Norway is unique in the world.

217. To assess whether additional PaMs would be necessary to achieve its medium- and long-term targets, in April 2012, Norway, as a follow-up to the Klimakur process 2008–2010, published a white paper with proposals to reinforce the domestic policy framework in order to meet the Norwegian emission targets. On this basis, a broad political agreement on Norway's climate policy was reached in June 2014. The ERT noted that Norway's PaMs have helped to restrain the growth in its emissions; however, the ERT could not assess whether the PaMs currently in place are sufficient to curb enough future growth in emissions in order to meet Norway's future emission reduction targets.

218. In its NC6, Norway has provided detailed information on its provision of financial resources related to the implementation of the Convention provided through bilateral, regional and other multilateral channels. Between 2010 and 2012, Norway provided financial resources related to climate change of a total of USD 1,092.9 million through bilateral and regional channels and a total of USD 792.3 million through multilateral channels to developing country Parties. The ERT noted that the share of climate-specific

support has increased between 2010 and 2012 from around 11 per cent of the total ODA in 2010 and around 18 per cent of the total ODA in 2012.

219. Norway has reported in its NC6 that its activities on technology transfer and capacity-building are framed within integral elements of its ODA, which considers transfer of technology and know-how, in order to promote development, availability and efficiency of energy, to be important.

220. The NC6 contains information on the expected impacts of climate change in Norway and on adaptation options, including: climate change projection and impacts on the Norwegian mainland; vulnerability to climate change of and expected impacts on biodiversity and natural ecosystems; vulnerability to climate change of and expected impacts on society; adaptation measures; and projected climate change, vulnerability to and impacts of climate change and adaptation measures in the Norwegian Arctic.

221. Norway has provided comprehensive information on its actions relating to research and systematic observation, and addressed both domestic and international activities.

222. Norway has also provided information on its actions relating to education, training and public awareness at both the domestic and international levels. Compared to the NC5, Norway has provided more extensive information on Statistics Norway's role in promoting public awareness and the inclusion of NGOs in the policymaking.

223. 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 Norway in its 2014 annual submission.

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

- (a) Improve the timeliness of its reporting by submitting its next NC on time, as required by the UNFCCC reporting guidelines on NCs (see para. 10 above);
- (b) Improve completeness of its reporting by including in the next NC the following:
 - (i) Information on the capacity of its national registries, as required by the UNFCCC reporting guidelines on NCs (see para. 41 above);
 - (ii) Information on legislative arrangements and administrative procedures which 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 contributes to the conservation of biodiversity and the sustainable use of natural resources (see para. 48 above);
 - (iii) Information on the total effect of its PaMs presented in terms of GHG emissions avoided or sequestered by gas, as required by the UNFCCC reporting guidelines on NCs (see para. 134 above);
 - (iv) Information on how it has taken into account the need for adequacy and predictability in the flow of financial resources (see para. 147 above);
 - (v) Information on activities related to technology transfer, including success and failure stories, as required in table 6 of the UNFCCC reporting guidelines on NCs (see para. 168 above);

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

- (vi) Information on support provided for research and systematic observation related capacity-building in developing countries (see para. 190 above);
- (vii) Improvements in the transparency and completeness of its reporting by including in its next annual submission information on how it gives priority to the actions taken in cooperating in the technological development of non-energy uses of fossil fuels and in supporting developing country Parties in implementing its commitments under Article 3, paragraph 14, of the Kyoto Protocol regarding the minimization of adverse impacts of response measures to climate change (see para. 207 above);
- (c) Improve the transparency of reporting by including in its next NC the following:
 - (i) Organization of the reporting of PaMs with a clear subdivision by gas for all sectors as required by the UNFCCC reporting guidelines on NCs (see para. 51 above);
 - (ii) More detailed information on any financial resources related to the implementation of the Convention provided through bilateral, regional and other multilateral channels, in particular, by using tables 4 and 5 as per the UNFCCC reporting guidelines on NCs (see para. 145 above);
 - (iii) More detailed information on its assistance to developing countries in meeting the cost of adaptation (see para. 159 above);
 - (iv) More detailed information on specific steps taken by governments to promote, facilitate and finance transfer of technology and to support development and enhancement of endogenous capacities and technologies of developing countries, in accordance with the UNFCCC reporting guidelines on NCs (see para. 174 above);
 - (v) More detailed information on specific activities for financing access by developing countries to 'hard' or 'soft' environmentally sound technologies (see para. 175 above);
 - (vi) More detailed information on activities undertaken by the private sector, by clearly distinguishing between activities undertaken by the public sector and those undertaken by the private sector (see para. 177 above).

V. Questions of implementation

225. 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

“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/NOR. Report of the individual review of the annual submission of Norway submitted in 2013. Available at <<http://unfccc.int/resource/docs/2014/arr/nor.pdf>>.

FCCC/IRR/2007/NOR. Report of the review of the initial report of the Kingdom of Norway. Available at <<http://unfccc.int/resource/docs/2007/irr/nor.pdf>>.

FCCC/IDR.5/NOR. Report of the in-depth review of the fifth national communication of Norway. Available at <<http://unfccc.int/resource/docs/2011/idr/nor05.pdf>>.

Sixth national communication of Norway. Available at
http://unfccc.int/files/national_reports/biennial_reports_and_iar/submitted_biennial_reports/application/pdf/nor_nc6_br1.pdf.

2013 GHG inventory submission of Norway. Available at
http://unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/nor-2013-nir-12apr.zip.

2014 GHG inventory submission of Norway. Available at
http://unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/nor-2014-nir-10apr.zip.

B. Additional information provided by the Party

Responses to questions during the review were received from Ms. Benedikte Wiig Sørensen (Ministry of Climate and Environment), including additional material on updated policies and measures, greenhouse gas projections, the national registry and recent climate policy developments in Norway. The following documents¹ were also provided by Norway:

Norwegian Ministry of Finance. 2009. *Long-term Perspectives for the Norwegian Economy*. White Paper, PM09, Oslo. Available at
https://www.regjeringen.no/globalassets/upload/fin/perspektiv_2009/engelsk_persp.pdf.

Norwegian Ministry of Finance. 2013. *Long-term Perspectives on the Norwegian Economy 2013 – a Summary*, White Paper, PM13, Oslo. Available at
https://www.regjeringen.no/en/dokumenter/meld.-st.-12-2012-2013/id714050/?docId=STM201220130012000ENGEPI&ch=1&q=®j_oss=10&ref=search&term=>.

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