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Report on the technical review of the fourth biennial report of Poland

Developed country Parties were requested by decision 2/CP.17 to submit their fourth biennial report to the secretariat by 1 January 2020. This report presents the results of the technical review of the fourth biennial report 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". The review took place from 1 to 5 March 2021 remotely.

Contents

Abbreviations and acronyms

AEA	annual emission allocation
Annex II Party	Party included in Annex II to the Convention
AR	Assessment Report of the Intergovernmental Panel on Climate Change
BR	biennial report
CH_4	methane
CO_2	carbon dioxide
CO_2 eq	carbon dioxide equivalent
CTF	common tabular format
ERT	expert review team
ESD	European Union effort-sharing decision
ESR	European Union effort-sharing regulation
EU	European Union
EU ETS	European Union Emissions Trading System
F-gas	fluorinated gas
GHG	greenhouse gas
GWP	global warming potential
HFC	hydrofluorocarbon
IPPU	industrial processes and product use
LULUCF	land use, land-use change and forestry
MESSAGE-PL	Polish model for energy supply strategy alternatives and their general environmental impacts
NA	not applicable
NC	national communication
NE	not estimated
NECP	National Energy and Climate Plan
NF_3	nitrogen trifluoride
NO	not occurring
N_2O	nitrous oxide
PaMs	policies and measures
PFC	perfluorocarbon
RES	renewable energy source(s)
SF_6	sulfur hexafluoride
STEAM-PL	Polish set of tools for energy demand analysis and modelling
UNFCCC reporting guidelines on BRs	“UNFCCC biennial reporting guidelines for developed country Parties”
UNFCCC reporting guidelines on NCs	“Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications”
WAM	‘with additional measures’
WEM	‘with measures’
WOM	‘without measures’

I. Introduction and summary

A. Introduction

1. This is a report on the centralized technical review of the BR4[1] of Poland. The review was organized 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", particularly "Part IV: UNFCCC guidelines for the technical review of biennial reports from Parties included in Annex I to the Convention" (annex to decision 13/CP.20).

2. In accordance with the same decision, a draft version of this report was transmitted to the Government of Poland, which provided comments that were considered and incorporated, as appropriate, into this final version of the report.

3. The review was conducted together with the review of one other Party included in Annex I to the Convention from 1 to 5 March 2021 remotely[2] by the following team of nominated experts from the UNFCCC roster of experts: Aba Amissah Gyasi (Ghana), Violeta Hristova (Bulgaria), Adriano Santhiago de Oliveira (Brazil), Koen E. L. Smekens (Belgium), Despoina Maria Vlachaki (Greece) and Benon Bibbu Yassin (Malawi). Mr. Santhiago de Oliveira and Mr. Smekens were the lead reviewers. The review was coordinated by Karin Simonson and Sina Wartmann (secretariat).

B. Summary

4. The ERT conducted a technical review of the information reported in the BR4 of Poland in accordance with the UNFCCC reporting guidelines on BRs (annex I to decision 2/CP.17).

1. Timeliness

5. The BR4 was submitted on 12 February 2020, after the deadline of 1 January 2020 mandated by decision 2/CP.17. The BR4 CTF tables were also submitted on 12 February 2020.

6. Poland informed the secretariat on 6 November 2019 about its difficulties with making a timely submission. In accordance with decision 13/CP.20, a Party should inform the secretariat thereof by the due date of the submission in order to facilitate the arrangement of the review process. The ERT noted with great concern the delay in the submission and recommended that Poland make its next submission on time.

2. Completeness, transparency of reporting and adherence to the reporting guidelines

7. Issues and gaps identified by the ERT related to the reported information are presented in table 1. The information reported by Poland in its BR4 mostly adheres to the UNFCCC reporting guidelines on BRs.

Table 1
Summary of completeness and transparency of mandatory information reported by Poland in its fourth biennial report

Section of BR	*Completeness*	*Transparency*	*Reference to description of recommendation(s)*
GHG emissions and removals	Complete	Transparent	–

[1] The BR submission comprises the text of the report and the CTF tables, which are both subject to the technical review.

[2] Owing to the circumstances related to the coronavirus disease 2019, the technical review of the BR submitted by Poland had to be conducted remotely.

Section of BR	*Completeness*	*Transparency*	*Reference to description of recommendation(s)*
Quantified economy-wide emission reduction target and related assumptions, conditions and methodologies	Complete	Transparent	–
Progress in achievement of targets	Complete	Mostly transparent	Issue 1 in table 4 Issues 1–2 in table 6 Issue 2 in table 10
Provision of support to developing country Parties[a]	NA	NA	NA

Note: A list of recommendations pertaining to the completeness and transparency issues identified in this table is included in chap. III below. The assessment of completeness and transparency by the ERT in this table is based only on the "shall" reporting requirements.

[a] Poland is not an Annex II Party and is therefore not obliged to adopt measures and fulfil obligations defined in Article 4, paras. 3–5, of the Convention.

II. Technical review of the information reported in the fourth biennial report

A. Information on greenhouse gas emissions and removals related to the quantified economy-wide emission reduction target

1. Technical assessment of the reported information

8. Total GHG emissions[3] excluding emissions and removals from LULUCF decreased by 13.1 per cent between 1990 and 2018, whereas total GHG emissions including net emissions or removals from LULUCF decreased by 15.0 per cent over the same period. The overall decrease in GHG emissions was due to factors such as economic restructuring and the modernization of energy-intensive industrial processes in the early 1990s; stricter environmental policy, particularly following Poland's accession to the EU in 2004; and the economic downturn in the late 2000s. Between 1990 and 2018, emission reductions were observed across most sectors, including waste and agriculture (40.9 and 31.7 per cent, respectively) and energy (30.6 and 25.9 per cent for energy industries, and manufacturing industries and construction, respectively), although emissions from transportation and IPPU grew by 214.4 and 10.0 per cent, respectively. The increase in transport emissions was due to a substantial rise in fuel consumption in road transport following growing demand for greater mobility. The significant increase in emissions from this sector counteracted the emission decreases achieved in other sectors and led to a temporary increase in total GHG emissions between 2016 and 2017. The increase in emissions from the IPPU sector was mostly driven by product uses as substitutes for ozone-depleting substances: the level of related emissions was more than 24 times higher in 2018 compared with the level in 1995, when such emissions were first reported.

9. Table 2 illustrates the emission trends by sector and by gas for Poland. Note that information in this paragraph and table 2 is based on Poland's 2020 annual submission, version 1, which has not yet been subject to review. All emission data in subsequent chapters are based on Poland's BR4 CTF tables unless otherwise noted. The emissions reported in the 2020 annual submission differ from the data reported in CTF table 1, which are based on the 2019 annual submission.

[3] In this report, the term "total GHG emissions" refers to the aggregated national GHG emissions expressed in terms of CO_2 eq excluding LULUCF, unless otherwise specified.

Table 2
Greenhouse gas emissions by sector and by gas for Poland for 1990–2018

	GHG emissions (kt CO_2 eq)					*Change (%)*		*Share (%)*	
	1990	*2000*	*2010*	*2017*	*2018*	*1990–2018*	*2017–2018*	*1990*	*2018*
Sector									
1. Energy	382 412.46	322 255.63	342 037.42	342 866.38	342 087.58	–10.5	1.9	80.5	82.9
A1. Energy industries	235 394.54	176 706.12	173 696.68	165 402.41	163 363.77	–30.6	3.2	49.5	39.6
A2. Manufacturing industries and construction	42 836.33	45 969.87	29 623.94	31 143.90	31 727.90	–25.9	–1.8	9.0	7.7
A3. Transport	20 773.67	29 170.31	49 420.49	63 285.87	65 303.45	214.4	–1.8	4.4	15.8
A4. and A5. Other	56 922.17	48 905.46	67 356.07	58 738.80	57 683.59	1.3	–	12.0	14.0
B. Fugitive emissions from fuels	26 485.75	21 503.88	21 940.23	24 295.39	24 008.87	–9.4	–1.2	5.6	5.8
C. CO_2 transport and storage	NO	NO	NO	NO	NO	–	–	–	–
2. IPPU	22 621.18	23 168.85	24 151.31	26 117.58	24 891.89	10.0	–4.7	4.8	6.0
3. Agriculture	48 463.25	32 069.48	30 705.12	32 734.84	33 117.07	–31.7	1.2	10.2	8.0
4. LULUCF	–32 433.73	–37 066.37	–34 514.38	–36 870.46	–36 451.04	12.4	–1.1	NA	NA
5. Waste	21 583.41	18 455.91	16 032.47	12 960.57	12 759.83	–40.9	–1.5	4.5	3.1
6. Other[a]	NO	NO	NO	NO	NO	–	–	–	–
Gas[b]									
CO_2	376 546.52	317 338.03	334 606.78	337 340.42	337 705.74	–10.3	0.1	79.3	81.8
CH_4	69 796.96	53 096.75	51 156.13	49 237.84	48 753.22	–30.1	–1.0	14.7	11.8
N_2O	28 594.97	24 243.28	20 915.01	21 970.00	22 106.01	–22.7	0.6	6.0	5.4
HFCs	NO, NA	1 072.08	6 195.96	6 036.75	4 172.71	–	–30.9	–	1.0
PFCs	141.87	176.68	17.07	11.92	11.32	–92.0	–5.0	0.0	0.0
SF_6	NA, NO	23.07	35.37	82.43	107.37	–	30.3	–	0.0
NF_3	NA, NO	NA, NO	NA, NO	NO, NA	NO, NA	–	–	–	–
Total GHG emissions excluding LULUCF	**475 080.32**	**395 949.88**	**412 926.32**	**414 679.37**	**412 856.37**	**–13.1**	**–0.4**	**100.0**	**100.0**
Total GHG emissions including LULUCF	**442 646.59**	**358 883.51**	**378 411.95**	**377 808.91**	**376 405.33**	**–15.0**	**–0.4**	**–**	**–**

Source: GHG emission data: Poland's 2020 annual submission, version 1.

[a] Emissions and removals reported under the sector other (sector 6) are not included in the total GHG emissions. Poland reported emissions in the category other as "NO".

[b] Emissions by gas without LULUCF. The Party did not report indirect CO_2 emissions.

10. In brief, Poland's national inventory arrangements were established in accordance with the Act of 17 July 2009 on the System to Manage the Emissions of Greenhouse Gases and Other Substances.[4] The Act established the legal basis for managing the national cap on emissions of GHGs and other substances to ensure that Poland complies with its relevant EU and international commitments. The changes in these arrangements since the BR3 include the development of a national programme for the quality assurance/quality control of the GHG inventory, which includes an inventory improvement plan.

[4] Journal of Laws of Poland 2019, item 1447 as amended.

2. Assessment of adherence to the reporting guidelines

11. The ERT assessed the information reported in the BR4 of Poland and recognized that the reporting is complete, transparent and thus adhering to the UNFCCC reporting guidelines on BRs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

B. Quantified economy-wide emission reduction target and related assumptions, conditions and methodologies

1. Technical assessment of the reported information

12. For Poland the Convention entered into force on 26 October 1994. Under the Convention Poland committed to contributing to the achievement of the joint EU economy-wide emission reduction target of 20 per cent below the 1990 level by 2020.

13. The target for the EU and its member States is formalized in the EU 2020 climate and energy package. The legislative package regulates emissions of CO_2, CH_4, N_2O, HFCs, PFCs and SF_6 using GWP values from the AR4 to aggregate the GHG emissions of the EU until 2020. Emissions and removals from the LULUCF sector are not included in the quantified economy-wide emission reduction target under the Convention. The EU generally allows its member States to use units from the Kyoto Protocol mechanisms for compliance purposes, subject to a number of restrictions in terms of origin and type of project and up to an established limit. Operators and airline operators can use such units to fulfil their requirements under the EU ETS, and member States can use such units for their national ESD targets, within specific limitations.

14. The EU 2020 climate and energy package includes the EU ETS and the ESD (see paras. 26–27 below). The EU ETS covers mainly point emissions sources in the energy, industry and aviation sectors. An EU-wide emission cap has been put in place for 2013–2020 with the goal of reducing emissions by 21 per cent below the 2005 level by 2020. For 2030, a reduction target of 43 per cent below the 2005 level has been set for emissions covered by the EU ETS. Emissions from ESD sectors are regulated through member State specific targets that add up to a reduction at the EU level of 10 per cent below the 2005 level by 2020. The ESR, successor to the ESD, was adopted in 2018 with a target of reducing covered emissions by 30 per cent below the 2005 level by 2030.

15. The European Council endorsed in December 2019 the objective of making the EU climate-neutral by 2050. As part of the European Green Deal, the European Commission proposed in March 2020 to enshrine the 2050 climate-neutrality target in the first European Climate Law. The European Green Deal calls for increasing the ambition of the 2030 emission reduction target to at least 50 per cent below the 1990 level. Member States will set out any increased ambition in the update of their NECPs. The EU submitted its updated nationally determined contribution on 17 December 2020. The EU and its member States, acting jointly, are committed to a binding target to reduce net domestic GHG emissions by at least 55 per cent below the 1990 level by 2030. This new target will enable the EU to move towards a low-carbon economy, achieve climate neutrality by 2050 under the European Green Deal legislative package and implement its commitments under the Paris Agreement.

16. Poland has a national target of limiting its emission growth to 14 per cent above the 2005 level by 2020 for ESD sectors. This target has been translated into binding quantified AEAs for 2013–2020. Poland's AEAs change following a linear path from 193,642.82 kt CO_2 eq in 2013 to 205,181.20 kt CO_2 eq in 2020.[5] Under the ESR, Poland has a national target of reducing emissions from the covered sectors to 7 per cent below the 2005 level by 2030.

17. In addition to its ESD target, Poland committed to increasing the share of electricity generated from RES in final energy consumption to 15 per cent and the share of biofuels in the transport fuel market to 10 per cent, and to achieving a reduction in primary energy consumption of 13.6 Mtoe by 2020 under the legal and institutional instruments established

[5] According to the EU transaction log.

at the EU and national level to achieve the ESD target. In addition, Poland reported its longer-term target of reducing emissions by 40 per cent below the 1990 level by 2030, with associated targets of a 32 per cent share for RES and a 32.5 per cent increase in energy efficiency by 2030. Taking into account the increased level of ambition in the recently updated EU 2030 GHG emission reduction target (see para. 15 above), the EU-level EU ETS and ESR targets for 2030 are expected to be revised, along with the national targets for member States under the ESR.

18. During the review, Poland shared information on strategies, a number of which are still under development, for achieving its targets for 2030 and beyond. These include its draft hydrogen strategy, the Energy Policy of Poland until 2040, its draft long-term renovation strategy focusing on improving energy efficiency in the construction and buildings sector by 2030, and transport strategies targeting domestic aviation and rail infrastructure.

2. Assessment of adherence to the reporting guidelines

19. The ERT assessed the information reported in the BR4 of Poland and recognized that the reporting is complete, transparent and thus adhering to the UNFCCC reporting guidelines on BRs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

C. Progress made towards achievement of the quantified economy-wide emission reduction target

1. Mitigation actions and their effects

(a) Technical assessment of the reported information

20. Poland provided information on its package of PaMs implemented and adopted, by sector and by gas, in order to fulfil its commitments under the Convention. Poland reported on its policy context and legal and institutional arrangements in place for implementing its commitments and monitoring and evaluating the effectiveness of its PaMs.

21. Poland's set of PaMs is similar to that previously reported, with a few exceptions, such as some being added, withdrawn or replaced or having their title changed since the BR3. Poland also indicated that there have been no changes since its previous submission to its institutional, legal, administrative and procedural arrangements used for domestic compliance, monitoring, reporting, archiving of information and evaluation of progress towards its target. Poland's PaMs are monitored and evaluated pursuant to EU regulations and national laws under the national institutional arrangements established by the Act of 17 July 2009 (see para. 10 above).

22. In its reporting on its PaMs, Poland provided the estimated emission reduction impacts for many of its PaMs. Where estimated impacts were not provided, the Party supplied explanations specific to individual PaMs for the energy, transport and agriculture sectors. The Party explained that estimated impacts were not provided for those PaMs owing to lack of necessary data. Poland provided updated estimates (in relation to those in the BR3) for the EU ETS, and explained during the review that the updates were due to changes in methodology and constant improvements to data availability, quality and timeliness. A measure related to the use of coalbed CH_4 was recategorized as research and thus an estimate of impact was not provided.

23. Poland's self-assessment of compliance with its emission reduction targets includes annual monitoring by KOBiZE, the National Centre for Emissions Management, of emission levels, trends and projections with respect to the Party's AEAs. The Party's progress in the establishment of national rules for taking action against non-compliance includes the Act of 17 July 2009, which provides for corrective measures to be planned in case national targets are not met despite use of flexibility mechanisms. The plan for corrective measures must be approved by Poland's Council of Ministers before submission to the European Commission.

24. The key overarching related cross-sectoral policy in the EU is the 2020 climate and energy package, adopted in 2009, which includes the revised EU ETS and the ESD. The

package is supplemented by renewable energy and energy efficiency legislation and legislative proposals on the 2020 targets for CO_2 emissions from cars and vans, the carbon capture and storage directive, and the general programmes for environmental conservation, namely the 7th Environment Action Programme and the clean air policy package. The 2030 climate and energy framework, adopted in 2014, includes more ambitious targets that will be updated as part of the European Green Deal.

25. The achievement of the Energy Union objectives and targets is ensured through a combination of Energy Union initiatives and national policies set out in integrated NECPs. The NECPs are periodically updated to reflect changes to EU policy, such as the implementation of the European Green Deal. Poland's NECP specifies that its targets for 2030 include (1) reducing CO_2 emissions from ESR sectors by 7 per cent below the 2005 level; (2) reaching a 14 per cent share for RES in energy production and a 21–23 per cent share for RES in gross final energy consumption, accompanied by a 1.1 per cent annual average increase in use of RES in heating and cooling; and (3) increasing energy efficiency by 23 per cent and reducing primary energy consumption by 13.6 Mtoe compared with the reference values for 2007 from a European Commission forecast. Poland's key areas for action include decarbonization, energy security, energy efficiency, the domestic energy market, and research, innovation and competitiveness.

26. In operation since 2005, the EU ETS is a cap-and-trade system that covers all significant energy-intensive installations (mainly large point emissions sources such as power plants and industrial facilities), which produce 40–45 per cent of the GHG emissions of the EU. It is expected that the EU ETS will guarantee that the 2020 and 2030 targets (a 21 and 43 per cent emission reduction below the 2005 level, respectively) will be achieved for sectors under the scheme. The third phase of the EU ETS started in 2013 and the system now includes aircraft operations (since 2012) as well as N_2O emissions from chemical industry, PFC emissions from aluminium production and CO_2 emissions from some industrial processes that were not covered in the previous phases of the EU ETS (since 2013). Auctioning is the default method for allocating allowances; however, harmonized rules for free allocations, based on benchmark values achieved by the most efficient 10 per cent of installations, are still in place as a safeguard for the international competitiveness of industrial sectors at risk of carbon leakage.

27. The ESD became operational in 2013 and covers transport (excluding domestic and international aviation, and international maritime transport), residential and commercial buildings, agriculture and waste, together accounting for 55–60 per cent of the GHG emissions of the EU. The ESD includes binding annual targets for each member State for 2013–2020. The ESR sets national emission reduction targets for 2030 ranging from 0 to 40 per cent below the 2005 level, and trajectories with annual limits for 2021–2030, for all member States, and keeps many of the flexibilities of the ESD.

28. Poland introduced national-level policies to achieve its targets under the ESD and domestic emission reduction targets. The key policies reported are the Energy Security and Environment Strategy and the Operational Programme Infrastructure and Environment (2014–2020). Of the measures introduced under these policies, the mitigation effect of a group of measures aimed at improving energy efficiency is the most significant. These measures aim to reduce the energy intensity of the country's economy through investment in the private sector, the heating sector and end-use of energy, including in relation to thermal modernization in construction and fuel efficiency in transport and projects encouraging rational energy use among end users. Other policies that have delivered significant emission reductions include the implementation of a group of measures promoting a higher share of RES in energy generation, which includes grants, loans, reliefs and subsidies, and a group of measures targeting the development and promotion of environmentally friendly solutions in urban transport.

29. Poland did not include information in its BR4 on planned national-level action owing to lack of precise information at the time of reporting. However, during the review, Poland highlighted the domestic mitigation actions that are under development, such as those set out in the Energy Policy of Poland until 2040: establishing a low-emission energy system (adopted on 2 February 2021) and banning use of granulated urea in 2021 (adopted on 7 May 2020). Another recently adopted action (on 13 January 2021) is promoting offshore wind

farms for electricity generation. Table 3 provides a summary of the reported information on the PaMs of Poland.

Table 3
Summary of information on policies and measures reported by Poland

Sector	*Key PaMs*	*Estimate of mitigation impact in 2020 (kt CO_2 eq)*	*Estimate of mitigation impact in 2030 (kt CO_2 eq)*
Policy framework and cross-sectoral measures	EU ETS	25 819.85	NE
	Emission reductions in sectors not covered by the EU ETS (ESD)	NE	NE
Energy			
Energy efficiency	Improving energy efficiency (group of measures)	54 093.46	NE
Energy supply and renewables	Developing RES (group of measures)	32 514.48	NE
Transport	Urban transport package (group of measures)	29 373.00	71.00
Agriculture/LULUCF	Rational management of agricultural and forest land	NE	NE
Agriculture	Supporting adaptation and mitigation measures in agricultural holdings	NE	NE
	Agro-environmental measures	NE	NE
Waste	Modern principles of waste management (group of measures)[a]	4 140.30	5 207.90

Note: The estimates of mitigation impact are estimates of emissions of CO_2 eq avoided in a given year as a result of the implementation of mitigation actions.

[a] The key measures include increasing recycling and waste incineration processes and reducing the quantities of municipal waste deposited in landfills.

(b) Policies and measures in the energy sector

30. **Energy efficiency.** The Energy Policy of Poland, which, at the time of the review, was being updated with a view to 2040, is the main long-term strategy for developing the energy sector in order to achieve energy security, increase energy efficiency and mitigate environmental impacts. The main piece of legislation on energy efficiency is the Fourth National Energy Efficiency Action Plan for Poland (adopted in 2018), which covers an array of measures targeting different users in different sectors of the economy. Energy efficiency PaMs targeting individual sectors are discussed below.

31. **Energy supply and renewables.** Poland plans to make use of domestic energy resources to reach the targets set in its Energy Policy by promoting high-efficiency cogeneration of electricity, nuclear energy, use of coalbed CH_4 and RES. RES-related measures implemented include green certificates of origin for energy from renewable sources, an auction-based RES support system, feed-in tariffs and a feed-in premium, grants and loans for using RES for heat and electricity generation, and production of biocomponents and biofuels. A white certificates scheme, which certifies energy savings in the form of tradable certificates, has been implemented with energy companies and is the Party's main mechanism for supporting investment in energy efficiency. Energy companies selling electricity, heat or natural gas to end users have a statutory obligation to implement projects that improve energy efficiency in their users' buildings or to achieve a certain amount of final energy savings and surrender for cancellation to the President of the Energy Regulatory Office attested by a white certificate.

32. Poland has set a target of 15 per cent of total primary energy consumption being electricity generated from RES by 2020. Its RES policy builds on the National Action Plan for Energy from Renewable Sources, which sets out measures for achieving this target.

33. **Residential and commercial sectors.** Promoting low-energy buildings, with the aim of nearly net zero energy buildings (new and/or occupied by public authorities) in line with

the EU directive on the energy performance of buildings (directive 2010/31/EU), is the main measure until 2020. This includes establishing technical construction regulations to maximize buildings' energy efficiency and increasing use of RES in buildings. Various measures to improve air quality are also in place to limit emissions of harmful air pollutants from the heating systems of residential and public buildings (e.g. the Stop Smog and Clean Air Priority programmes) along with measures to reduce energy consumption in the construction sector.

34. **Transport sector.** The main strategies for modernizing the transport sector are the Transport Development Strategy until 2020 (adopted in 2013 with an outlook until 2030) and the Sustainable Transport Development Strategy until 2030 (adopted in 2019). The overarching goal is to establish an efficient, integrated and sustainable transport system at the national, EU and global level. PaMs in the transport sector are thus diverse, addressing urban, road, rail and air transport, as well as inland navigation and maritime shipping. Poland is aiming for interconnected, low-emission public transport within cities and across the country. The most ambitious measures in terms of emission reductions relate to urban transport, including improving energy efficiency and reducing emissions from vehicles; utilizing alternative fuels and electricity (Clean Transport Package); promoting use of public and non-motorized transport in cities and zero-emission public transport; implementing sustainable urban mobility plans at the city level; and implementing intelligent transport systems.

35. **Industrial sector.** Large enterprises and industrial facilities are subject to energy audits every four years and may access financial support for implementing the audit recommendations. Other measures are aimed at optimizing energy management and mitigating the environmental impact of industry (e.g. use of RES, smart energy management systems and technological upgrades).

(c) Policies and measures in other sectors

36. **Industrial processes.** The EU ETS is the fundamental channel for limiting GHG emissions related to industrial processes. The only other implemented measure reported in the BR4 is limiting use of F-gases in accordance with the EU F-gas regulation. This includes regulating use of F-gases (e.g. restricted use of HFCs in bulk or contained in equipment, prohibited use of F-gases with a GWP of 2,500 or more, restricted use in passenger vehicles) and establishing a system for monitoring F-gases (e.g. recording and recovering F-gases, certifying personnel).

37. **Agriculture.** The European Agricultural Fund for Rural Development is the overarching EU framework for agricultural policy in Poland, including environmental protection and climate-related measures. The main measures implemented include protecting agricultural and forest land (e.g. preventing conversion of agricultural and forest land to other uses, supporting land restoration after natural disasters); supporting environmentally and climate-friendly agriculture (e.g. modernizing agricultural holdings, restructuring small agricultural holdings, offering grants for young farmers); rationalizing and thus reducing use of fertilizers, including nitrogen fertilizers; protecting soil and water (through, e.g., sustainable management of agricultural land, organic farming, afforestation); and reducing emissions from livestock manure (by, e.g., improving monogastric livestock systems, reducing CH_4 emissions from livestock, eliminating gaseous pollutants emitted from livestock housing, and establishing agricultural biogas plants). Afforestation of agricultural land was included in the BR4 as a measure under the agriculture sector rather than the LULUCF or forestry sector, and, during the review, the Party identified it as a key measure in this sector.

38. **LULUCF.** The National Forestry Policy and the National Programme for the Augmentation of Forest Cover, which have been in place for more than 20 years, represent key strategies. The LULUCF sector was a net sink of 37,439.85 kt CO_2 in Poland in 2017 and net GHG removals have increased by 5,589.91 kt CO_2 eq since 1990. Poland is aiming to increase forest cover to 30 per cent of the national area by 2020 and to 33 per cent by 2050 through afforestation of agricultural land with low agricultural potential. Moreover, the 2030 National Environmental Policy is focused on improving the resilience of private forests through close-to-nature management, aiming to diversify species composition and stand

structure, in order to conserve existing carbon pools and enhance biodiversity. Pilot forest carbon farms have been established in 26 forest districts for a 10-year period (2017–2026). Continuing scientific research on the impact of forest management on the carbon balance will provide insights relevant to implementing EU regulation 2018/841 on including emissions and removals from LULUCF in the 2030 climate and energy framework.

39. **Waste management.** The National Waste Management Plan 2022 is the key strategy, dealing mostly with municipal waste. It contains objectives and directions for waste management and detailed measures for achieving those objectives in line with the waste hierarchy laid down in the EU waste framework directive. Poland's 2020 target is to reach a level of recycling and reuse of the four waste fractions (paper, metals, plastics and glass) of at least 50 per cent by weight. By 2020, the amount of biodegradable municipal waste should be reduced so that the annual total waste deposited in landfills equates to less than 35 per cent of the waste generated in 1995 in terms of mass (and less than 10 per cent by 2030). Poland is aiming to reach these targets by reducing the amount of waste deposited in landfills (through recycling, waste incineration, awareness-raising) and utilizing landfill biogas generation for heat and power. Through its wastewater management scheme, Poland is aiming to utilize biogas and minimize sludge production at 1,769 municipal wastewater treatment plants, located in 1,587 towns populated by 38.8 million people, by 2021.

(d) Response measures

40. Poland's assessment of the economic and social consequences of its response measures includes a strategic environmental assessment of all policies, plans and programmes across its economic sectors to identify cumulative adverse effects on the environment as soon as possible to provide the opportunity for reconsidering options. Environmental impact assessments have as their legal basis the act of 3 October 2008 on the provision of information on the environment and its protection, public participation in environmental protection and environmental impact assessments. Poland's initiatives aimed at minimizing adverse impacts include undertaking an environmental impact assessment of a given policy or programme, which is subject to stakeholder consultation and public disclosure, and monitoring and disclosing the results led by the competent authority. Poland's major policies, programmes and measures for mitigating climate change in the EU come directly or indirectly from EU documents or legal instruments. For instance, the PaMs included in the EU 2020 climate and energy package were subject to extensive impact analysis by the European Commission, including assessment of impact on third parties. The EU allows its member States to decide whether to adopt a given policy or programme and ensures that potential impacts of policies and programmes on third parties are transparently presented and can be assessed by the member States as needed. Information on this analysis of potential impacts of PaMs on third parties can be found in the national inventory reports and BRs of the EU.

(e) Assessment of adherence to the reporting guidelines

41. The ERT assessed the information reported in the BR4 of Poland and identified an issue relating to transparency and thus adherence to the UNFCCC reporting guidelines on BRs. The finding is described in table 4.

Table 4
Findings on mitigation actions and their effects from the review of the fourth biennial report of Poland

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 6 Issue type: transparency Assessment: recommendation	The reporting of the GHGs affected by the rational management of agricultural and forest land is inconsistent: the BR4 states that the measure affects CO_2, CH_4 and N_2O, whereas CTF table 3 suggests that only CO_2 is affected. In addition, in the BR4 this measure incorporates the measure "Restoring the forest production potential destroyed by disasters and the implementation of preventive measures", which was reported separately in the BR3. The status of the latter measure in the BR4 is unclear because it was reported as both withdrawn and replaced by another measure. During the review, Poland explained that only CO_2 is affected by the measure, as correctly reported in CTF table 3, and the additional gases were erroneously reported

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
		in the BR4. Regarding the restoration of forest production potential destroyed by disasters and the implementation of preventive measures, Poland explained that the measure is still in place but was incorporated into the rational management of agricultural and forest land owing to a change in funding (the measure is no longer funded by the Rural Development Programme). The ERT recommends that Poland improve the transparency of its reporting by ensuring consistency between the BR and CTF table 3 with regard to the information reported on the GHGs affected by mitigation actions and the implementation status of PaMs.

Note: Item listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on BRs. The reporting on the requirements not included in this table is considered to be complete, transparent and thus adhering to the UNFCCC reporting guidelines on BRs.

2. Estimates of emission reductions and removals and the use of units from market-based mechanisms and land use, land-use change and forestry

(a) Technical assessment of the reported information

42. Poland does not intend to use units from market-based mechanisms or other market-based mechanisms under the Convention to meet its commitment under the ESD. It reported in CTF tables 4 and 4(b) that it did not use any units from market-based mechanisms in 2017. Given that the contribution of LULUCF activities is not included in the joint EU target under the Convention, the reporting of contributions of LULUCF activities is not applicable for Poland. Table 5 illustrates Poland's ESD emissions and use of units from market-based mechanisms for achieving its ESD target.

Table 5
Summary of information on the use of units from market-based mechanisms by Poland for achieving its target

Year	*ESD emissions (kt CO_2 eq)*	*AEA (kt CO_2 eq)*	*Use of units from market-based mechanisms (kt CO_2 eq)*[a]	*Annual AEA surplus/deficit (kt CO_2 eq)*	*Cumulative AEA surplus/deficit (kt CO_2 eq)*
2013	186 095.05	193 642.82	NA	7 547.77	7 547.77
2014	181 543.02	194 885.55	NA	13 342.52	20 890.30
2015	186 772.42	196 128.27	NA	9 355.85	30 246.14
2016	198 664.76	197 370.99	NA	–1 293.77	28 952.37
2017	211 506.73	199 974.47	NA	–11 532.27	17 420.11
2018	213 033.37	201 710.05	NA	–11 323.33	6 096.78

Sources: Poland's BR4 and BR4 CTF table 4(b), information provided by the Party during the review and EU transaction log (AEAs).

Note: For a given year, a positive number (surplus) indicates that annual or cumulative ESD emissions were lower than the corresponding AEA or cumulative AEAs, while a negative number (deficit) indicates annual or cumulative ESD emissions were higher than the AEA or cumulative AEAs.

[a] "NA" indicates that the Party stated in its BR4 that it does not intend to use market-based mechanisms for achieving its target.

43. In assessing the progress towards achieving the 2020 joint EU target, the ERT noted that Poland's emission reduction target for the ESD is 14.0 per cent above the base-year level (see para.17 above). In 2018, Poland's ESD emissions were 5.6 per cent (11,323.33 kt CO_2 eq) above the AEA (201,710.05 kt CO_2 eq). Poland has a cumulative surplus of 6,096.78 kt CO_2 eq with respect to its AEAs between 2013 and 2018. According to the information reported in CTF tables 4 and 4(b), Poland did not make use of units from market-based mechanisms in 2018.

44. The ERT noted that Poland is making progress towards its ESD target by implementing mitigation actions that are delivering significant emission reductions.

(b) Assessment of adherence to the reporting guidelines

45. The ERT assessed the information reported in the BR4 of Poland and identified issues relating to transparency and thus adherence to the UNFCCC reporting guidelines on BRs. The findings are described in table 6.

Table 6
Findings on estimates of emission reductions and removals and on the use of units from market-based mechanisms and land use, land-use change and forestry from the review of the fourth biennial report of Poland

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation*
1	Reporting requirement specified in paragraph 9 Issue type: transparency Assessment: recommendation	In CTF table 4, Poland reported the value for its adopted base year (1988) instead of the base year for its 2020 target, which is 1990. In addition, Poland reported values for LULUCF activities in CTF table 4(a)II for 2017 and 2018 even though LULUCF is not included in its economy-wide emission reduction target. During the review, Poland: (a) Explained that the value for the wrong base year was reported because of the automated filling functions in the CRF Reporter; (b) Confirmed that LULUCF is excluded from its target and values were erroneously reported in CTF table 4(a)II for 2017 and 2018 as a result of using an automated software tool for completing the CTF tables. The ERT recommends that Poland improve the transparency of its reporting by providing accurate information in CTF table 4 with regard to the base year for its 2020 target and the inclusion of the LULUCF sector in its target.
2	Reporting requirement specified in paragraph 10 Issue type: transparency Assessment: recommendation	In CTF table 4, Poland reported the use of units from market-based mechanisms as "NA" without providing an explanation. During the review, Poland explained that it reported "NA" to indicate that none of the units from market-based mechanisms for 2013–2017 or units from other market-based mechanisms had been utilized towards achieving its ESD target. The ERT recommends that Poland improve the transparency of its reporting by providing an explanation (e.g. in a footnote) regarding the notation keys used.

Note: Item listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on BRs. The reporting on the requirements not included in this table is considered to be complete, transparent and thus adhering to the UNFCCC reporting guidelines on BRs.

3. Projections overview, methodology and results

(a) Technical assessment of the reported information

46. Poland reported updated projections for 2020 and 2030 relative to actual inventory data for 2017 under the WEM scenario. The WEM scenario reported by Poland includes PaMs implemented and adopted until the end of 2017.

47. In addition to the WEM scenario, Poland reported the WAM scenario. The WAM scenario includes planned PaMs for the energy sector and targeting F-gas emissions. Poland provided definitions of its scenarios: the WEM scenario includes PaMs such as those contained in the NECP, the Strategy for Responsible Development until 2020 (with an outlook to 2030) and the National Waste Management Plan 2022; the WAM scenario includes the same PaMs but different assumptions regarding the energy mix and the phase-out of F-gases. The definitions indicate that the scenarios were prepared in accordance with the UNFCCC reporting guidelines on BRs.

48. The projections are presented on a sectoral basis, using the same sectoral categories as those used in the reporting on mitigation actions, and on a gas-by-gas basis for CO_2, CH_4, N_2O, PFCs, HFCs and SF_6 (treating PFCs and HFCs collectively in each case) for 2020, 2025, 2030, 2035 and 2040. The projections are also provided in an aggregated format for each sector and for a Party total using GWP values from the AR4. Poland reported in its BR4 on factors and activities affecting emissions for each sector.

(b) Methodology, assumptions and changes since the previous submission

49. The methodology used for the preparation of the projections is different from that used for the preparation of the emission projections for the NC7. For the energy sector projections, Poland applied two country-specific models, STEAM-PL and MESSAGE-PL, instead of the WISE Microfoundations-based Energy and Emissions Project model and WISE Polish Energy Sector Simulation Analytics toolbox used for the NC7. Poland did not provide information on the changes since the submission of its NC7 in the assumptions, methodologies, models and approaches used for the projection scenarios or report on the rationale for such changes. However, it did report supporting information further explaining the methodologies and models applied for its BR4. In addition, Poland provided in its BR4 an analysis comparing the WEM and WAM scenario projections reported in the BR4 with the WEM projections reported in the NC7: namely, emission projections under the WEM scenario for 2020 reported in the BR4 are comparable to those in the NC7, but the emission projections for 2030 under the same scenario are higher than those in the NC7. The higher emission projections for 2030 were attributed to the updated assumptions for the energy sector and F-gases. Total GHG emissions under the WAM scenario reported in the BR4 are below those under the WEM scenario reported in the NC7 for all reported years.

50. To prepare its projections, Poland relied on key underlying assumptions relating to population, energy prices, economic development indicators, primary and final energy demand, and activity levels. The assumptions were updated on the basis of the most recent economic developments known at the time of the preparation of the projections. The main assumptions are included in CTF table 5 and they relate to population, growth in gross domestic product, primary energy demand, gross electricity demand, industrial activity levels in relation to production of ammonia and nitric acid, iron and steel, and clinker and lime, fertilizer use, cattle population and generation of municipal solid waste. Assumptions were provided for 1990–2030 in CTF table 5 and for 2020–2040 in the BR4.

51. According to the energy sector projections under the WEM scenario, PaMs will lead to a decrease in reliance on fossil fuels (particularly coal), the introduction of nuclear power after 2030 and an increase in use of RES such as solar photovoltaics and geothermal sources. Under the WAM scenario, the reliance on coal is projected to further decrease and the use of RES to further increase. Final energy use in the industry, transport, built environment and agriculture sectors is projected to remain fairly stable or slightly increase under the WEM scenario. Under the WAM scenario, decreases in final energy use are projected for all end-use sectors, ranging from –3.3 per cent in 2020 to –15.3 per cent in 2030 compared with the WEM scenario, with the largest decreases in energy use to occur in the transport, industry and built environment sectors. The largest difference between the WEM and WAM scenarios is in final energy consumption and relates to a reduction in the use of oil products, coal and natural gas, and an increase in the use of biomass and renewables.

52. Under the WEM scenario, activity levels are expected to slowly increase from 2017 towards 2020 and 2030 for most industrial processes. In the iron and steel sector, electric steel production is projected to gain a larger share of production in spite of basic oxygen steel production remaining the major production type. It is assumed that the amount of F-gases placed on the market will gradually decrease, with the total amount for sale in 2030 equating to 21 per cent of the 2015 total. In agriculture, a gradual reduction of arable land is assumed owing to a decrease in growing certain crops and conversion of land to non-agricultural uses. The cattle population is assumed to remain fairly stable, although milk production is expected to increase towards 2030. Other livestock populations are expected to decrease (sheep and goats), remain stable (pigs) or increase (poultry). Changes in the price of animal products and animal health requirements may affect future livestock numbers. In the waste sector, the amount of disposed waste is expected to decrease owing to recycling, biowaste separation and restrictions on landfilling and incineration. Except for a further decrease in use of F-gases, assumptions under the WAM scenario are the same as under the WEM scenario for the industry, agriculture and waste sectors.

(c) Results of projections

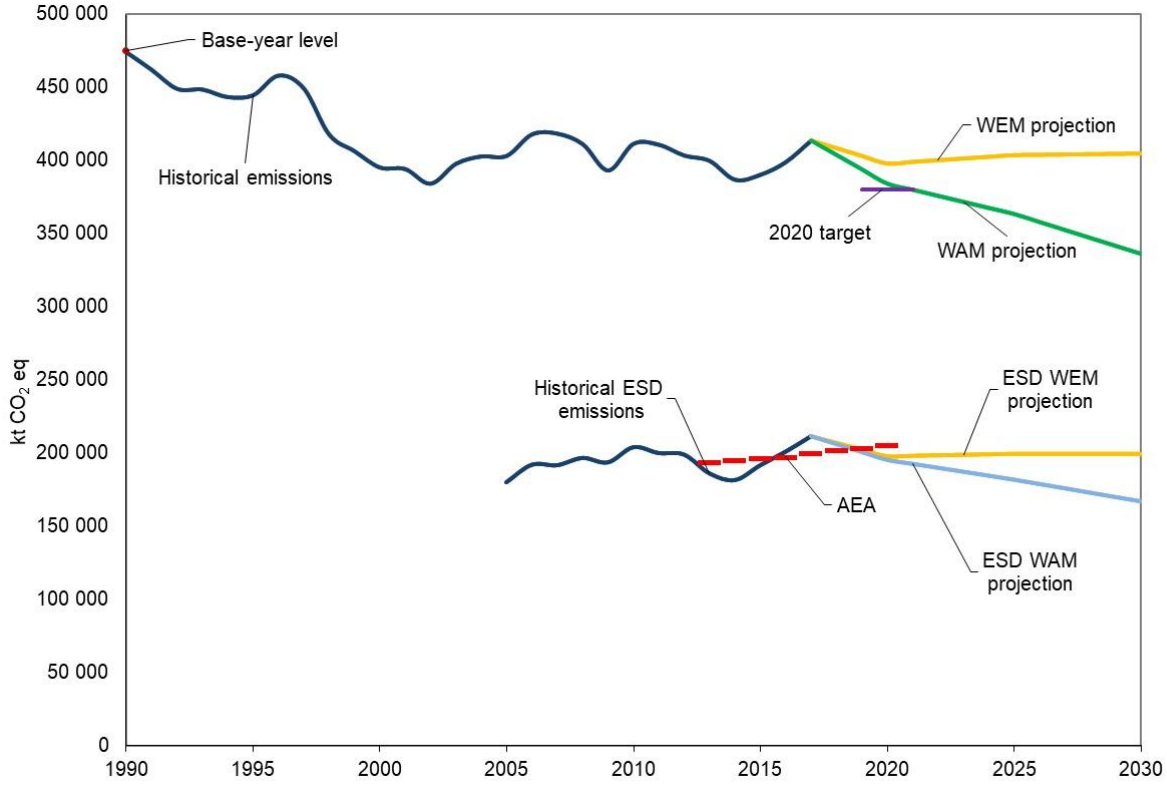
53. The projected emission levels under different scenarios and information on the quantified economy-wide emission reduction target are presented in table 7 and figure 1.

Table 7
Summary of greenhouse gas emission projections for Poland

	Total GHG emissions		*Emissions under the ESD*	
	GHG emissions (kt CO_2 eq/year)	*Change in relation to 1990 level (%)*	*ESD emissions (kt CO_2 eq/year)*	*Difference from 2020 AEA (%)*
2020 AEA under the ESD[a]	NA	NA	205 181.20	NA
Inventory data 1990	474 350.11	–	NA	NA
Inventory data 2017	413 781.40	–12.8	211 615.00	
WEM projections for 2020	397 810.50	–16.1	198 125.00	–3.4
WAM projections for 2020	384 247.14	–19.0	195 326.00	–4.8
WEM projections for 2030	404 739.60	–14.7	199 767.00	NA
WAM projections for 2030	336 252.75	–29.1	166 728.00	NA

Sources: Poland's BR4 and BR4 CTF table 6, and EU transaction log (AEAs).
Note: The projections are for GHG emissions excluding LULUCF and excluding indirect CO_2.
[a] The quantified economy-wide emission reduction target under the Convention is a joint target of the EU and its member States. The target is to reduce emissions by 20 per cent compared with the base-year (1990) level by 2020. Poland's target under the ESD is 14 per cent above the 2005 level by 2020.

Figure 1
Greenhouse gas emission projections reported by Poland



Sources: EU transaction log (AEAs) and Poland's BR4 and BR4 CTF tables 1 and 6.

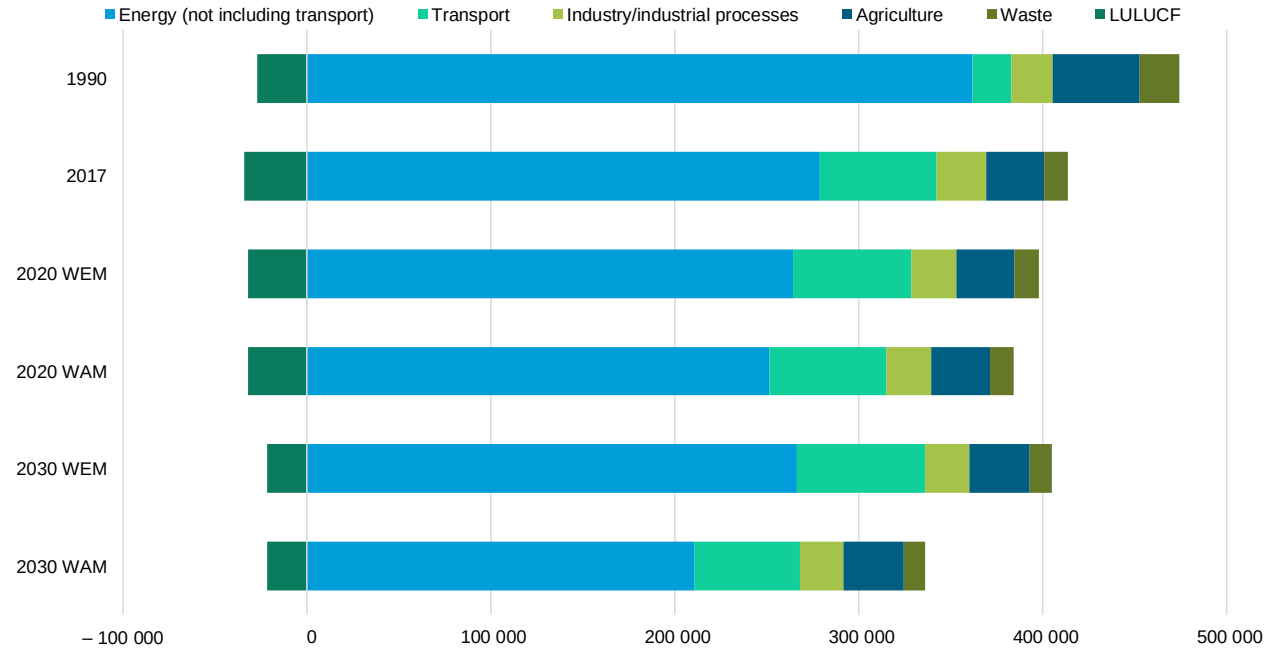
54. Poland's total GHG emissions excluding LULUCF in 2020 and 2030 are projected under the WEM scenario to decrease by 16.1 and 14.7 per cent, respectively, below the 1990 level. Under the WAM scenario, emissions in 2020 and 2030 are projected to be lower than those in 1990 by 19.0 and 29.1 per cent, respectively.

55. Poland's target under the ESD is to limit its ESD emission growth to 14.0 per cent above the 2005 level by 2020 (see para. 17 above). Poland's AEAs, which correspond to its national emission target for ESD sectors, change linearly from 193,642.82 kt CO_2 eq in 2013 to 205,181.20 kt CO_2 eq for 2020. The projected level of emissions under the WEM and WAM scenarios is 3.4 and 4.8 per cent, respectively, below the AEAs for 2020. The ERT noted that the Party's cumulative surplus of AEAs for 2013–2020 is expected to be 12,399.96

and 17,997.96 kt CO_2 eq under the WEM and WAM scenarios, respectively, which suggests that Poland expects to meet its ESD target under the WEM and WAM scenarios.

56. Poland presented the WEM and WAM scenarios by sector for 2020 and 2030, as summarized in figure 2 and table 8.

Figure 2
Greenhouse gas emission projections for Poland presented by sector
(kt CO_2 eq)



Source: Poland's BR4 CTF table 6.

Table 8
Summary of greenhouse gas emission projections for Poland presented by sector

	GHG emissions and removals (kt CO_2 eq)					*Change (%)*			
		2020		*2030*		*1990–2020*		*1990–2030*	
Sector	*1990*	*WEM*	*WAM*	*WEM*	*WAM*	*WEM*	*WAM*	*WEM*	*WAM*
Energy (not including transport)	361 922.95	264 381.08	251 370.78	266 316.65	210 862.82	–27.0	–30.5	–26.4	–41.7
Transport	20 898.10	64 178.37	63 625.30	69 725.03	57 028.66	207.1	204.5	233.6	172.9
Industry/ industrial processes	22 701.35	24 419.97	24 419.97	23 941.76	23 605.13	7.6	7.6	5.5	4.0
Agriculture	47 244.30	31 751.72	31 751.72	32 880.91	32 880.91	–32.8	–32.8	–30.4	–30.4
LULUCF	–27 190.91	–31 777.68	–31 777.68	–21 692.93	–21 692.93	16.9	16.9	–20.2	–20.2
Waste	21 583.41	13 079.37	13 079.37	11 875.23	11 875.23	–39.4	–39.4	–45.0	–45.0
Other	–	–	–	–	–	–	–	–	–
Total GHG emissions excluding LULUCF	**474 350.11**	**397 810.50**	**384 247.14**	**404 739.60**	**336 252.75**	**–16.1**	**–19.0**	**–14.7**	**–29.1**

Source: Poland's BR4 CTF table 6.

57. According to the projections reported for 2020 under the WEM scenario, the most significant absolute emission reductions are expected to occur in the energy, agriculture and waste sectors, amounting to projected reductions of 27.0, 32.8 and 39.4 per cent between 1990 and 2020, respectively. In contrast, emissions from transport and industry are expected to increase by 207.1 and 7.6 per cent, respectively, between 1990 and 2020. The pattern of

projected emissions reported for 2030 under the same scenario slightly changes owing to a slight increase in emissions from energy and agriculture (by 0.7 and 3.6 per cent, respectively, compared with those projected for 2020) and a further increase in emissions from transport (by 8.6 per cent compared with those projected for 2020). These increases are partially offset by decreases in emissions from waste and industry (by 9.2 and 2.0 per cent compared with those projected for 2020, respectively). Overall, emissions are projected to increase by 1.7 per cent between 2020 and 2030. By 2030, emissions are expected to be lower than in 1990 by 26.4 per cent in the energy sector, 30.4 per cent in the agriculture sector and 45.0 per cent in the waste sector; however, emissions from transport are projected to increase by 233.6 per cent and those from industry by 5.5 per cent, leading to an overall net emission reduction of 14.7 per cent from the 1990 level.

58. If additional measures are considered (i.e. under the WAM scenario), the patterns of emission reductions by 2020 presented by sector slightly change owing to a different energy mix in the energy and transport sectors. Emissions from the industry, agriculture and waste sectors are projected to be the same as under the WEM scenario because no additional policies were included for those sectors. Overall, emissions in 2020 are estimated to be 3.4 per cent lower under the WAM scenario than under the WEM scenario. By 2030, emissions from the energy sector are expected to decrease further, while those from transport are expected to increase less than under the WEM scenario. The additional policies targeting F-gases are expected to contribute to reducing growth in emissions from industry. Overall, emissions in 2030 are estimated to be 16.9 per cent lower under the WAM scenario than under the WEM scenario.

59. Poland presented the WEM and WAM scenarios by gas for 2020 and 2030, as summarized in table 9.

Table 9
Summary of greenhouse gas emission projections for Poland presented by gas

	GHG emissions and removals (kt CO_2 eq)					*Change (%)*			
		2020		*2030*		*1990–2020*		*1990–2030*	
Gas	*1990*	*WEM*	*WAM*	*WEM*	*WAM*	*WEM*	*WAM*	*WEM*	*WAM*
CO_2[a]	376 959.60	323 023.60	311 227.40	331 695.43	268 601.18	–14.3	–17.4	–12.0	–28.7
CH_4	69 842.33	50 495.09	48 733.76	49 170.97	44 294.69	–27.7	–30.2	–29.6	–36.6
N_2O	27 406.31	20 179.98	20 174.15	20 833.56	20 653.88	–26.4	–26.4	–24.0	–24.6
HFCs	–	4 004.23	4 004.23	2 882.32	2 605.47	–	–	–	–
PFCs	141.87	10.22	10.22	6.12	6.12	–92.8	–92.8	–95.7	–95.7
SF_6	–	97.38	97.38	151.19	91.40	–	–	–	–
NF_3	–	–	–	–	–	–	–	–	–
Total GHG emissions without LULUCF	**474 350.11**	**397 810.50**	**384 247.14**	**404 739.59**	**336 252.74**	**–16.1**	**–19.0**	**–14.7**	**–29.1**

Source: Poland's BR4 CTF table 6.
[a] Poland did not include indirect CO_2 emissions in its projections.

60. Under the WEM scenario, for 2020, the most significant absolute reductions are projected for emissions of CO_2 (mainly from fuel combustion in energy industries), CH_4 (mainly from enteric fermentation and waste treatment) and N_2O (mainly from chemical industry): 14.3, 27.7 and 26.4 per cent between 1990 and 2020, respectively. The reduction in PFC emissions is projected to be offset by increases in HFC and SF_6 emissions.

61. By 2030, CO_2 emissions from energy and transport are expected to increase compared with the 2020 level, leading to a lower percentage reduction of CO_2 emissions than in the 2020 projections (12.0 per cent compared with the 1990 level). CH_4 emissions from waste are expected to decrease further in 2020–2030, but CH_4 emissions from agriculture are estimated to slightly increase, leading to a net CH_4 emission reduction of 29.6 per cent between 1990 and 2030. The expected increase in N_2O emissions from agricultural soils

would result in a 24.0 per cent reduction in N_2O emissions by 2030 over the same time frame. HFC and PFC emissions are projected to decrease between 2020 and 2030, while SF_6 emissions are projected to increase.

62. If additional measures are considered (i.e. under the WAM scenario), the patterns of emission reductions by 2020 presented by gas slightly change owing to a larger reduction in CO_2 emissions from energy industries, partially offset by an increase in fugitive CO_2 emissions, and a larger reduction in fugitive CH_4 emissions. By 2030, CO_2 and CH_4 emissions from fuel combustion and fugitive emissions are expected to decrease further, and N_2O emissions are projected to decrease slightly more than by 2020 because of a reduction of emissions from transport.

(d) Assessment of adherence to the reporting guidelines

63. The ERT assessed the information reported in the BR4 of Poland and identified issues relating to completeness and transparency and thus adherence to the UNFCCC reporting guidelines on BRs. The findings are described in table 10.

Table 10
Findings on greenhouse gas emission projections reported in the fourth biennial report of Poland

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement[a] specified in paragraph 28 Issue type: completeness Assessment: encouragement	The Party reported a WEM and a WAM scenario but did not report a WOM scenario in its BR4. During the review, Poland explained that as reporting a WOM scenario is not a mandatory requirement and its reporting obligations are constantly growing, it decided to focus its available resources on meeting mandatory requirements. The ERT reiterates the encouragement from previous review reports for Poland to improve the completeness of its reporting by providing a WOM scenario.
2	Reporting requirement[a] specified in paragraph 29 Issue type: transparency Assessment: recommendation	The Party referred in its BR4 to reports used as the basis (e.g. data source) for its WEM and WAM projections. For example, for the GHG projections in the energy sector, the BR4 refers to the NECP for 2021–2030 as the main source of data. However, Poland did not clearly explain how these reports were connected with the projections or the PaMs listed and described in chapter 4 of the BR4, or which listed PaMs were incorporated into each projection scenario. During the review, Poland provided information on the measures listed as PaMs in chapter 4 of the BR4 and the corresponding sections in the reports. It explained that, when the BR4 was submitted, the information available on planned PaMs was very general, and so planned PaMs were not described individually in chapter 4 but were included in the WAM scenario. The ERT recommends that the Party explain which of the measures listed in the PaMs section of the BR are included in the WEM and WAM projection scenarios, which could include the information provided during the review.
3	Reporting requirement[a] specified in paragraph 30 Issue type: completeness Assessment: encouragement	The Party did not report a sensitivity analysis for any of the reported projection scenarios provided in the BR4. During the review, Poland explained that such information is not a mandatory reporting element, and that, owing to budget constraints, it has had to focus its efforts on meeting mandatory requirements, which it prioritizes over non-mandatory requirements. The ERT reiterates the encouragement from the previous review report for Poland to improve the completeness of its reporting by providing a sensitivity analysis for the projection scenarios reported in the BR.
4	Reporting requirement[a] specified in paragraph 32 Issue type: transparency	The Party did not report in its BR4 the starting year of the PaMs included in the WEM and WAM scenarios. During the review, Poland explained that the starting point of the PaMs included in the WEM and WAM scenarios reported in its BR4 was the end of 2017.

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
	Assessment: encouragement	The ERT encourages the Party to increase the transparency of its reporting by stating in future BRs the starting point of the PaMs included in the projection scenarios.
5	Reporting requirement[a] specified in paragraph 35 Issue type: completeness Assessment: encouragement	The Party did not report in its BR4 projections of the indirect GHGs carbon monoxide, nitrogen oxides, non-methane volatile organic compounds or sulfur oxides. During the review, Poland explained that such information is not a mandatory reporting element, and that, owing to budget constraints, it has had to focus its efforts on meeting mandatory requirements, which it prioritizes over non-mandatory requirements. The Party further clarified that air pollution projections, based on the same assumptions and data used for the GHG projections presented in the BR4, were completed in early 2021 for the purpose of reporting under the EU directive on the reduction of national emissions of certain atmospheric pollutants (directive 2016/2284). The Party added that previous air pollution projections were not entirely consistent with the GHG projections presented in its BR4. The ERT reiterates the encouragement from the previous review report for Poland to improve the completeness of its reporting by providing in its BR emission projections for indirect GHGs.
6	Reporting requirement[a] specified in paragraph 43 Issue type: completeness Assessment: encouragement	The Party reported comprehensive information on the models used for the emission projections in its BR4, in particular covering the elements mentioned in the UNFCCC reporting guidelines on NCs, paragraph 43(a–c), as well as on the interlinkages between the applied models. However, Poland did not provide information on the strengths and weaknesses of the models or the approach used, or how the model or approach used accounts for any overlap or synergies that may exist between different PaMs (paragraph 43(d–e) of the UNFCCC reporting guidelines on NCs). During the review, Poland provided detailed information on the strengths and weaknesses of the main models used for the projections (STEAM-PL and MESSAGE-PL). The Party also provided information on how it dealt with synergies and overlaps between PaMs in the models; namely, through a consultative process in which stakeholders discussed the assumptions for the different models, taking into account synergies and overlaps between PaMs. The ERT encourages the Party to improve the completeness of its reporting by providing information on the strengths and weaknesses of the models applied for the projections and how it deals with synergies and overlaps between PaMs in the models, including, for example, the information provided during the review.
7	Reporting requirement[a] specified in paragraph 46 Issue type: completeness Assessment: encouragement	The Party did not report on the sensitivity of the projections to underlying assumptions either qualitatively or quantitatively in its BR4. During the review, Poland explained that no sensitivity analysis was performed; however, the applied models were run a few times using different assumptions on fuel and CO_2 prices and rate of technology development. It also explained that, under the assumptions of a growing share of RES in power and heat generation; cogeneration development; and GHG emission reductions, the results of the projection scenarios were considered quite robust. The ERT encourages the Party to improve the completeness of its reporting by discussing in its BR the sensitivity of the projections to underlying assumptions qualitatively and, where possible, quantitatively, such as by reporting the information provided during the review.
8	Reporting requirement[b] specified in paragraph 12 Issue type: completeness Assessment: encouragement	The Party did not report on the changes since its most recent NC in the model or methodologies used for the preparation of projections, nor did it provide supporting documentation for those changes, even though a completely different set of modelling tools was used for the BR4. During the review, the Party clarified that the changes in methodology were due to changing the contractor responsible for providing the projections. The ERT encourages the Party to improve the completeness of its reporting by describing the changes since its most recent NC in relation to the model or

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
		methodologies used for the preparation of projections and by providing supporting documentation.

Note: The reporting on the requirements not included in this table is considered to be complete, transparent and thus adhering to the UNFCCC reporting guidelines on NCs and on BRs.

[a] Item listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on NCs, as per para. 11 of the UNFCCC reporting guidelines on BRs.

[b] Item listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on BRs.

D. Provision of financial, technological and capacity-building support to developing country Parties

64. Poland is not an Annex II Party and is therefore not obliged to adopt measures and fulfil obligations defined in Article 4, paragraphs 3–5, of the Convention. However, Poland provided information in its BR4 on its provision of support to developing country Parties. The ERT commends Poland for reporting such information and suggests that it continue to do so in future BRs.

65. Poland's financial support to developing country Parties is provided pursuant to the Act of 16 September 2011 on Development Assistance[6] and on the basis of the framework laid down in the Government's Multiannual Development Cooperation Programme for 2016–2020. As an EU member State, the majority of Poland's official development assistance is allocated through contributions to the EU general budget. In 2017, the climate-related assistance provided by Poland amounted to EUR 4.3 million (in grants), while in 2018 it was EUR 49.5 million (comprising EUR 6.9 million in grants and EUR 42.6 million in preferential loans).

66. Technology transfer support is provided through the Green Technology Accelerator Programme (known as GreenEvo), a project developed by the Ministry of Climate and Environment to promote Polish green technologies by creating favourable conditions for the dissemination of environmental protection technologies relating to use of energy and RES. Poland participates in the financing of EU projects and programmes intended to support technology development and transfer by paying into the EU assistance budget. Such projects include the Climate Technology Centre and Network, Switch Asia and Switch Africa Green. Poland reported that it grants financial assistance for capacity-building projects in developing countries via its contributions to the European Development Fund and the EU assistance budget and referred to the BR4 of the EU for more information on capacity-building activities supported via the EU assistance budget.

III. Conclusions and recommendations

67. The ERT conducted a technical review of the information reported in the BR4 and BR4 CTF tables of Poland in accordance with the UNFCCC reporting guidelines on BRs. The ERT concludes that the reported information mostly adheres to the UNFCCC reporting guidelines on BRs and provides an overview of emissions and removals related to the Party's quantified economy-wide emission reduction target; assumptions, conditions and methodologies related to the attainment of the target; the progress of Poland towards achieving its target; and the Party's provision of support to developing country Parties.

68. Poland's total GHG emissions excluding LULUCF covered by its quantified economy-wide emission reduction target were estimated to be 13.1 per cent below its 1990 level, whereas total GHG emissions including LULUCF were 15.0 per cent below its 1990 level, in 2018. Emissions were at the highest point in 1990. The decrease in total emissions was driven by emission reductions across almost all sectors, including waste (–40.9 per cent), agriculture (–31.7 per cent) and energy (energy industries, –30.6 per cent; and manufacturing industries and construction, –25.9 per cent), which were due to economic restructuring and the modernization of energy-intensive industry in the early 1990s, stricter environmental

[6] Journal of Laws of Poland 2017, item 2098, and Journal of Laws of Poland 2018, items 650 and 1699.

policy, in particular after Poland's accession to the EU in 2004, and the economic downturn in the late 2000s. However, emissions increased significantly from 2016 to 2017 as a result of a substantial increase in fuel consumption for road transport, driven by lower fuel prices and a higher number of vehicles. This was followed by a slight drop in emissions from 2017 to 2018. Between 1990 and 2018, emissions from transport increased by 214.4 per cent.

69. Under the Convention Poland committed to contributing to the achievement of the joint EU quantified economy-wide target of a 20 per cent reduction in emissions below the 1990 level by 2020. The target covers all sectors and CO_2, CH_4, N_2O, HFCs, PFCs and SF_6, expressed using GWP values from the AR4. Emissions and removals from the LULUCF sector are not included.

70. Under the ESD Poland has a target of limiting its emission growth to 14 per cent below the 2005 level by 2020. Two specific sectoral targets are, among others, relevant to achieving the ESD target. Poland committed to increasing the share of electricity generated from RES in final energy consumption by 15 per cent and the share of biofuels in the transport fuel market by 10 per cent (under the EU renewable energy directive (directive 2009/28/EC)) and to achieving a reduction in primary energy consumption of 13.6 Mtoe by 2020 (under the EU energy efficiency directive (directive 2012/27/EU)).

71. Poland, as an EU member State, participates in the implementation of the EU joint longer-term target of reducing net domestic GHG emissions by at least 55 per cent below the 1990 level by 2030 and to associated EU targets of a 32 per cent share for RES in final energy consumption and a 32.5 per cent increase in energy efficiency by 2030. The EU's joint targets under the EU ETS and the ESR are to reduce emissions by 2030 by 43 and 30 per cent, respectively, compared with the 2005 level. Taking into account the increased level of ambition in the recently updated EU 2030 GHG emission reduction target (see para. 15 above), the EU-level targets under the EU ETS and the ESR compared with the 2005 level are expected to be revised, along with the national targets for member States under the ESR.

72. In 2018 Poland's ESD emissions were 5.6 per cent (11,323.33 kt CO_2 eq) above the AEA. In its BR4 Poland indicated that it will not make use of market-based mechanisms. Poland has a cumulative surplus of 6,096.78 kt CO_2 eq with respect to its AEAs between 2013 and 2018. The ERT noted that Poland is making progress towards its ESD target by implementing mitigation actions that are delivering significant emission reductions.

73. The GHG emission projections provided by Poland in its BR4 correspond to the WEM and WAM scenarios. Under these scenarios, emissions are projected to be 16.1 and 19.0 per cent below the 1990 level by 2020, respectively. According to the projections under the WEM scenario, ESD emissions are estimated to reach 198,125.00 kt CO_2 eq by 2020. Under the WAM scenario, Poland's ESD emissions in 2020 are projected to be 195,326.00 kt CO_2 eq. The projected level of emissions under the WEM and WAM scenarios is 3.4 and 4.8 per cent, respectively, below the AEAs for 2020. Taking into account its cumulative surplus of AEAs referred to in paragraph 72 above, Poland expects to meet its target under the WEM and WAM scenarios.

74. Poland's main policy framework relating to energy and climate change is its Energy Security and Environment Strategy. The Party described the mitigation actions that it has implemented to help it achieve its 2020 targets, which include integrated programmes for reducing GHG emissions by increasing use of RES, developing nuclear energy and limiting emissions from fuel production and transport (by promoting public transport, electric and low-emission vehicles and non-motorized transport). Increasing energy efficiency and use of alternative fuels, electricity or energy from RES in various sectors (e.g. residential and commercial, industry and transport) are also key to Poland's Strategy.

75. The Party also highlighted the mitigation actions for 2020–2030 that it has recently implemented to help achieve its medium- and long-term emission reduction targets. Most existing PaMs have either been modified or expanded since the BR3, and some new PaMs have been added. These PaMs include high-efficiency electricity cogeneration, additional measures in the urban transport sector, limiting emissions from heating in single-family dwellings by providing financial support, and developing agricultural biogas plants.

76. Poland is not an Annex II Party and is therefore not obliged to adopt measures and fulfil obligations defined in Article 4, paragraphs 3–5, of the Convention. However, it provided information on its provision of support to developing country Parties. In 2017 and 2018, Poland provided climate-related assistance of EUR 4.3 million and EUR 49.5 million, respectively. Poland also provided technology transfer support through, GreenEvo, a green technology accelerator. In addition, Poland contributes to financing EU projects and programmes intended to support technology development and transfer by paying into the EU assistance budget. In addition, Poland contributes to financing EU projects and programmes intended to provide capacity-building support and technology development and transfer by paying into the EU assistance budget.

77. In the course of the review, the ERT formulated the following recommendations for Poland to improve its adherence to the UNFCCC reporting guidelines on BRs in its next BR:

(a) To improve the transparency of its reporting by:

(i) Ensuring consistency between the BR and CTF table 3 with regard to the information reported on the GHGs affected by mitigation actions and the implementation status of PaMs when reporting on mitigation actions (see issue 1 in table 4);

(ii) When reporting on its 2020 emission reduction target, ensuring that correct information is provided in CTF table 4 with regards to the selected base year and to the inclusion of the LULUCF sector in its target (see issue 1 in table 6);

(iii) Providing an explanation (e.g. in a footnote) regarding the notation keys used when reporting the contribution of units from market-based mechanisms to achieving the target (see issue 2 in table 6);

(iv) Explaining which of the measures listed in the PaMs section of the BR were included in the WEM and WAM projection scenarios (see issue 2 in table 10);

(b) To improve the timeliness of its reporting by submitting its next BR on time (see para. 6 above).

Annex

Documents and information used during the review

A. Reference documents

2020 GHG inventory submission of Poland. Available at https://unfccc.int/ghg-inventories-annex-i-parties/2020.

BR3 of Poland. Available at https://unfccc.int/process-and-meetings/transparency-and-reporting/reporting-and-review-under-the-convention/national-communications-and-biennial-reports-annex-i-parties/biennial-report-submissions/third-biennial-reports-annex-i.

BR4 of the EU. Available at https://unfccc.int/BRs.

BR4 of Poland. Available at https://unfccc.int/BRs.

BR4 CTF tables of Poland. Available at https://unfccc.int/BRs.

"Common tabular format for 'UNFCCC biennial reporting guidelines for developed country Parties'". Annex to decision 19/CP.18. Available at https://unfccc.int/resource/docs/2012/cop18/eng/08a03.pdf.

"Compilation of economy-wide emission reduction targets to be implemented by Parties included in Annex I to the Convention". FCCC/SBSTA/2014/INF.6. Available at http://unfccc.int/resource/docs/2014/sbsta/eng/inf06.pdf.

European Green Deal. European Commission document COM(2019) 640 final. Available at https://ec.europa.eu/info/files/communication-european-green-deal_en.

"Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories". Annex I to decision 24/CP.19. Available at http://unfccc.int/resource/docs/2013/cop19/eng/10a03.pdf.

"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 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 13/CP.20. Available at http://unfccc.int/resource/docs/2014/cop20/eng/10a03.pdf.

NECP of Poland. Available at https://ec.europa.eu/energy/topics/energy-strategy/national-energy-climate-plans_en.

Report on the individual review of the annual submission of Poland submitted in 2018. FCCC/ARR/2018/POL. Available at https://unfccc.int/sites/default/files/resource/arr2018_POL.pdf.

Report on the technical review of the BR3 of Poland. FCCC/TRR.3/POL. Available at https://unfccc.int/sites/default/files/resource/trr.3_POL.pdf.

"UNFCCC biennial reporting guidelines for developed country Parties". Annex I to decision 2/CP.17. Available at http://unfccc.int/resource/docs/2011/cop17/eng/09a01.pdf.

Update of the nationally determined contribution of the EU and its member States. Available at https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/European%20Union%20First/EU_NDC_Submission_December%202020.pdf.

B. Additional information provided by the Party

Responses to questions during the review were received from Ewelina Bagińska-Sztonyk (Ministry of Climate and Environment of Poland), including additional material. The following documents[1] were provided by Poland:

Energy Policy of Poland until 2040. Available at https://www.gov.pl/attachment/376a6254-2b6d-4406-a3a5-a0435d18be0f.

Polish Nuclear Power Programme. Available at https://www.gov.pl/attachment/737c84a1-843f-4f43-b421-8ba687adea2d.

[1] References reproduced as received from the Party.