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

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 Poland 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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Contents

		Paragraphs	*Page*
I.	Introduction and summary	1–12	3
	A. Introduction	1–6	3
	B. Summary	7–12	4
II.	Technical review of the reported information in the national communication and supplementary information under the Kyoto Protocol	13–141	6
	A. Information on greenhouse gas emissions and national circumstances relevant to greenhouse gas emissions and removals, including other elements related to the Kyoto Protocol	13–38	6
	B. Policies and measures, including those in accordance with Article 2 of the Kyoto Protocol	39–82	11
	C. Projections and the total effect of policies and measures, including information on supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol	83–115	20
	D. Provision of financial resources and technology transfer to developing country Parties, including information under Articles 10 and 11 of the Kyoto Protocol	116–122	27
	E. Vulnerability assessment, climate change impacts and adaptation measures	123–131	29
	F. Research and systematic observation	132–135	31
	G. Education, training and public awareness	136–141	31
III.	Summary of reviewed supplementary information under the Kyoto Protocol	142–145	32
	A. Overview of supplementary information under Article 7, paragraph 2, of the Kyoto Protocol	142–143	32
	B. Minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol	144–145	33
IV.	Conclusions and recommendations	146–159	34
V.	Questions of implementation	160	37
Annex			
	Documents and information used during the review		38

I. Introduction and summary

A. Introduction

1. For Poland, the Convention entered into force on 28 July 1994 and the Kyoto Protocol on 16 February 2005. Under the Convention, Poland made a commitment to contribute to the joint European Union (EU) economy-wide emission reduction target of a 20.0 per cent reduction in greenhouse gas (GHG) emissions by 2020 compared with the 1990 level.

2. Under the Kyoto Protocol, Poland committed itself to reducing its GHG emissions by 6.0 per cent compared with the base year[1] level during the first commitment period, from 2008 to 2012. For the second commitment period of the Kyoto Protocol, from 2013 to 2020, Poland committed to contributing to the joint EU efforts to reduce GHG emissions by 20.0 per cent below the base year level. Under the EU climate and energy package, this target will be met by the EU and its member States through a 21.0 per cent reduction, compared with 2005 levels, in GHG emissions from installations under the European Union Emissions Trading System (EU ETS) and a 10.0 per cent reduction, compared with 2005 levels, in GHG emissions in the sectors not included in the EU ETS (non-ETS). According to the EU effort-sharing decision (ESD) regarding the non-ETS target, Poland is to limit the growth in its GHG emissions from the non-ETS sectors to 14.0 per cent by 2020 compared with the 2005 level.

3. This report covers the in-country technical review of the sixth national communication (NC6) of Poland, 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).

4. The review took place from 8 to 13 September 2014 in Warsaw, Poland, and was conducted by the following team of nominated experts from the UNFCCC roster of experts: Mr. Amr Osama Abdel-Aziz (Egypt), Ms. Emily Massawa (Kenya), Mr. Mark Molnar (Hungary) and Ms. Karin Simonson (Canada). Ms. Massawa and Mr. Molnar were the lead reviewers. The review was coordinated by Ms. Barbara Muik and Mr. Nalin Srivastava (secretariat).

5. During the review, the expert review team (ERT) reviewed each section of the NC6. The ERT also reviewed the supplementary information provided by Poland 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 Poland in its 2013 annual submission and previous submissions and elaborated further in its 2014 annual submission under Article 7, paragraph 1, of the Kyoto Protocol.

[1] "Base year" refers to the base year under the Kyoto Protocol, which is 1988 for carbon dioxide, methane and nitrous oxide, and 1995 for perfluorocarbons, hydrofluorocarbons and sulphur hexafluoride. The base year emissions include emissions from sectors/source categories listed in Annex A to the Kyoto Protocol.

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

B. Summary

7. The ERT conducted a technical review of the information reported in the NC6 of Poland in accordance with the "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications" (hereinafter referred to as the UNFCCC reporting guidelines on NCs). As required by decision 15/CMP.1, supplementary information required under Article 7, paragraph 2, of the Kyoto Protocol[2] is provided in the NC6 (see para. 142 below). The supplementary information on the minimization of adverse impacts referred to in paragraph 5 above is partially complete and partially transparent.

8. Poland considered part of the recommendations provided in the report of the in-depth review of the fifth national communication (NC5) of Poland.[3] For example, the total effect of policies and measures (PaMs) was not provided, as requested in the previous review report. Reporting on development aid and assistance was provided, as requested in the previous review report, although Poland is not a Party included in Annex II to the Convention (i.e. it is not an Annex II Party). The ERT commended Poland for its improved reporting.

9. During the review, Poland provided additional information on the national circumstances, the total and individual effects of PaMs and their sectoral and gas-by-gas breakdown, projections and the methodology used to develop PaMs, financial resources and transfer of technology. Poland also provided further information on existing and planned PaMs.

1. Completeness and transparency of reporting

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

2. Timeliness

11. The NC6 was submitted on 7 February 2014, after the deadline of 1 January 2014 mandated by decision 9/CP.16. The ERT noted with concern the delay in the submission of the NC6.

3. Adherence to the reporting guidelines

12. The information reported by Poland 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/POL.

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

Sections of national communication	*Completeness*	*Transparency*	*Reference to paragraphs*	*Supplementary information under the Kyoto Protocol*	*Completeness*	*Transparency*	*Reference to paragraphs*
Executive summary	Complete	Transparent		National systems	Complete	Transparent	
National circumstances	Complete	Mostly transparent	14–16	National registries	Complete	Transparent	
Greenhouse gas inventory	Complete	Transparent		Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	Complete	Transparent	
Policies and measures (PaMs)	Mostly complete	Mostly transparent	41	PaMs in accordance with Article 2	Partially complete	Mostly transparent	78, 82
Projections and total effect of PaMs	Mostly complete	Mostly transparent	85–87	Domestic and regional programmes and/or arrangements and procedures	Partially complete	Mostly transparent	30–32
Vulnerability assessment, climate change impacts and adaptation measures	Complete	Mostly transparent	125, 131	Information under Article 10[b]	NA	NA	
Financial resources and transfer of technology[c]	NA	NA		Financial resources[c]	NA	NA	
Research and systematic observation	Mostly complete	Transparent	133	Minimization of adverse impacts in accordance with Article 3, paragraph 14	Complete	Transparent	
Education, training and public awareness	Complete	Transparent					

Abbreviation: NA = not applicable.

[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.

[c] Reporting on financial resources under the Kyoto Protocol is relevant for developed country Parties and other developed Parties that are included in Annex II to the Convention (Annex II Parties). As Poland is not an Annex II Party, it does not have an obligation to provide information on financial resources under Article 11 of the Kyoto Protocol, including on "new and additional" resources.

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, Poland has provided a 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. Under national circumstances, some key information relevant to GHG emissions and removals relating to the Party's government structure, population distribution, geography (including the location of Poland as a transit country), economic profile, national energy mix and role of renewable energy could be further elaborated in the NC6. In addition, the ERT noted that information on how the national circumstances and changes in the national circumstances affect GHG emissions and removals over time is not well elaborated in the report.

15. During the review, Poland provided additional information on the national circumstances, elaborating on the details of energy production from renewable sources and the transport sector and on how the national circumstances affect GHG emissions and removals.

16. The ERT recommends that Poland improve transparency by further elaborating in its next national communication (NC) on how the national circumstances affect GHG emissions and removals, and how the national circumstances and changes in the national circumstances affect GHG emissions and removals over time, in accordance with the information provided to the ERT during the review. Furthermore, Poland is encouraged to provide transparent information on its government structure, population (including population growth rates) and economic profile in its next NC.

17. Poland is a constitutional republic with a parliamentary and presidential system, with three branches of authority: the legislative, the executive and the judiciary. Executive power is exercised by the President and the Council of Ministers. The country is divided into 16 provinces (voivodeships), 317 rural counties (poviats), 66 urban counties (poviats) and 2,479 communes (gminas). Overall responsibility for climate change policy lies within the Ministry of the Environment, with the Institute of Environmental Protection – National Research Institute (IOŚ-PIB), whose organizational structure includes the National Centre for Emissions Management (KOBiZE), being responsible for GHG inventory preparation and coordination of the emissions trading scheme, and the Climate Protection Centre being responsible for the preparation of NCs and assessment of vulnerability to climate change.

18. In accordance with Article 4, paragraph 6, of the Convention and decision 9/CP.2, Poland, as a Party with an economy in transition, may use 1988 as its base year.

19. The ERT noted that during the period 1990–2012, Poland's population and gross domestic product (GDP) increased by 1.3 and 126.3 per cent, respectively, while GHG emissions per GDP and GHG emissions per capita decreased by 62.2 and 15.5 per cent, respectively. The main drivers of emission trends in Poland include the economic decline at

the end of the 1980s following the transition to a market economy, the effect of energy efficiency measures and the technological modernization of heavy industry. The ERT noted that, despite a continuous economic growth since 1990, Poland has managed to keep emissions well below 1990 levels and thus provides a good example of how Parties can successfully decouple economic growth from GHG emission growth. Table 2 illustrates the national circumstances of Poland by providing some indicators relevant to GHG emissions and removals.

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

	1990	*2000*	*2005*	*2010*	*2012*	*Change 1990–2012 (%)*	*Change 2011–2012 (%)*
Population (million)	38.03	38.26	38.17	38.51	38.54	1.3	0.0
GDP (2005 USD billion using PPP)	311.83	451.96	526.08	662.27	705.63	126.3	1.9
TPES (Mtoe)	103.11	89.12	92.44	100.62	97.85	–5.1	–3.3
GHG emissions without LULUCF (kt CO_2 eq)	466 371.96	396 103.65	398 827.04	407 474.65	399 267.97	–14.4	–1.6
GHG emissions with LULUCF (kt CO_2 eq)	440 865.48	365 503.64	353 943.04	378 320.68	367 413.33	–16.7	–0.7
GDP per capita (2005 USD thousand using PPP)	8.20	11.81	13.78	17.20	18.31	123.3	1.9
TPES per capita (toe)	2.71	2.33	2.42	2.61	2.54	–6.4	–3.3
GHG emissions per capita (t CO_2 eq)	12.26	10.35	10.45	10.58	10.36	–15.5	–1.6
GHG emissions per GDP unit (kg CO_2 eq per 2005 USD using PPP)	1.50	0.88	0.76	0.62	0.57	–62.2	–3.5

Sources: (1) GHG emission data: Poland's 2014 GHG inventory submission, version 1.3; (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

20. Poland has provided a summary of information on GHG emission trends for the period 1990–2011. This information is fully consistent with the 2013 national GHG inventory submission. Summary tables, including trend tables for emissions in carbon dioxide equivalent (CO_2 eq) (given in the common reporting format tables), are provided in an annex to the NC6. During the review, the ERT took note of the 2014 annual submission. The 2013 and 2014 submissions differ with regard to the emission levels for the period 1990–2011 owing to the update of the national GHG inventory in 2014 following the recommendations made by the ERT in 2013 and earlier. For example, for 2011, the total emissions in the 2014 submission were 0.3 per cent lower than those in the 2013 submission. Recalculations (methodological and activity data) were made in almost all sectors influencing small changes in the entire time series since 1988. The relevant information provided in the 2014 GHG inventory submission is reflected in this report.

21. Total GHG emissions[4] excluding emissions and removals from land use, land-use change and forestry (LULUCF) decreased by 14.4 per cent between 1990 and 2012 and by 29.9 per cent between 1988[5] and 2012, whereas total GHG emissions including net emissions or removals from LULUCF decreased by 16.7 per cent between 1990 and 2012 and by 34.0 per cent between 1988 and 2012.

22. With regard to emission trends by gas, carbon dioxide (CO_2) emissions decreased significantly over the period 1988–2012, by 31.6 per cent, owing to the significant drop in emissions during the transition to a market economy and the subsequent restructuring of the economy towards less energy-intensive industries and the gradual development of a dominant tertiary sector. Methane (CH_4) emissions decreased by 26.6 per cent over the same period, owing to the increased quality of waste management, reduced waste generation and decreased agricultural activity levels resulting from the economic decline. Nitrous oxide (N_2O) emissions decreased by 33.5 per cent over the same period owing to the reduction in fertilizer use stemming from decreasing agricultural activity levels. When compared with the 1995 levels, fluorinated gas (F-gas) emissions displayed a variable trend, hydrofluorocarbon (HFC) emissions increased by a factor of 37.5, perfluorocarbon (PFC) emissions decreased by 71.9 per cent and sulphur hexafluoride (SF_6) emissions increased by 37.8 per cent. 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.

23. During the review, Poland provided additional information, elaborating on emissions from agriculture, waste, transport, forestry and maritime sources. The information provided highlighted some of the important distinctive characteristics of the Polish car fleet and subsidies on liquefied petroleum gas and compressed natural gas for road uses, and helped to improve the transparency of the drivers of emission trends. Moreover, the change in the activity level of agricultural production was emphasized, together with waste generation, to provide a broader scope for understanding emission trends.

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

	GHG emissions (kt CO_2 eq)				*Change (%)*		*Share[a] by sector (%)*	
Sector	*1990*	*2000*	*2010*	*2012*	*1990–2012*	*2011–2012*	*1990*	*2012*
1. Energy	374 281.29	318 226.15	329 242.00	319 657.56	–14.6	–1.6	80.3	80.1
A1. Energy industries	235 819.15	177 435.95	172 853.18	169 603.08	–28.1	–3.0	50.6	42.5
A2. Manufacturing industries and construction	42 518.08	47 840.17	31 285.68	30 901.85	–27.3	–2.7	9.1	7.7
A3. Transport	20 575.29	27 676.65	47 675.90	46 824.53	127.6	–2.9	4.4	11.7
A4.–A5. Other	56 339.57	47 755.43	63 128.40	56 311.00	–0.1	2.4	12.1	14.1
B. Fugitive emissions	19 029.19	17 517.94	14 298.84	16 017.12	–15.8	7.8	4.1	4.0
2. Industrial processes	24 448.63	24 515.59	25 092.04	26 958.32	10.3	–3.0	5.2	6.8

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

[5] Base year of Poland.

Sector	GHG emissions (kt CO_2 eq)				Change (%)		Share[a] by sector (%)	
	1990	*2000*	*2010*	*2012*	*1990–2012*	*2011–2012*	*1990*	*2012*
3. Solvent and other product use	629.23	627.89	779.40	759.67	20.7	–3.4	0.1	0.2
4. Agriculture	54 327.99	37 355.29	37 078.80	36 653.86	–32.5	–1.8	11.6	9.2
5. LULUCF	–25 506.48	–30 600.01	–29 153.97	–31 854.64	24.9	–10.6	NA	NA
6. Waste	12 684.82	15 378.73	15 282.41	15 238.55	20.1	0.8	2.7	3.8
GHG total with LULUCF	**440 865.48**	**365 503.64**	**378 320.68**	**367 413.33**	**–16.7**	**–0.7**	**NA**	**NA**
GHG total without LULUCF	**466 371.96**	**396 103.65**	**407 474.65**	**399 267.97**	**–14.4**	**–1.6**	**100.0**	**100.0**

Source: Poland's 2014 GHG inventory submission, version 1.3 (for GHG emission data).

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

Abbreviations: 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

24. Poland provided in its NC6 a description of how its national system is performing the general and specific functions defined in the guidelines for national systems under Article 5, paragraph 1, of the Kyoto Protocol (decision 19/CMP.1). The description includes all 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 2013 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 the GHG inventory of Poland submitted in 2013.

25. During the review, Poland provided additional information on the national system, elaborating on the work of KOBiZE, which includes management of the national database on GHG emissions (both under the Convention and its Kyoto Protocol), including the development of methodologies for the calculation of emissions, emission factors, scenarios and projections of emissions, the review of approved joint implementation projects and administration of the EU ETS.

4. National registry

26. In its NC6, Poland 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 Poland submitted in 2013.

27. Poland described the changes, specifically due to the centralization of EU ETS operations into a single European Union registry operated by the European Commission and called the Consolidated System of European Union registries (CSEUR). CSEUR is a consolidated platform that implements the national registries in a consolidated manner and was developed together with the new EU registry.

28. The ERT commends Poland for providing complete and transparent information on the national registry. During the review, Poland elaborated further on the national registry's conformance to technical standards for data exchange as it connects to the international

transaction log directly, establishing a distinct and secure communication link through a consolidated communication channel (a virtual private network tunnel). The national registry guarantees confidentiality of data storage and protection against unauthorized manipulation.

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

29. Poland has reported in its NC6 information on domestic and regional programmes and/or legislative arrangements and procedures related to the Kyoto Protocol.

30. The NC6 does not include information required by the UNFCCC reporting guidelines on NCs on the procedures for addressing non-compliance related to domestic and regional legislative arrangements for the implementation of the Kyoto Protocol, or on provisions to make information on legislative arrangements and enforcement and administrative procedures publicly accessible.

31. During the review, Poland provided additional information, elaborating on measures under the Act on the System to Manage the Emissions of Greenhouse Gases and Other Substances to address non-compliance with emission reduction targets. The additional information provided outlined the procedures to be followed in the event that the national emission reduction target will not be met, including the preparation of a draft proposal for a national emission reduction plan specifying the substances and sectors covered by the plan and the scope of activities to be pursued in order to meet the target. The draft plan then has to be submitted for approval by the Ministry of the Environment, with the regulation to implement the plan to be passed by the Council of Ministers.

32. The ERT recommends that Poland, in order to enhance the transparency and increase the completeness of its reporting, provide information in its next NC on procedures for addressing cases of non-compliance under domestic law and on provisions to make information on legislative arrangements and enforcement and administrative procedures publicly accessible.

33. Implementation of the Kyoto Protocol in Poland is underpinned by the Act on the System to Manage the Emissions of Greenhouse Gases and Other Substances, which also regulates the functioning of the national system for GHG emissions management and the management of participation in the Kyoto Protocol mechanisms (i.e. joint implementation, the clean development mechanism and international emissions trading), including the functioning of the national registry and the national green investment scheme (GIS).

34. The national development strategy 2020 and the national development strategy for Poland 2030 provide the strategic basis for the development of the country. The basic government document that formulates the national environmental policy is the "strategy for energy security and environment", one of nine integrated development strategies. The strategy is aligned with the 2008 EU climate and energy package with its "20-20-20 in 2020" targets and its national implementation in Poland. The "national programme for the development of a low-emission economy" will be the executive programme of the "strategy for energy security and environment". The main aim of the programme is to integrate economic, social and environmental benefits in GHG mitigation activities through, inter alia, innovation and implementation of new technologies, lower energy intensities and job creation.

35. The Ministry of the Environment is responsible for the implementation of the Convention and its Kyoto Protocol, as well as the development of climate policy. The Ministry of the Environment collaborates with other ministries, most notably the Ministry of Economy, which is responsible for energy policy and industry and for international economic cooperation, the Ministry of Agriculture and Rural Areas, which oversees the

implementation of government policy in the fields of agriculture and rural areas, and the Ministry of Infrastructure and Development, which is responsible for transport and construction and for the management of resources from EU funds. In addition, the Ministry of the Environment engages research and development institutes, including the Institute of Environmental Protection – National Research Institute, the Forest Research Institute and the Institute of Meteorology and Water Management for implementing tasks mandated by the Convention and its Kyoto Protocol.

36. Poland participates in the Kyoto Protocol mechanisms. Participation in joint implementation projects is outlined in the national procedures included in the Act on the System to Manage the Emissions of Greenhouse Gases and Other Substances. Additionally, letters of endorsement and approval from the Minister of the Environment are required. The clean development mechanism is not currently used in Poland, but the Act on the System to Manage the Emissions of Greenhouse Gases and Other Substances stipulates that participation in the implementation of a clean development mechanism project requires the consent of the Minister of the Environment.

37. The Act on Air Emission Allowance Trading Scheme for Greenhouse Gases and Other Substances of April 2011 establishes the legal basis for Poland's participation in the EU ETS, which is also overseen by the Minister of the Environment. The Polish GIS guarantees that the proceeds of sales of assigned amount units will be allocated to objectives related to environmental protection and, in particular, to climate change mitigation and adaptation measures.

38. Poland provided a description of national legislative arrangements and administrative procedures that seek to ensure that the implementation of activities under Article 3, paragraph 3, and elected activities under Article 3, paragraph 4, of the Kyoto Protocol also contribute to the conservation of biodiversity and the sustainable use of natural resources. The Act on Forests of 28 September 1991 clarifies that the main responsibility for the implementation of forest policy rests with State Forests National Forest Holding and that forest management practices are guided by principles of protection, sustainable use and enhancement of forest resources. The national forest policy (adopted in April 1997) further outlines Poland's plans to increase national forest cover to 30 per cent by 2020 and to 33 per cent by 2050 through afforestation. In addition to increasing forest cover, the national programme for the augmentation of forest cover in Poland also aims to rehabilitate forest ecosystems and preserve biodiversity by promoting a sustainable, multifunctional forest. An annual report on the state of forests provides an update on the status of the afforestation programme, which is reviewed by the Ministry of the Environment and by Parliament.

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

39. Poland has provided in its NC6 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

40. In its NC6, Poland reported on its PaMs adopted, implemented and planned in achieving its commitments under the Convention. Poland provided information on PaMs by sector and by gas and a description of the principal PaMs. The NC6 contains, with a few exceptions, a set of PaMs similar to those in the NC5.

41. The NC6 includes some information on the effect of PaMs on long-term emission trends based on the results of studies conducted by McKinsey & Company and the Institute for Structural Research, which assessed the mitigation potential of various PaMs in 2030 and 2050, respectively. The report compiled by the Institute for Structural Research concluded that GHG emissions in Poland could be reduced by 55 per cent by 2050 at negative costs through the implementation of a range of PaMs. The ERT noted that this information relates to PaMs that could be implemented by Poland and thus does not fulfil the requirement of the UNFCCC reporting guidelines on NCs that Poland report 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. During the review, Poland clarified that cost–benefit analysis of the PaMs currently in place has not been carried out, and that the total impact of PaMs could not be estimated. The ERT therefore reiterates the recommendation made in the previous review report that Poland provide information related to the impact of its PaMs on long-term GHG emission trends in its next NC.

42. In its NC6, Poland 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 national, state, provincial, regional and local levels. Poland did not specifically indicate which PaMs were innovative and/or effectively replicable by other Parties. Poland reported on its policy context and national targets and objectives set to implement its commitments under the Convention.

43. During the review, Poland highlighted the Polish system of funds for environmental protection and water management via the National Fund for Environmental Protection and Water Management as a replicable and innovative example of financial leveraging to support the implementation of environmental projects. The ERT encourages Poland to include information on any PaMs it considers innovative and/or replicable in its next NC.

44. The NC6 does not include information required by the UNFCCC reporting guidelines on NCs on PaMs that could lead to higher emissions and the rationale for such PaMs. The ERT notes that this information was not provided in the NC5 either, and therefore reiterates its encouragement that Poland include this information in its next NC.

45. The NC6 does not include some information required by the UNFCCC reporting guidelines on NCs on individual PaMs, such as a complete, detailed description of each PaM, including its impact, the changes in activity levels, a description of the estimation methods used, the effect for individual years and a table describing cross-sectoral PaMs. During the review, Poland provided some additional information describing individual PaMs in greater detail (in tabular format), including the year of implementation and a textual description of cross-sectoral PaMs, including the EU ETS, GIS and National Fund for Environmental Protection and Water Management. The ERT encourages Poland to include, in its next NC, detailed information on each PaM, including information related to the changes in activity levels, a description of the estimation methods used, the effect for individual years and a table describing cross-sectoral PaMs.

46. The NC6 does not include information required by the UNFCCC reporting guidelines on NCs on the way in which progress made in relation to PaMs to mitigate GHG emissions is monitored and evaluated over time; on the relevant institutional arrangements; or on the costs of PaMs.

47. During the review, Poland provided additional information outlining the general processes for evaluating policies, programmes and projects, and clarified that comprehensive monitoring is only conducted for PaMs financed with public resources or EU funds. In the first stage of evaluation, PaMs undergo a strategic impact assessment that addresses potential socioeconomic and environmental consequences and recommends related monitoring indicators and a monitoring system; the second phase involves ongoing

monitoring to assess compliance with the approved programme; and the third phase involves ex post evaluation of objectives and results. A handbook for the evaluation of infrastructure projects has also been developed to facilitate monitoring and evaluation. The ERT encourages Poland to provide this information in its next NC.

48. During the review, Poland also explained that cost–benefit studies of PaMs currently in place have not been conducted. The ERT considers that Poland would benefit from putting in place institutional arrangements for regular monitoring of the impact of individual PaMs and conducting analysis on the costs of PaMs, as this would increase the reliability of its climate change policy, improve public awareness of the actions taken, provide a justification of the budgets allocated to specific PaMs and consequently lead to broader acceptance and support from all stakeholders. The ERT noted that this information was also not included in the NC5 and encourages Poland to include this information in its next NC.

49. The ERT commends Poland for responding to the recommendation of the ERT in its review of the NC5 by including in the NC6 information on steps taken to promote and/or implement any decisions by the International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO) in order to limit or reduce GHG emissions not controlled by the Montreal Protocol from aviation and marine bunker fuels.

2. Policy framework and cross-sectoral measures

50. The NC6 provides a description of the Party's overall climate change policy framework, which has been shaped by its national development strategy (see para. 34 above). The strategy is aligned with the 2008 EU climate and energy package, which provides the legal framework for climate change action in Poland.

51. According to the information provided in the NC6, Poland will achieve its national emission reduction target for the first commitment period of the Kyoto Protocol of a 6.0 per cent reduction over the period 2008–2012. For the second commitment period, the 2008 EU climate and energy package with its legislation on GHG emissions is central to providing the legislative framework to enable Poland to reach its targets at the EU and national levels. The EU aims to achieve its target of a 20.0 per cent GHG emission reduction for the period 2013–2020 by two pieces of complementary legislation: the reform of the EU ETS and the EU ESD.

52. Under the EU ETS, the EU as a whole has committed to reducing emissions from sectors falling under the EU ETS (namely, power generation and energy-intensive industries) by 21.0 per cent by 2020 compared with 2005 levels. Over 800 Polish installations are covered by the EU ETS and are thereby collectively responsible for about 51 per cent of national emissions. After the first two phases from 2005 to 2007 and from 2008 to 2012, the EU ETS has entered into its third phase (2013–2020), which has seen the widespread introduction of auctioning of the emissions quota instead of free allocation. For subsectors considered to be exposed to the risk of CO_2 leakage, allocation has been based on the use of best available technology benchmarks.

53. Under the EU ESD, EU emissions from sectors not covered under the EU ETS (namely, agriculture, transport, tertiary, small industry, waste and activities emitting F-gases) have to decrease by 10.0 per cent by 2020 compared with 2005 emission levels. For Poland, where the sectors concerned represent about 49 per cent of national emissions, the target is limiting the growth in its GHG emissions from the non-ETS sectors to 14 per cent by 2020 compared with the 2005 level.

54. In addition, the EU has set national renewable energy targets in a directive on the promotion of the use of energy from renewable sources. For Poland, a target for the share of energy from renewable sources in gross final consumption of energy of 15.0 per cent has

been set. The national action plan on energy from renewable sources, which was adopted in 2010, defines the measures that need to be taken in Poland to achieve this target.

55. In its NC6, Poland also describes its domestic energy legislation, the energy policy of Poland until 2030, adopted in 2009. The policy outlines Poland's energy priorities, including energy efficiency, energy security, diversification of electricity generation through nuclear power, development of renewable energy sources (RES), competitive fuel and energy markets, and reduced environmental impacts. Key targets related to this policy include zero-energy economic growth and reducing the energy intensity of the Polish economy to the level of the 15 member States that formed the European Community at the time of ratification of the Kyoto Protocol (EU-15). Additionally, the policy provides a forecast of fuel and energy demand and forms the basis of Poland's long-term emission projections. The policy is also linked to the national action plan on energy from renewable sources (see para. 54 above), as well as the executive action programme for 2009–2012, which provided for the implementation and monitoring of more than 300 energy-related actions.

56. In its NC6, Poland provided information on a variety of mechanisms to finance the implementation of mitigation actions. The National Fund for Environmental Protection and Water Management is the governmental agency that has managed public local and EU funds in the environmental protection sector since 1989. The National Fund is also the GIS operator and is thus responsible for managing the greening programme in its priority areas of promotion of energy efficiency, wider use of RES (including the necessary infrastructure) and sustainable development of urban transport. Support is provided through grants, loans, subsidies and investments. In addition, there are 16 voivodeship (regional) funds for environmental protection and water management in Poland that provide loans and grants for projects below EUR 25 million and are also funded with payments arising from environmental charges and fines.

57. Poland provided in its NC6 comprehensive information on PaMs, focusing primarily on those undertaken at the national level. Table 4 provides a summary of the reported information on the PaMs of Poland.

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

Sectors affected	*List of key policies and measures*	*Estimate of mitigation impact (kt CO_2 eq)*
Policy framework and cross-sectoral measures		
	National development strategy 2020, including the strategy for energy security and the environment	
	National programme for the development of a low-emission economy	
	National reform programme for the implementation of the European Union 2020 strategy	
	European Union climate and energy package, including the European Union Emissions Trading System and effort-sharing decision	
Energy	Energy policy of Poland until 2030 (currently being updated to 2050)	
	National green investment scheme	

Sectors affected	*List of key policies and measures*	*Estimate of mitigation impact (kt CO_2 eq)*
Energy supply	Industrial use of methane from mines for electricity and heat	265.32 (2010)
Renewable energy	National action plan on energy from renewable sources	
	Measures to increase the share of renewable energy sources; tax incentives; and a certification programme for companies using electricity from renewable energy sources	163.85
Energy efficiency	Cogeneration using combined heat and power	30.01
	Modernization of local heating networks	127.14
	Modernization of heat sources	96.60
Residential and commercial sectors	Implementation of new energy efficiency standards for buildings	
Transport	National transport policy 2006–2025	
	Transport development strategy until 2020	
	Measures to reduce exhaust emissions	3 246.50
Industrial processes	Measures to monitor and control fluorinated gases	
	Implementation of best available techniques/best environmental practices	
Agriculture	Rural development programme 2007–2013	
	Measure to ensure efficient use of fertilizers	
	Cultivation of high CO_2 sequestering crops	16.64 (2025)
	Improvements in animal feeding and feed management	2.90 (2025)
Forestry	Measures to prevent land-use change	
	Afforestation	
Waste management	National waste management plan 2014	
	Enhanced recycling of municipal waste	4 250.00
	Cogeneration using waste materials	271.00 (2010)
	Reduced landfilling of waste (including biodegradable waste)	345.00–728.00

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

3. Policies and measures in the energy sector

58. Between 1990 and 2012, GHG emissions from the energy sector decreased by 14.6 per cent from 374,281.29 to 319,657.56 kt CO_2 eq, or by 31.6 per cent, compared with the base year level (467,445.46 kt CO_2 eq), mainly owing to the transition to a market economy. The transition was accompanied by the rapid decommissioning of most of the polluting and energy-intensive heavy industries, which resulted in a sharp drop in emissions. Between 1988 and 2012, the emissions in all energy subsectors, except

transport, decreased by 34.2 per cent in energy industries, 43.2 per cent in industry, 47.8 per cent in other sectors, including residential and commercial sectors, and 31.5 per cent for fugitive emissions. Emissions from transport increased by 93.3 per cent owing to a continuous, strong increase in the number of passenger cars and the associated fossil fuel consumption.

59. ***Energy supply***. The NC6 states that existing forecasts of energy supply indicate that a shortfall in capacity may be experienced in the future, and that there is currently limited ability to import electricity from neighbouring countries to address this gap. Meanwhile, Poland has committed to reducing its GHG emissions, making it necessary to seek low-emission solutions. As a result, Poland is targeting its energy supply efforts at developing domestic capacity, increasing capacity to exchange electricity internationally and pursuing nuclear energy.

60. According to the NC6, primary energy consumption of coal for the generation of electricity has fallen slightly over the period 2008–2011 (from 55.2 per cent to 53.4 per cent), while consumption of natural gas has increased (from 3.0 per cent to 3.6 per cent). A substantial increase in RES is also indicated, with wind power increasing from 0.5 per cent in 2008 to 2.0 per cent in 2011. Poland has supported this shift towards an increasing use of RES because it not only reduces GHG emissions, but also ensures more stable energy supplies in the long term. The main goal of the national PaMs in this area is to ensure stable and reasonably priced fuel and energy supplies to meet national demand, while simultaneously diversifying the sources of oil, liquid and gaseous fuels. Forecasts indicate a growing need for electricity generating capacity and transmission. As a result, Poland has implemented measures to increase CH_4 recovery from coal mines, waste landfills, wastewater management sites and agricultural systems, as well as measures to stimulate the development of cogeneration, using CH_4 to produce electricity and heat.

61. ***Renewable energy sources***. The main RES policy is the long-term programme to promote biofuels or other renewable fuels for 2008–2014, which aims to support the production of alternative fuels and generate increased demand for them. The NC6 describes how Poland, in order to support the development of RES, initiated a system of "green certificates". The system requires purchasers of renewable energy to obtain certificates indicating the origin of the energy in exchange for tax incentives. The NC6 includes information on the number of installations using RES and their collective capacity, and indicates that the share of RES among primary energy carriers has increased from 3.4 per cent in 2008 to 4.6 per cent in 2011. Under the EU climate and energy package, Poland has committed to increase the share of energy from RES in gross final energy consumption to 15.0 per cent by 2020, compared to a share of 11.2 per cent in 2013.

62. ***Energy efficiency***. Despite improvements in energy efficiency over the past 10 years, the energy intensity of the Polish economy (calculated as total primary energy supply per unit of GDP) continues to be twice as high as the EU average. However, when analysing this indicator in terms of purchasing power parity, it becomes comparable to other EU countries in 2011. As a result, the NC6 explains that implementing measures to improve energy efficiency is a priority, given the objectives of maintaining zero-energy economic growth and fulfilling the commitment, under the EU climate and energy package, of improving the energy efficiency of the economy by 2016 to achieve energy savings of at least 9.0 per cent of the average annual national final energy consumption in the years 2001–2005, or to stabilize primary energy consumption so that the 2020 level is the same as the 2005 level.

63. PaMs aimed at improving energy efficiency include cogeneration and the modernization of local heating networks, heat sources, industrial installations and lighting systems. One of Poland's most significant PaMs in this area is the modernization of heat sources, which resulted in a near fivefold increase in estimated impacts on emissions over

the period 2010–2015 (from approximately 60 kt CO_2 eq to 287 kt CO_2 eq). Additionally, improvements to local heating networks resulted in a near doubling of the estimated impact on emissions between 2010 and 2015 (from approximately 85 kt CO_2 eq to 143 kt CO_2 eq).

64. ***Residential and commercial sectors***. The NC6 notes that the construction and housing sector has a high potential for cost-effective emission reductions in the long term. The NC6 notes that housing construction policy is decentralized and subject to decisions by local governments, but also states that through recent amendments to the legislation, including the introduction of gradually tightening requirements for thermal protection of buildings, additional emission reductions can be made in this area. One such example is Poland's objective that all new and newly renovated buildings be "near zero-energy" buildings by 2020. Poland has implemented a number of measures to reach this objective, including a system to assess the energy performance of buildings and the implementation of periodic inspections to determine compliance with the regulations.

65. ***Transport sector***. Poland's main objectives in the transport sector are to create an efficient system of transport connections by improving the connectivity of existing networks, improving the quality of the transport system and expanding the system in a sustainable manner. The main policy addressing transport in Poland is the national transport policy for 2006–2025, which reflects the transport objectives outlined in the national development strategy until 2020. In addition, Poland has committed to achieving a 10.0 per cent share of biofuels in the transport fuel market, as part of the EU climate and energy package.

66. The NC6 describes Poland's efforts to develop an efficient transport network by improving connections between major economic centres in Poland and the rest of Europe through an improved network of motorways, expressways and modern rail lines, thus improving public transport transit. Other PaMs include: measures to reduce vehicle exhaust emissions; measures to increase the share of alternative fuels in transport in line with the EU biofuel directive; measures to improve energy efficiency in rail, sea and air transport; and measures to encourage increased use of alternative transport, including cycling. As limited information was provided in the NC6 on the estimated impacts of transport sector PaMs, the ERT considers it difficult to assess Poland's progress in changing the long-term emission trends in this area.

67. ***Industrial sector***. The NC6 includes a brief overview of PaMs in the industrial sector, focusing on measures to improve the energy efficiency of industrial production, such as improvements in the technical standards of installations and equipment. Efforts to promote environmentally friendly practices and best available technologies have also been undertaken.

4. Policies and measures in other sectors

68. Between 1990 and 2012, GHG emissions from industrial processes (including solvent and other product use), agriculture and waste decreased by 13.8 per cent overall, or by 22.3 per cent when compared with the base year level, mainly owing to a decline in activity levels in agriculture. A relatively small growth in emissions from industrial processes was noted, as well as a relatively significant – although not in absolute numbers – growth in emissions from waste.

69. ***Industrial processes***. Between 1990 and 2012, GHG emissions from the industrial processes sector increased by 10.3 per cent, but decreased by 18.2 per cent when compared with the base year level. The time series show that the significant decrease in the 1990s was followed by a slow recovery in the last decade, mainly owing to the closure of old outdated industrial facilities and to the recovering industrial sector, building on new investments and modern, energy-efficient equipment.

70. The NC6 provides a very brief overview of Poland's main measures to reduce emissions from industrial processes. Measures include monitoring and analysis of the use of F-gases, creation of a database and register of F-gases and F-gas operators, and fines for products and equipment that introduce F-gases into the Polish market.

71. ***Agriculture***. Between 1990 and 2012, GHG emissions from the agriculture sector decreased by 32.5 per cent and by 34.2 per cent when compared with the base year level, mainly owing to the decline in agricultural output that the economic transition created. This was coupled with the loss of the traditional (Eastern Bloc) markets of agricultural products and only recently has a slow recovery begun. Major indicators of economic activity in these sectors show a sharp decrease, for example livestock numbers and nitrogen fertilizer use in agriculture.

72. The main PaMs in the agriculture sector are implemented under the EU Common Agricultural Policy and the rural development programme for 2007–2013. Key PaMs include measures to more effectively use fertilizers (including nitrogen fertilizers), energy production from biomass (including waste, liquid manure and solid manure), improvements in animal feeding techniques and feed management, afforestation of agricultural land and incentives to establish crops with high carbon sequestration potential.

73. ***LULUCF***. The LULUCF sector was a net sink of 31,854.64 kt CO_2 eq in Poland in 2012, and net GHG removals increased by 6,348.16 kt CO_2 eq since 1990 (18,857.38 kt CO_2 eq since the base year (1988)). The trend was mainly driven by the afforestation programme of the Polish State Forests; an additional, but less relevant, factor was the decline in agricultural activity levels.

74. The national programme for the augmentation of forest cover and the national forest policy are the key policies pertaining to forestry in Poland. Both policies place a strong emphasis on afforestation, with the objective of increasing national forest cover to 30.0 per cent by 2020 and 33.0 per cent by 2050. Additionally, measures are being implemented to diversify and rehabilitate single species tree stands to improve the overall ecosystem and to ensure that no more than 60 per cent of the annual increment is harvested.

75. ***Waste management***. Between 1990 and 2012, GHG emissions from the waste sector increased by 20.1 per cent and by 19.4 per cent when compared with the base year level, mainly driven by increasing living standards, consumption patterns approaching those of western European consumers and the increasing economic output of the economy (and the resulting per capita income growth) by the end of the last decade.

76. The main policy addressing the waste sector is the national waste management plan 2014, which outlines the necessary measures to establish integrated waste management in Poland. The plan, which was originally set to cover the period 2011–2014, has now been extended to cover the period until 2016. Poland's waste management objectives include achieving an increased level of recycling and reuse of municipal waste (including paper, metals, plastics and glass) to at least 50 per cent by weight, and an increased level of recycling, reuse and recovery of non-hazardous construction and demolition waste to at least 70 per cent by weight. Measures implemented to attain these targets include enhanced recycling of municipal waste, increased use of waste to generate heat and electricity, and the reduction of landfill waste.

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

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

78. However, Poland has not included in the NC6 information required by the UNFCCC reporting guidelines on NCs on PaMs implemented and/or further elaborated, as well as on cooperation with other Parties included in Annex I to the Convention (Annex I Parties) in achieving its quantified emission limitation and reduction commitment under Article 3 of the Kyoto Protocol, in order to promote sustainable development. During the review, Poland provided some additional information explaining that, as an EU member State, funding provided jointly assists in the promotion of sustainable development. The ERT recommends that Poland provide a complete response to this reporting requirement in its next NC.

79. The NC6 includes information on how Poland promotes and implements the ICAO/IMO decisions to limit emissions from aviation and marine bunker fuels. During the review, Poland provided additional information on the energy efficiency design index for newly built ships and the Single European Sky Initiative. The ERT commends Poland for responding to the recommendation made in the previous review report by providing information on this reporting item.

80. In its NC6, Poland did not report complete and transparent 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 the effects on international trade and social, environmental and economic impacts on other Parties, especially developing country Parties. There is a brief reference in the NC6 under the development cooperation and technology transfer chapter on minimization of adverse impacts, which describes the GreenEvo project and Poland's contribution to fast-start finance. The ERT noted that this information, although it provides the latest information, does not address all of the requirements under Article 2, paragraph 3, of the Kyoto Protocol. Further information on how Poland 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.

81. During the review, Poland further elaborated on its activities under the GreenEvo project, aiming to increase the efficiency of technology transfer from Poland through the identification of developing country needs, and on its cooperation with developing countries in general. The ERT noted that similar information was included in Poland's 2013 and 2014 annual submissions. However, in its 2012 annual submission, Poland provided information that addressed the minimization of adverse impacts in a more comprehensive way (see chapter III.B below).

82. The ERT notes that some PaMs described by the Party might have adverse effects on other countries; for example, targets related to renewable energy in final energy consumption and biofuel shares in transport fuels. The ERT noted that the Party could continue to explore the effects of its PaMs, and recommends that Poland provide complete and transparent 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, in its next NC.

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

83. The projections presented in the NC6 of Poland were based on the official energy policy of Poland. The figures included in the energy policy of Poland document[6] (appendix 2, "Projection of the demand for fuels and energy until 2030") thus had to be considered as mandatory milestones of the analysis by the Polish experts. The projections were based on the MAED[7] modelling methodology. Projections were made until 2030 and only a single scenario was submitted. On request from the ERT, the Party reported that a new modelling environment is being developed, including a large-scale computable general equilibrium (CGE) model (PLACE), sectoral submodels (e.g. PL-ENER) and microsimulations by the Centre for Climate Change Policy at the Institute of Environmental Protection – National Research Institute. However, no comprehensive updated forecasts were available at the time of the review.

1. Projections overview, methodology and key assumptions

84. The GHG emission projections provided by Poland in the NC6 include a 'with measures' scenario until 2030, presented relative to actual inventory data for 2011. Projections are presented on a sectoral basis, using the same sectoral categories used in the NC6 chapter on PaMs and on a gas-by-gas basis for the following GHGs: CO_2, CH_4, N_2O, PFCs, HFCs and SF_6. Projections are also provided in an aggregated format for each sector, as well as for a national total, using global warming potential values. Emission projections related to fuel sold to ships and aircraft engaged in international transport were reported separately and not included in the totals.

85. The NC6 does not include information required by the UNFCCC reporting guidelines on NCs on the total effect of PaMs outlined and discussed in the NC6 chapter on PaMs. Furthermore, the quantitative assessment of the mitigation impact of PaMs was not transparent to the ERT. Additionally, some lack of transparency was perceived regarding the inclusion of certain policies (e.g. the nuclear energy programme) in the 'with measures' scenario.

86. During the review, Poland provided additional information, elaborating on the methodology used for the macroeconomic forecast, the estimation of the mitigation impact of PaMs, the total effect of PaMs and the precise definition of the projection scenario. Poland also clarified the status of the nuclear energy programme, justifying its inclusion in the projection scenario. Additional information on the energy statistics, power-generating capacity enlargement and retirement, and forecasted modernization (and the respective mitigation impact) of maritime vessels was shared with the ERT.

87. The ERT recommends that Poland include an estimate of the total effect of PaMs in its next submission, for example by summarizing the expected effect of individual PaMs and taking into account the synergies and overlaps of PaMs. The ERT also recommends that Poland increase the transparency of its reporting by explicitly stating which PaMs are included in the projection scenario. The ERT noted that applying the modelling environment recently developed by the Centre for Climate Policy Analysis in IOŚ-PIB will improve the quality of the mitigation assessment of PaMs.

[6] Ministry of Economy. 2009. *Energy Policy of Poland until 2030*. Warsaw: MoE.
[7] Model for Analysis of Energy Demand.

88. The ERT reiterates its encouragement to Poland to provide projections of the indirect GHGs carbon monoxide, nitrogen oxides and non-methane volatile organic compounds or sulphur oxides in its next NC. The ERT also encourages Poland to provide in its next NC details on how the models and approaches used account for overlaps or synergies that may exist between different PaMs. The ERT further encourages Poland to develop a 'without measures' scenario and a 'with additional measures' scenario to provide the necessary benchmark for the 'with measures' scenario. Furthermore, the ERT highlights the importance of data exchange arrangements between the entity responsible for the assessment of PaMs and for GHG projections (KOBiZE) and other data-providing entities (ministries and institutions), and encourages Poland to ensure fluent and seamless data provision and exchange.

89. The only scenario developed and submitted in the NC6 of Poland is the 'with measures' scenario. It is based on the energy policy of Poland document (appendix 2, "Projection of the demand for fuels and energy until 2030"). In addition, further information on the expected production of industrial goods, agricultural production, quantities of waste generated, etc., arranged by year and by type of source, is used based on data provided by competent ministries. If no input data on activities were available, for some activities, average historical data for the period 2009–2011 were used from the national inventory of GHG emissions submitted in 2013. The ERT noted that this is justified by the insignificant share of these respective activities (fuels used, etc.) and the lack of any apparent trend thereof. The scenario includes the nuclear energy programme, considers the "20-20-20" energy efficiency and renewable energy goals of the EU and is based on activity data for various sectors. The ERT noted that the scenario includes those PaMs that are included in the official policy papers as an official requirement.

90. The ERT noted that due to the single scenario reported in the NC6, it is rather difficult to establish the robustness of the forecast. Furthermore, the projection included can also be considered as a target scenario, as it is based on the official energy policy of Poland, and not as the most likely scenario relying on existing measures, because in some areas, the separation of implemented, adopted and planned measures is not straightforward. The ERT encourages Poland to improve the transparency of reporting on its future projections by more clearly distinguishing between adopted, implemented and planned policies.

91. In the MAED model, the structure of the final energy consumption of the country is broken down in a consistent manner, subdividing the economy into major consuming sectors and subsectors; for example, agriculture, residential, transport, etc. Energy consumption in each subsector is disaggregated into a multitude of end-uses, for example space heating (services and residential), steam (industry), cooking (residential), motor fuels (transportation), etc. Following this, the set of social, economic and technical factors that influence each category of end-use energy demand is identified, development scenarios of social, economic and technical factors are constructed, and evaluation of the energy demand is performed resulting from each scenario.

92. A key input to the modelling is a robust macroeconomic forecast of technological changes in the future structure of the economy and other variables, such as population growth. The macroeconomic forecast was elaborated by the Institute for Market Economy Research and then corrected in accordance with the suggestions of the Ministry of Finance to include the impact of the global economic crisis. The macroeconomic forecast foresees robust development in all sectors of the economy until 2030, with some moderation in the last five years of the forecasting period.

93. Poland has reported a comparison of the projection results with the emission projections presented in the NC5, but has not reported on changes to the methodology compared with the NC5 and has not provided supporting documentation. The changes were not related to the methodology but rather to the assumptions made regarding the parametric

values used for forecasting. The main assumptions for the energy sector concerning fuel consumption in stationary sources remained the same in both of the NCs. The fuel consumption levels in the road transport sector were updated on the basis of a new study from 2012, increasing the forecasted GHG emissions in the energy sector. The higher levels of anticipated industrial production (including cement clinker, soda ash, ammonia, nitric acid, and iron and steel) caused enhanced emissions in the industrial processes sector, just as larger quantities of generated municipal waste raised the emissions in the waste sector compared with the NC5. An update of the livestock population in accordance with the present trends led to a reduction in projected GHG emissions in the agriculture sector for the period 2015−2020. The NC6 also extended projections for international bunker fuels and for the LULUCF sector to 2030. The projections for the LULUCF activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol were also updated.

94. Major variables for the modelling included economic growth, population growth, technological development and energy market data. As key assumptions, the major indicators and directives were used from the energy policy of Poland. The following main assumptions were thus considered: striving for zero growth of primary energy consumption; a permanent growth of the national economy's energy efficiency to the average of the EU-15; and the fulfilment of the requirements of the EU energy efficiency directive 2006/32/EC. A national plan for energy efficiency measures was prepared according to the requirements of the EU directive, indicating a cumulative reduction of final energy consumption by 53.5 TWh in 2016 (9 per cent of the average consumption in the years 2001–2006, excluding the energy consumed by installations covered by the EU ETS). Furthermore, details on energy efficiency improvements were provided by Poland during the review, outlining sectoral energy efficiency improvements until 2030.

95. Considering basic assumptions on GDP growth, an average annual increase of 5 per cent GDP (with slight variations) was assumed until 2030. In accordance with the anticipated requirements of the EU, it was assumed that the share of renewable energy in the final energy mix would grow to 15.0 per cent in 2020 and that a 10.0 per cent share of biofuels in the market of transport fuels would be achieved in the same year. In addition, it was assumed that forests would be protected against excessive biomass production and that farmland would be used in a sustainable manner to generate renewable energy, including biofuels, in order to prevent competition between renewable energy generation and agriculture. It was assumed that services would be the fastest growing sector of the economy in Poland in the period covered by the forecast, as its share in the value added would grow from 58.0 per cent in 2008 to 65.8 per cent in 2030. The share of industry in the value added was assumed to fall from 24.3 per cent in 2008 to 19.3 per cent in 2030. The shares of transport and construction would decrease slightly, while the share of agriculture would fall from 3.7 per cent to approximately 2.2 per cent. The projections in the NC6 consider the impact of the global economic crisis in the form of updated macroeconomic indicators. The Polish nuclear programme was considered in the calculations for nuclear energy.

96. Four basic scenarios were developed as variations of the 'with measures' scenario with different key assumptions, enabling the examination of the "strength" of the impacts of the individual input data and a clear presentation of the results of such impacts. "The shift from coal fuels to gas" scenario was based on the assumption that part of the hard coal and lignite equivalent to 500 PJ calorific value burned would be replaced by natural gas. As a result, total emissions would be 5.8 per cent lower in 2030. The "CO_2 reductions" scenario was based on the assumption that higher CO_2 emission allowance prices would force the highest emitters to introduce new technologies and systems designed to control air-pollutant emissions into the atmosphere. As a result, total emissions would be 4.1 per cent lower in 2030. The "GHG reductions" scenario was based on the assumptions that new energy production technologies would be introduced, such as extended nuclear capacities

for power generation, and also that carbon dioxide capture and storage technology would be implemented. As a result, total GHG emissions would be 3.9 per cent lower in 2030. The "Transport development" scenario was based on the assumption of a 20 per cent increase in mineral fuels in transport, which would lead to a 2.9 per cent increase in total emissions in 2030. Changes in the input parameters for the agriculture, LULUCF and waste sectors do not have such large impacts on the final results. The uncertainty analysis for the energy sector demonstrated the robustness of the results, as the deviation from the original forecast remained less than 6 per cent.

2. Results of projections

97. Overall, Poland's reported projections of total GHG emissions until 2020 show a decreasing trend that changes into an increasing trend after 2020, and results in projected emissions in 2030 that are around the level of the starting year of the projections. Total emissions in 2020 are expected to be at a level that is 19.0 per cent below the 1990 level in the 'with measures' scenario. For 2030, the difference decreases to 14.5 per cent below the 1990 level. The projected emission levels under the 'with measures' scenario and information on the Kyoto Protocol targets and quantified economy-wide emission reduction target are presented in table 5 and the figure.

98. For Poland, the Kyoto Protocol target for the first commitment period (2008–2012) is a 6.0 per cent reduction relative to the base year level. Based on its latest annual submission, Poland reduced its emissions during this period on average by approximately 28 per cent and activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol (afforestation and reforestation, deforestation and forest management) are expected to lead to the issuance of about 26 million removal units. Thus, Poland requires no extra effort to reach its target.

99. The overall target for the second commitment period (2013–2020) for the EU is a 20.0 per cent reduction compared with the base year level. The quantified economy-wide emission reduction target under the Convention is a joint target of a 20.0 per cent emission reduction by 2020 compared with 1990 levels for the EU and its 28 member States and Iceland. Poland will, as part of the EU, take on a quantified economy-wide emission reduction target to reduce its GHG emissions by 2020 to fulfil the overarching EU targets.

100. The EU aims to achieve its targets in the context of the climate and energy package, which stipulates an EU-wide target of a 21.0 per cent reduction between 2005 and 2020 for the EU ETS sectors, while under the EU ESD, the non-ETS sectors in Poland are allowed a 14.0 per cent increase by 2020 compared with 2005 levels (see also paras. 52 and 53 above). No quantitative economy-wide GHG emission reduction target for Poland for 2020 has yet been established. However, the Party informed the ERT during the review that the sum of the EU ETS and ESD targets would correspond to a reduction of approximately 5 per cent between 2005 and 2020 and to an absolute emission limit of 369,483.07 kt CO_2 eq. As the Party projects emissions of 377,655.28 kt CO_2 eq for 2020, this would indicate that the Party is not on track to achieve its target.

101. However, as the target under the EU ETS will have to be achieved by installations, if necessary with the acquirement of units, for Poland's achievement of the target, close monitoring of the non-ETS sectors is essential. According to information provided by the Party during the review, Poland can increase emissions under the EU ESD from 171,037.49 kt CO_2 eq in 2005 to 194,982.74 kt CO_2 eq in 2020. For 2012 and 2020, data on emissions from sectors not covered under the EU ETS were approximately estimated by the Party by applying the historical share (49 per cent) of ESD emissions in total emissions. According to this information, ESD emissions amounted to 202,631.69 kt CO_2 eq in 2012 and are projected to amount to 175,469.90 kt CO_2 eq in 2020. In addition, the Party explained that when summing up the projected emissions for the period 2013–2020 and comparing them

with the summed-up annual emission allocations for the non-ETS sectors, there is a surplus of 90,970.00 kt CO_2 eq. The ERT notes that the Party projects to achieve emission reductions for its non-ETS sectors below the target in 2020 and below the emission allocations for the period 2013–2020. This suggests that Poland is expected to meet its target under the 'with measures' scenario, although this assessment is very preliminary because it is based on the historical share of EU ETS and ESD emissions, which is likely to change.

102. The ERT welcomed the additional information provided by Poland during the review and encourages the Party to further improve completeness and transparency by providing a clear distinction in the projections between EU ETS and non-ETS sectors in its next submission.

103. On a gas-by-gas basis, Poland reported that CO_2 emissions in 2011 were 330,309.43 kt CO_2 eq. According to the projections, CO_2 emissions will decrease to 306,518.06 kt CO_2 eq in 2020 in the 'with measures' scenario and then increase again to 323,722.53 kt CO_2 eq in 2030, and continue to have the highest share in total emissions. Projected non-CO_2 emissions show a moderate increase in 2030. Poland's CH_4 emissions were 35,537.91 kt CO_2 eq in 2011 and are projected to decrease slightly to 35,516.85 kt CO_2 eq by 2020 and then increase to 36,692.06 kt CO_2 eq by 2030. N_2O emissions were 27,240.63 kt CO_2 eq in 2011 and are projected to increase to 27,526.86 kt CO_2 eq by 2020 and to 29,708.27 kt CO_2 eq by 2030. F-gas emissions were 6,301.58 kt CO_2 eq in 2011 and are projected to increase to 8,093.51 kt CO_2 eq by 2020 and 8,442.45 kt CO_2 eq by 2030 due to the projected increase in HFC emissions.

104. Emissions in the energy sector show an increasing trend. It was noted by the ERT that even the introduction of nuclear energy into the power sector will not result in a stabilization of emissions from energy use. In addition, in the projections, an increasing amount of fossil fuel consumption is forecasted in the power sector. The renewable energy sector's projected abatement potential is not transparently presented in the projections chapter of the NC6, and the ERT encourages Poland to further elaborate on its RES potential in its next submission. The share of emissions from the energy sector will decrease slightly from 80 per cent in 2012 to 77 per cent of the total in 2030.

105. Emissions from transport show an increasing tendency, and the share of emissions from this sector also shows an increasing trend since the transition to a market economy. Road transport and personal vehicles play a major role in this trend, and the share of emissions from transport in total emissions is projected to more than triple by the end of the projection period (2030) compared with the base year level (1988).

106. Emissions from industry are forecasted to decrease until 2020, but are projected to show an increase in the last five years of the forecasted period (until 2030), mainly due to the clinker and cement industry.

107. Trends in agriculture show a slow increase as the projected livestock figures are expected to rise. This is coupled with a slow increase in nitrogen fertilizer use. The ERT considers these assumptions plausible as the agricultural activity levels were at a much higher level before the economic transition, which created a structural break in agriculture. As a slow recovery is projected, this will result in a slow reversion to the 'business as usual' long-term trend. Poland does not have any planned measures or technical measures projected to balance this tendency.

108. The Party is encouraged to enhance the transparency of LULUCF modelling and forecasting. The ERT noticed that the forest management reference level value provided in Poland's 2011 submission for technical assessment differs significantly from the value indicated in the NC6. The Party explained that this is partially due to the recalculation of estimates and primarily due to the non-inclusion of emissions/removals assigned to the

harvested wood products pool. Owing to the scale of the difference, the ERT encourages Poland to enhance the transparency of its methodology applied to forest management emissions.

109. The ERT notes that meeting emission targets could be challenging for Poland due to the uncertainties associated with the assumptions underlying the scenarios (see paras. 90, 100 and 101 above). Primarily, the introduction of nuclear energy appears to be insufficient to satisfy the growing energy needs of the emerging economy, and an increase in the use of fossil fuels is projected. Moreover, the exploitation of RES seems to be quite conservative compared to their full potential in Poland. The transport sector appears to show a constant growth in emissions, and agriculture also slowly recovers from the decrease in its emissions during the economic transition, both resulting in potentially increasing emissions.

Table 5
Summary of greenhouse gas emission projections for Poland

	Greenhouse gas emissions (kt CO_2 eq per year)	*Changes in relation to the base year[a] level (%)*	*Changes in relation to the 1990 level (%)*
Kyoto Protocol base year[b]	563 442.77	NA	NA
Kyoto Protocol target for the first commitment period (2008–2012)	529 636.21	–6.0	NA
Kyoto Protocol target for the second commitment period (2013–2020)[c]	Not available yet		
Quantified economy-wide emission reduction target under the Convention[d]	Not available yet		
Inventory data 1990[e]	466 371.96	NA	NA
Inventory data 2012[e]	399 267.97	–29.1	–14.4
Average annual emissions for 2008–2012[e]	401 253.11	–28.8	–14.0
'With measures' projections for 2020[f]	377 655.28	–33.0	–19.0
'With measures' projections for 2030[f]	398 565.31	–29.3	–14.5

Abbreviation: NA = not applicable.

[a] "Base year" in this column refers to the base year used for the targets under the Kyoto Protocol, while for the target under the Convention it refers to the base year used for that target.

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

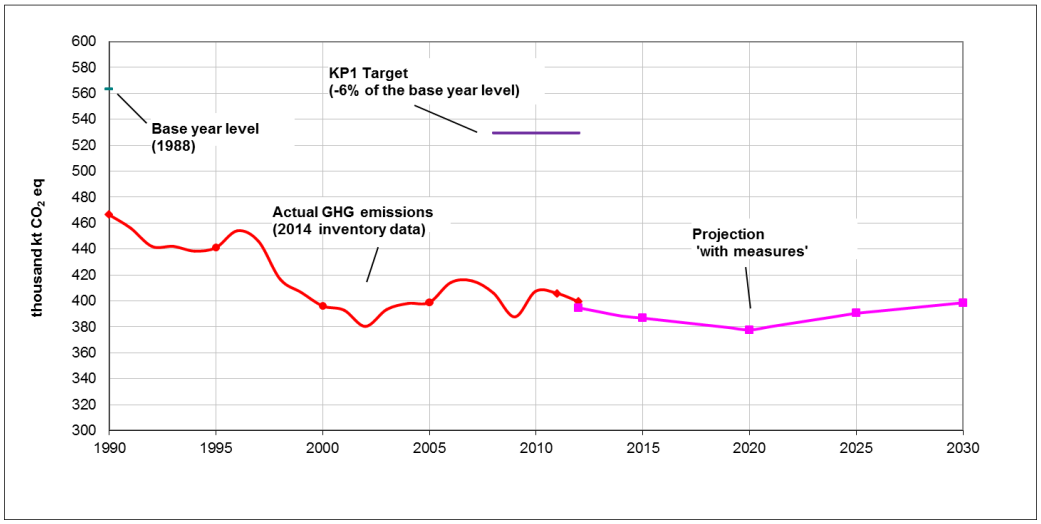
[c] The Kyoto Protocol target for the second commitment period (2013–2020) is a joint target for the European Union and its 28 member States and Iceland. The target is to reduce emissions by 20.0 per cent by 2020 compared with the base year (1990) level. The target for sectors not covered by the European Union Emissions Trading System for Poland under the European Union effort-sharing decision is +14 per cent by 2020 compared with the 2005 level.

[d] Quantified economy-wide emission reduction target under the Convention is a joint target for the European Union and its 28 member States. The target is to reduce emissions by 20.0 per cent by 2020 compared with the base year (1990) level.

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

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

Greenhouse gas emission projections



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

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

3. Total effect of policies and measures

110. The NC6 does not include complete and transparent information required by the UNFCCC reporting guidelines on NCs on the total effect of PaMs in accordance with the 'with measures' scenario definition and the subdivision of the effect of measures by gas. Additional information was provided by the Party during the review, including information on GHG emissions avoided or sequestered, by gas (on a CO_2 eq basis), in 2010, 2015, 2020 and 2025.

111. The ERT reiterates the recommendations made in the previous review report that Poland further improve completeness and transparency by indicating the expected total effect of its PaMs by gas and encourages the Party to also add a sectoral breakdown. During the review, the ERT was informed by the Party that the assessment of the effects of the individual PaMs was also not complete for several reasons: lack of data, lack of information provision from relevant institutions and agencies or lack of methodology to calculate these. The ERT noted the problems in the institutional arrangements and encourages Poland to improve the flow of information between the respective agencies to enable the provision of a more complete estimation of the total effect of PaMs.

112. During the review, Poland also presented relevant information on factors and activities for each sector for the years 1990–2030 and the methodology used in the calculation of the effects of individual measures. This additional information improved the transparency of the reported information. The ERT noted, however, that completeness and transparency could be further improved by providing further elaboration of the assessment of the effect of individual PaMs and encourages the Party to provide such information in its next NC.

113. Poland reported that the total estimated effects of adopted and implemented PaMs are 20,432.60, 26,364.35, 29,814.47 and 45,963.16 kt CO_2 eq for the years 2010, 2015, 2020 and 2025, respectively. According to the information reported in the NC6, PaMs implemented in the household sector will deliver the largest emission reductions, followed

by the effect of PaMs implemented in the transport and waste 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 Poland.

Table 6
Projected effects of planned, implemented and adopted policies and measures in 2020 and 2025

Sector	*Effect of implemented and adopted measures (kt CO_2 eq)*	*Relative value (% of 1990 emissions)*	*Effect of planned measures (kt CO_2 eq)*	*Relative value (% of 1990 emissions)*	*Effect of implemented and adopted measures (kt CO_2 eq)*	*Relative value (% of 1990 emissions)*	*Effect of planned measures (kt CO_2 eq)*	*Relative value (% of 1990 emissions)*
	2020				*2025*			
Energy (without transport)	16 417.59	5.0	NA	NA	16 491.39	4.7	NA	NA
Transport	8 982.89	44.0	NA	NA	12 433.53	60.4	NA	NA
Industrial processes	NA	NA	NA	NA	NA	NA	NA	NA
Agriculture	68.98	0.0	NA	NA	17 038.23	31.4	NA	NA
Land-use change and forestry	NA	NA	NA	NA	NA	NA	NA	NA
Waste management	4 345.00	34.0	NA	NA	NA	NA	NA	NA
Total	**29 814.47**	**6.0**	**NA**	**NA**	**45 963.16**	**9.9**	**NA**	**NA**

Source: Poland's sixth national communication and/or first biennial report and information provided during the review.
Note: The total effect of implemented and adopted policies and measures is defined as the sum of individual PaMs (as no 'without measures' scenario was developed). Energy includes measures in the construction and housing sector. Relative value is per cent value of the 1990 total.
Abbreviation: NA = not available.

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

114. Poland 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, although it did not elaborate on supplementarity as such. The ERT noted that Poland does not plan to use the market-based mechanisms to meet its Kyoto Protocol target.

115. Joint implementation was used for 19 projects, resulting in expected emission savings of 15,647.70 kt CO_2 eq. Poland is also actively involved in the EU ETS. The aggregate emissions of installations under the scope of the EU ETS amounted to 203,026,525.00 kt CO_2 eq in 2011.

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

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

117. Poland is not an Annex II Party and is thus not obliged to fulfil the commitments under Article 4, paragraphs 3, 4 and 5, of the Convention. However, as a member of the EU, Poland took on international commitments under development cooperation. The Party

therefore provided information on the support provided to developing countries through its international development cooperation agenda. In the period 2008–2011, the assistance granted through bilateral cooperation went to the countries of the Eastern Partnership, including Armenia, Azerbaijan, Belarus, Georgia, Republic of Moldova and Ukraine, as well as African countries (Angola, Cameroon, Congo, Ethiopia, Sudan and United Republic of Tanzania), Afghanistan and Palestine. The ERT commends the Party for providing such information in its NC6.

118. The activities in the scope of climate change were only a minor part of the total value of development cooperation carried out by Poland. In 2011, about 78 per cent of Polish official development assistance (ODA) was granted by multilateral channels, mainly through the contribution to the EU budget and the payment to the European development fund. A total of 22 per cent of Polish ODA was accounted for by bilateral aid, provided by institutions of the public finance sector, Polish diplomatic missions and non-governmental organizations (NGOs). Table 7 summarizes information on ODA as reported by Poland in its NC6.

119. In its NC6, Poland also provided information on provision of financial support to multilateral organizations, including the Multilateral Fund for the Implementation of the Montreal Protocol, the United Nations Environment Programme, the UNFCCC, the World Meteorological Organization, the United Nations Convention to Combat Desertification, the International Tropical Timber Organization and the International Renewable Energy Agency.

120. The ERT noted the discrepancies in information in the tables on resources provided under ODA in the NC6 and the first biennial report, and notes that this information could be reconciled. The Party may also wish to consider providing further information on:

(a) The assistance provided to vulnerable developing countries in meeting the costs of adaptation, not only in tabular but also in textual format;

(b) Distinguishing between activities undertaken by the public and private sectors;

(c) Activities for financing access by developing countries to 'hard' or 'soft' environmentally sound technologies, including enhancement of endogenous capacities and technologies of developing countries.

121. During the review, Poland provided additional information, elaborating on fast-start finance and the GreenEvo mechanism. Within fast-start finance, in 2010–2012, Poland mobilized EUR 12.75 million.

Table 7
Summary of information on total development assistance for 2008–2011
(millions of United States dollars)

Allocation channel of public financial support	*Years of disbursement*			
	2008	*2009*	*2010*	*2011*
Official development assistance	358	374	377	418
Multilateral assistance	274	270	281	330
Bilateral assistance	84	104	96	88

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

122. While Poland does not explicitly mention Article 10 of the Kyoto Protocol in its NC6, the Party has provided in its NC6 information on activities related to the transfer of

technology by the public and private sectors. During the review, Poland provided additional information on the GreenEvo project as part of the Party's activities related to technology transfer. A detailed review of the reported information is provided in chapter II.D.3 of the report of the technical review of the first biennial report (TRR/BR1).

E. Vulnerability assessment, climate change impacts and adaptation measures

123. In its NC6, Poland has provided the required information on the expected impacts of climate change and on strategies of adaptation measures to be adopted. The proposed adaptation measures cover the following sectors: water management, agriculture, spatial management, health care, urban areas, construction, transport, energy, coastal zones, biodiversity conservation, forestry and protection of monuments. However, it was not clear why these sectors were identified as vulnerable to the impacts of climate change and whether any indicators or criteria were used for their identification. The Party is encouraged to provide more transparency in its next submission to clarify these issues.

124. In its NC6, Poland has focused mainly on the observed patterns of climate change by detailing its expected impacts in specific sectors and Poland's vulnerability. Only general information was provided on adaptation. Compared with the NC5, there has not been any significant shift in focus of the information provided. Poland reported in the NC6 that the expected climate change impacts would directly or indirectly affect agriculture, forestry, water resources, coastal areas, energy, transport infrastructure, construction and building, biodiversity, health, food security and urban areas.

125. The NC6 stated that a list of adaptation measures was identified and included in different government strategies. However, no information was provided on specific adaptation measures in the NC6. The ERT recommends that the Party provide a more transparent outline of the action taken to implement Article 4, paragraph 1(b), of the Convention with regard to adaptation, by including information on adaptation measures in its next submission. The Party did not refer to any integrated plans for coastal zone management, water resources and agriculture. The Party is encouraged to provide an explanation of such plans in its next submission.

126. During the review, the Party informed the ERT that the national adaptation strategy until 2020 (NAS 2020) was finalized and adopted in October 2013 by the government. The ERT notes that the formal adoption of NAS 2020 occurred after the finalization of the NC6 and encourages the Party to report the main findings of the strategy in its next submission. The Party also informed the ERT about its nine medium-term national development strategies until 2020 and clarified that NAS 2020 is not listed with such strategies as it cross-cuts with most of them. The Party incorporated the direction of adaptation measures into the governmental strategies. The ERT commends the Party for such an approach and encourages Poland to formally mainstream NAS 2020 into the existing national development strategies.

127. Poland selected the Intergovernmental Panel on Climate Change (IPCC) *Special Report on Emissions Scenario* (SRES) scenario A1B for the assessment of climate impacts. However, the ERT noted that the reason for this selection was not transparently documented in the NC6. Moreover, it is not clear whether the models used in the analysis were validated and if an uncertainty analysis was conducted. The ERT notes that Poland may wish to provide more explanation of the reason behind the selection of the emissions scenario and how the models used were validated, and increase the transparency of the uncertainty analysis in its next submission.

128. In its NC6, the Party presented scenarios for water demand trends up to 2100. Scenarios for the trends of other environmental and socioeconomic factors, for example sea level rise and agricultural production, were not presented. The ERT notes that the Party may wish to include scenarios for such factors in its next submission.

129. During the review, the Party presented the ongoing efforts of the Ministry of Interior Affairs and the Ministry of Administration and Digitization for a crisis management system and reconstruction due to damages caused by natural disasters. The ERT commends the Party for such efforts, which constitute an important step in adaptation to the impacts of climate change. The ERT encourages the Party to continue its coordination with such ministries, especially during the implementation of NAS 2020 actions.

130. Table 8 summarizes the information on vulnerability to climate change presented in the NC6.

Table 8
Summary of information on vulnerability to climate change

Vulnerable area	*Examples/comments reported*
Agriculture	*Vulnerability*: diverse impacts, including positive effects owing to an extended period of agricultural productivity, a greater potential for thermophilous crop yields, longer growing season and increased net primary production; negative effects owing to decreased grazing; reduced herd productivity; decreased milk yield rate; increased cost of animal fodder
Biodiversity and natural ecosystems	*Vulnerability*: degradation of wetlands; intensification of migration of birds; vulnerability of marine and coastal habitats; vulnerability of plant species connected with water and wet habitats; endangered plants; vulnerability of bird species, especially those connected ecologically with river valleys, marshlands and peat-bogs; vulnerability of swamp forests because of lowering of groundwater
Coastal zones	*Vulnerability*: potential sea level rise and floods; increased frequency and intensity of storm floods and surges; coastal erosion; disturbance of ecosystems of national parks of unique natural value; loss related to the ecology of the Baltic sea
Forests	*Vulnerability*: changes in the biotic environment; loss of species in mountain ecosystems; soil degradation and erosion; reduction in genetic resources of flora and fauna; losses of biodiversity and natural landscape; changes in the natural limits of the range of the main tree species; severe drought; hurricanes; increase in insects and fungi
Human health	*Vulnerability*: risk of death or disease during heat waves; vulnerability of elderly and children; growth of number of death during cold waves; development of certain bacteria and pathogenic microorganisms in water
Infrastructure	*Vulnerability*: vulnerability of residential buildings in urban and rural areas to floods, inundation, snowfall and wind; vulnerability of roads and rail infrastructure to rain, flood and wind; vulnerability of airports to wind gusts and icing; vulnerability of inland water transport to floods
Water resources	*Vulnerability*: changes in the water balance (outflow and evaporation); changes in annual mean flows of rivers; falling trend of snow fall; growing trend in temperature in rivers; increased frequency of extreme hydrological events (droughts and floods)

131. In its NC6, the Party stated that the majority of activities financed by Poland were related to adaptation, including providing financing to Parties not included in Annex I to the Convention, for example to African countries (Angola, Cameroon, Congo, Ethiopia, Sudan and United Republic of Tanzania). However, details of such activities were not included. The ERT recommends that Poland provide a more transparent outline of the action taken to implement Article 4, paragraph 1(e), of the Convention with regard to adaptation, by including further information on such activities in its next submission.

F. Research and systematic observation

132. Poland has provided information on its actions relating to research and systematic observation, and addressed both domestic and international activities, including the World Climate Programme, the International Geosphere–Biosphere Programme, the Global Climate Observing System, the European Global Observing System and the IPCC. Furthermore, detailed information is provided in the NC6 on Poland's activities with respect to meteorological and atmospheric observation, oceanic observation, terrestrial observation and space-based observation programmes and the monitoring of GHGs.

133. In the previous review report, the ERT recommended that Poland provide, to the extent possible, information in its next NC on actions taken to support capacity-building in developing countries for research and systematic observation. However, in the NC6, such information is still not specifically reflected on actions taken to support such activities in developing countries. The ERT took note of the fact that Poland is a Party with an economy in transition, and may require additional capacity strengthening. Notwithstanding, the ERT reiterates the recommendation of the previous review report.

134. In Poland, 1,259 observation and measurement points exist within the framework of the global system of meteorological and climatic observation networks. The State Hydrological Meteorological Service at the Institute of Meteorology and Water Management – National Research Institute carries out the measurements in Poland.

135. A number of institutions and research organizations in Poland are engaged in research on climate change. Key research activities are focused on historical research on climate change, modelling climatic processes, development of climate change scenarios and climate change impact assessment. Moreover, several research projects in the area of adaptation have been finalized and several others are currently ongoing. The ERT commends Poland for the transparency of its reporting on research and systematic observation.

G. Education, training and public awareness

136. In the NC6, Poland has provided information on its actions relating to education, training and public awareness at both the domestic and the international levels.

137. The national strategy for environmental education covers individual age and vocational groups and sets out relevant tasks for the entities that carry out education and propose methods for its financing. The Ministry of National Education and the Ministry of the Environment are mainly responsible for environmental education, including education in the field of climate protection. The Act on the Education System states that the education system shall ensure the dissemination of the knowledge of sustainable development among children and the youth.

138. Several training programmes in the field of climate protection exist in Poland. These programmes are administered by different institutions; for example, the training courses organized in the field of sustainable development (in particular, energy savings) for

craftspersons within the framework of the EU Grundtvig programme. Training courses are also carried out for the representatives of local authorities and self-governments in the fields of air protection and sustainable development of cities. There are also training courses for farmers on good practices to minimize the adverse impacts of agricultural growth on GHGs and the use of renewable energy, administered by the Agricultural Extension Centre in Przysiek. Moreover, training courses addressing governmental representatives on the sustainable development of cities are organized within the framework of the project Green Cities – Towards the Future.

139. Different types of educational, promotional and information measures are also carried out by State administration institutions, scientific centres and NGOs. An example of such activities, which was conducted by the Ministry of the Environment, is the nationwide educational awareness campaign "We switch off electricity, we save energy" in 2012. The aim of the campaign was to raise awareness of climate change and GHG emission reductions. Another example of the involvement of NGOs is the Eco-teams programme initiated in Poland by the GAP Polska Foundation. As part of the programme, school teams are trained on ways of reducing energy consumption and adopting an environmentally friendly lifestyle.

140. In Poland, a network of regional environmental education centres exists, which is managed by local governments or NGOs and centres operating at national and landscape parks. These centres involve local communities and support diverse forms of activities, including regular classes, workshops for teachers or thematic competitions and campaigns.

141. In the review report of the NC5, the ERT encouraged the Party to provide more concise information on the engagement of stakeholders in the preparation of the NC. Such information was not provided in the NC6. However, during the review, the Party clarified that the draft report of the NC6 was formally sent to 45 NGOs, businesses and unions for comment. Moreover, the Party clarified that the report was published on the website of the Ministry of the Environment. The ERT commends the Party for conducting such processes and encourages Poland to provide explanations of such consultation processes in its next submission.

III. Summary of reviewed supplementary information under the Kyoto Protocol

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

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

143. The ERT noted that Poland could increase the completeness and transparency of its reporting on the following elements of the supplementary information required under Article 7, paragraph 2, of the Kyoto Protocol: PaMs in accordance with Article 2 of the Kyoto Protocol; information on what efforts Poland is making to implement PaMs in such a way as to minimize adverse effects, including the effects of climate change, effects on international trade, and social, environmental and economic impacts on other Parties, particularly those identified in Article 4, paragraphs 8 and 9, of the Convention; and the description of domestic and regional programmes and/or legislative arrangements and procedures related to the Kyoto Protocol. 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. The ERT recommends that Poland transparently include these reporting elements in its next NC.

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

Supplementary information	*Reference to the sixth national communication*
National registry	Chapter 3.6
National system	Chapter 3.5
Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	Chapter 4.9
Policies and measures in accordance with Article 2	Chapters 4 and 7.2
Domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures	Chapter 4
Information under Article 10	Chapters 3, 4, 6, 7, 8 and 9
Financial resources	Chapter 7

Note: Reporting on financial resources under the Kyoto Protocol is relevant for developed country Parties and other developed Parties that are included in Annex II to the Convention (Annex II Parties). As Poland is not an Annex II Party, it does not have an obligation to provide information on financial resources under Article 11 of the Kyoto Protocol, including on "new and additional" resources.

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

144. Poland 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, 2013 and 2012 annual submissions. Poland has not reported, however, how it gives priority to the actions taken to implement its commitments under Article 3, paragraph 14, of the Kyoto Protocol. During the review, Poland provided the ERT with the additional information on how it strives to implement its commitments under Article 3, paragraph 1, of the Kyoto Protocol in such a way as to minimize adverse social, environmental and economic impacts on developing country Parties, particularly those identified in Article 4, paragraphs 8 and 9, of the Convention. The ERT considers the reported information to be complete and transparent. The ERT noted that Poland could continue exploring the adverse impacts of its response measures and report on how it gives priority to the actions taken to minimize adverse impacts.

145. The 2013 and 2014 annual submissions include changes in the reporting with respect to the 2012 annual submission. The ERT noted that this is in line with the reporting requirements and considered the information provided in these three submissions during the review. Poland reported detailed information on how it is striving to meet its commitments under Article 3, paragraph 14, of the Kyoto Protocol, both at the national level and as an EU member State. The information addressed Poland's activities in global and regional cooperation and policy programmes, as well as bilateral collaboration with developing countries related to energy and research, including energy efficiency improvements and low-carbon technologies, and development of carbon dioxide capture and storage technologies and clean coal technologies. Information on provision of financial and other support, for example related to science and education, to developing countries was also

provided. In its latest submissions, Poland also provided updated information on its technology transfer activities, implemented through the GreenEvo project, on deployment of environmentally friendly technologies (performed under the GEKON programme) and on its support to developing countries through fast-start finance and bilateral cooperation projects.

IV. Conclusions and recommendations

146. The ERT conducted a technical review of the information reported in the NC6 of Poland according to the UNFCCC reporting guidelines on NCs. The ERT concludes that the NC6 provides a good overview of the national climate policy of Poland. The information provided in the NC6 includes most elements of the supplementary information under Article 7 of the Kyoto Protocol, with the exception of part of the information on PaMs in accordance with Article 2 of the Kyoto Protocol, and domestic and regional programmes and/or legislative arrangements and procedures. During the review, Poland provided additional information, to improve transparency, on its national circumstances, PaMs, projections, and vulnerability and adaptation measures.

147. Poland's emissions for 2012 were estimated to be 14.4 per cent below the 1990 level and 29.9 per cent below the base year level excluding LULUCF, and 16.7 per cent below the 1990 level and 34.0 per cent below the base year level including LULUCF. Emission decreases were driven by the economic decline at the end of the 1980s following the transition to a market economy. Furthermore, an important factor was the decoupling of economic growth from emissions through the restructuring and modernization of the economy. These factors were not outweighed by the economic growth. However, a rigid projected structure of energy supply relying on fossil fuel sources, despite the introduction of nuclear energy, means that in the next two decades, there will be a higher risk for a sharper increase in the emissions of Poland.

148. In the NC6, Poland presents GHG projections for the period 2012–2030. The projected reductions in GHG emissions under the 'with measures' scenario in relation to 1990 are 19.0 per cent in 2020 and 14.5 per cent in 2030.

149. Based on the comparison of the target and the average annual emissions for the first commitment period (2008–2012), Poland is in a position to meet its Kyoto Protocol target for the first commitment period (6.0 per cent reduction) by domestic action alone. The overall target for the second commitment period (2013–2020) for the EU is 20.0 per cent. The EU aims to achieve its targets in the context of the climate and energy package, which stipulates an EU-wide target of a 21.0 per cent reduction between 2005 and 2020 for the EU ETS sector, while under the EU ESD, the non-ETS sectors in Poland are allowed a 14.0 per cent increase by 2020 compared with the 2005 level. Considering that the target under the EU ETS will have to be achieved by installations, if necessary with the acquirement of units, close monitoring of the non-ETS sectors is essential for Poland's achievement of the target. Poland can increase emissions in the non-ETS sectors to 194,982.74 kt CO_2 eq in 2020 and projects that they will amount to 175,469.90 kt CO_2 eq in 2020. This suggests that Poland is expected to meet its target under the 'with measures' scenario, although this assessment is very preliminary because it is based on the historical share of EU ETS and ESD emissions, which is likely to change.

150. The NC6 contains information on how Poland's use of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol is supplemental to domestic action, although it did not elaborate on supplementarity as such. Poland is not planning to make use of the Kyoto Protocol mechanisms to meet its Kyoto Protocol target.

151. Poland's overall climate change policy framework has been shaped by its national development strategy. The strategy is aligned with the 2008 EU climate and energy package, which provides the legal framework for climate change action. Poland has to implement PaMs to achieve several EU targets for 2020, including the target under the EU ETS, the ESD (which regulates member State emissions that are not covered under the EU ETS) and the renewable energy target. At the national level, the main legislation is the energy policy of Poland until 2030, which outlines Poland's energy priorities, including energy efficiency, energy security, diversification of electricity generation through nuclear power, development of RES, competitive fuel and energy markets, and reduced environmental impacts. Key targets related to this policy include economic growth with no extra demand for primary energy (zero-energy economic growth) and reducing the energy intensity of the Polish economy to the level of the EU-15. Key policies in non-energy sectors are the rural development programme 2007–2013, the strategy for sustainable rural development, agriculture and fisheries, the national programme for the augmentation of forest cover, the national forest policy and the national waste management plan 2014.

152. In its climate policy, Poland continues to place emphasis on the construction and housing sector, as it has a high potential for cost-effective emission reductions in the long term. Key PaMs are related to "near zero-energy" building standards for construction, certificates for efficient energy performance of buildings, awareness campaigns on energy efficiency and incentives to promote thermo-modernization of buildings. With its measures to increase the share of renewable energy and measures to improve energy efficiency with the modernization of heating networks and sources and cogeneration (heat and power), Poland is pursuing its goal to ensure stable and reasonably priced fuel and energy supplies to meet national energy demand, while simultaneously diversifying the source fuels.

153. Poland is not an Annex II Party and therefore has no obligation to fulfil the commitments under Article 4, paragraphs 3, 4 and 5, of the Convention. However, as a member of the EU, Poland has taken on commitments on development cooperation. In the period 2008–2011, Poland granted assistance to countries of the Eastern Partnership, African countries, Afghanistan and Palestine related to capacity-building for adaptation in the agriculture and water sectors. Poland also provided contributions to multilateral organizations, including: the Multilateral Fund for the Implementation of the Montreal Protocol, the United Nations Environment Programme, the UNFCCC, the World Meteorological Organization, the United Nations Convention to Combat Desertification, the International Tropical Timber Organization and the International Renewable Energy Agency.

154. The description of climate change impacts, vulnerability and adaptation in the NC6 focused mainly on the impacts of climate change, and outlined vulnerability in specific sectors. Less emphasis was placed on the actions being taken to adapt to climate change. The key sectors vulnerable to climate change in Poland are water management, agriculture, coastal zones, forestry, health and biodiversity. While details on the sector-specific adaptation measures being implemented or planned are not outlined in the NC6, more details are available in the NAS 2020, which was finalized and adopted by the government in October 2013 after the completion of the NC6.

155. Poland's actions relating to research and systematic observation address both domestic and international activities, and involve meteorological and atmospheric, oceanic, terrestrial and space-based observations and the monitoring of GHGs. Key research activities are focused on historical research on climate change, modelling climatic processes, development of climate change scenarios and climate change impact assessment.

156. Poland provided comprehensive information on its education, training and public awareness activities in the NC6. Education is regulated under the curriculum for upbringing at kindergartens and general education in the individual school types. Climate change

educational and awareness-raising activities in Poland are undertaken at the primary, secondary and tertiary levels. Popular open lectures on the topic are given by selected universities in Poland, for example by the University Centre for Environmental Studies at Warsaw University and the Centre for the Study on Man and the Environment at the University of Silesia. These institutions are also involved in a number of public awareness-raising campaigns.

157. 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 Poland in its 2013 annual submission.

158. In the course of the review, the ERT formulated several recommendations relating to the completeness and transparency of Poland's reporting under the Convention and its Kyoto Protocol. The key recommendations[8] are that Poland:

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

(i) Domestic/regional programmes and/or legislative arrangements related to the Kyoto Protocol, in particular regarding procedures for addressing cases of non-compliance under domestic law and on provisions to make information on legislative arrangements and enforcement and administrative procedures publicly accessible;

(ii) PaMs under Article 2 of the Kyoto Protocol, in particular PaMs implemented and/or further elaborated, as well as cooperation with other Annex I Parties in achieving its quantified emission limitation and reduction commitment under Article 3 of the Kyoto Protocol, in order to promote sustainable development;

(iii) 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;

(iv) Total effect of PaMs by gas;

(v) Actions taken to support capacity-building for research and systematic observation in developing countries;

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

(i) How the national circumstances affect GHG emissions and removals, and how the national circumstances and changes in the national circumstances affect GHG emissions and removals over time;

(ii) How PaMs are modifying longer-term trends in GHG emissions and removals consistent with the objective of the Convention;

(iii) Explanations of which PaMs are included and how they have been considered in the projections;

(iv) An outline of the action taken to implement Article 4, paragraph 1(b) and (e) of the Convention with regard to adaptation, by including further information on adaptation measures and cooperation in preparing for adaptation.

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

159. The ERT encourages Poland to improve the transparency and completeness of its reporting; the most important of these are that Poland:

(a) Report quantitative estimates of the impacts of its individual PaMs in the various sectors;

(b) Describe the way in which progress with PaMs is monitored and evaluated over time, including the overall process for policy-setting with respect to the assessment of emission reduction potentials;

(c) Report details on how the models and approaches used for the projections account for overlaps or synergies that may exist between different PaMs;

(d) Provide more explanation of the reason behind the selection of the emissions scenarios for vulnerability assessment and how the models used were validated, and increase the transparency of the reporting on how the uncertainty analysis was performed.

V. Questions of implementation

160. 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 UNFCCC 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>.

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FCCC/ARR/2013/POL. Report of the individual review of the annual submission of Poland submitted in 2013. Available at <http://unfccc.int/resource/docs/2014/arr/pol.pdf>.

FCCC/IRR/2007/POL. Report of the review of the initial report of Poland. Available at <http://unfccc.int/resource/docs/2007/irr/pol.pdf>.

FCCC/IDR.5/POL. Report of the in-depth review of the fifth national communication of Poland. Available at <http://unfccc.int/documentation/documents/advanced_search/items/3594.php?rec=j&priref=600006435#beg>.

Sixth national communication of Poland. Available at <http://unfccc.int/files/national_reports/annex_i_natcom/submitted_natcom/application/pdf/pol_nc6.pdf>.

2013 GHG inventory submission of Poland. Available at <http://unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/pol-2013-nir-25may.zip>.

2014 GHG inventory submission of Poland. Available at <http://unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/pol-2014-nir-27may.zip>.

B. Additional information provided by the Party

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

Ministry of Economy. 2014. *Polish Nuclear Power Programme*. Warsaw: MoE.

McKinsey&Company. 2009. *Assessment of Greenhous Gas Emissions Abatament Potential in Poland by 2030*. McKinsey&Company.

Ministry of Economy. 2009. *Energy Policy of Poland until 2030*. Warsaw: MoE.

Centre For Climate Policy Analysis. 2014. *Economic effects of the proposed 2030 climate and energy policy framework on Poland and other EU regions- Results based on the PLACE global CGE model*. Warsaw: KOBiZE.

[1] Reproduced as received from the Party.