THE REPUBLIC OF POLAND

THE SECOND BIENNIAL REPORT TO THE CONFERENCE OF THE PARTIES OF THE UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

WARSAW 2015

Financed with the resources of the National Fund for Environmental Protection and Water Management

The Report was prepared at the National Centre for Emissions Management in the Institute of Environmental Protection – National Research Institute in cooperation with the Ministry of the Environment and:

- the Ministry of Finance,
- the Ministry of the Economy,
- the Ministry of Infrastructure and Development,
- the Ministry of Agriculture and Rural Development,
- the Ministry of Foreign Affairs,
- the National Fund for Environmental Protection and Water Management.

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SUMMARY

The Second Biennial Report to the Conference of the Parties to the UN Convention on Climate Change, covering the period from 2012 to 2013, and, in specific cases, 2014, too, was prepared in accordance with Decision 2/CP.17 on biennial reporting guidelines by developed country Parties and Decision 19/CP.18 on the Common Tabular Format (CTF), which was used in filling CTF tables.

The inventory of greenhouse gas emissions

In 2013, the particular greenhouse gases had the following shares in the total greenhouse gas emissions: the share of carbon dioxide (CO_2) was 81.8%, methane (CH_4) represented 10.7%, nitrous oxide (N_2O) 5.1% and industrial gases 2.4%. In the period from the base year to 2013, the total greenhouse gas emissions fell by about 37% when including the Land Use, Land Use Change and Forestry *Sector* (LULUCF) and by almost 32% when excluding LULUCF. From 2008 onwards the emissions of these gases stabilised, except for their distinct fall in 2009 as a result of a global economic slowdown. The emissions per capita amounted to 9.28 t of CO_2 eq. Sector 1. *Energy* had the largest share in the total greenhouse gas emissions (expressed as CO_2 equivalent) in Poland in 2013, i.e. about 82%, primarily from fuel combustion processes. Sector 4. *Land Use, Land Use Change and Forestry* was a net sink of carbon dioxide (about -37.6 million tonnes of CO_2 eq.).

Greenhouse gas inventories are prepared by the National Centre for Emissions Management (KOBiZE) at the Institute of Environmental Protection-National Research Institute (IEP – NRI). Pursuant to the Act of 17 July 2009 on the System to Manage the Emissions of Greenhouse Gases and Other Substances (Official Journal of the Laws No. 130, Item 1070, as amended), KOBIZE prepares and submits to the Minister responsible for the environment annual inventories of greenhouse gases and substances laid down in the *Convention on Long-Range Transboundary Air Pollution*. The tasks of the National Centre also include the preparation of information sets, including those on emissions, for the purposes of the public statistics.

KOBiZE administers the Polish Registry of Kyoto Units, connected with the Independent Transaction Log, and accounts for the commitments under the Kyoto Protocol. The Registry of Units is managed together with those of the other Member States of the European Union (EU). The current information and changes in the national registry are presented annually in the *National Inventory Report.*

The quantified economy-wide emission reduction target

In accordance with Decision 9/CP.2, Poland as a Party to the Convention and the Kyoto Protocol (KP) adopted 1988 as the base year for the reductions of basic greenhouse gases under the *United Nations Framework Convention on Climate Change and* the Kyoto Protocol. 1995 was adopted for F-gases. In accordance with Annex B to the Kyoto Protocol, Poland undertook to achieve a 6% emission reduction by 2012. This target was achieved with a surplus.

As a Member State of the EU, Poland and the other Member States undertook joint reduction commitments to achieve by 2020 mean annual emission reductions of 20% with respect to 1990. Moreover, in the sectors covered by the European Emission Allowance Trading Scheme (EU ETS) the reduction target was set at the level of -21% relative to the emissions in the EU ETS in 2005. In the sectors not covered by the EU ETS scheme the target for Poland was set at +14%.

Poland's reduction commitments under the EU legislation (the Energy and Climate Package) are binding for Poland; however, the international commitments by 2020 will become binding for Poland after it has ratified the Doha Amendment to the Kyoto Protocol and after it has entered into force.

In the period reported on (2012-2013), there was a further reduction in the emissions in all the sectors by 3.5% as CO_2 eq., primarily in the energy and industrial production sectors as a result of energy efficiency improvements. Emissions grew only for HFCs and N_2O.

The progress in the fulfilment of the adopted commitments is monitored annually in accordance with the Monitoring Mechanism Regulation No 525/2013, while the greenhouse gas emission levels from installations covered by the European Emission Allowance Trading Scheme in 2013-2014 are calculated in accordance with Commission Regulation (EU) No 601/2012 of 21 June 2012 on the monitoring and reporting of greenhouse gas emissions. The greenhouse gas emissions calculated by the operators of installations covered by EU ETS are verified by external, independent and accredited auditors. Verified greenhouse gas emission levels are transferred to the Union Registry.

The functioning of the EU ETS scheme is assessed using the production-specific emission factor which enables the analysis of the real effects of measures taken by the operators of installations covered by EU ETS to reduce their CO_2 emissions. The analysis of changes in this indicator show that the emission factor of the production in the energy sector, i.e. public and industrial CHP plants and public heating plants, diminished. The change in the emission factors of the other industrial sectors cannot be assessed unequivocally and there are limited possibilities for improving the emission factors of industrial installations, primarily in the scope of improving the efficiency of fuel combustion.

The fundamental legal documents regulating the issues related to the fulfilment of commitments, monitoring, reporting, archiving of information and assessment of progress towards the achievement of the reduction targets include the Act of 17 July 2009 on the System to Manage the Emissions of Greenhouse Gases and Other Substances (the consolidated text in the Official Journal of the Laws of 2013, Item 1107, as amended), laying down the tasks of the National Centre for Emissions Management, and the Act of 12 June 2015 on the Greenhouse Gas Emission Allowance Trading Scheme (Official Journal of the Laws of 2015, Item 1223). The latter of these Acts ensured the implementation of Directive 2009/29/EC on the greenhouse gas allowance trading scheme of the Community into the Polish law. It also established a legal basis for creating a comprehensive system for monitoring the implementation of policies and measures to reduce greenhouse gas emissions.

Policies and measures

Among many policies and measures of horizontal nature, there are several ones related directly to EU and international climate policies, i.e. the greenhouse gas emission allowance trading scheme (EU ETS), the Effort Sharing Decision (ESD), the National Green Investment Scheme (GIS) and also the financial mechanisms supporting measures to reduce greenhouse gas emissions.

The emission allowance trading scheme operates according to the *cap and trade* principle. The allowances within the annually diminishing *cap* are either sold at auctions or allocated free of charge to enterprises exposed to so-called *carbon leakage* risk. The holders of allowances can trade in them on the market without restrictions. The market determines allowance prices and the higher the prices are the greater benefits can be expected from investments in low-emission technologies.

In 2008-2014, the number of installations covered by the EU ETS slightly changed, *inter alia*, as a result of the inclusion of new installations and the exclusion of installations ceasing to operate or significantly reducing their production capacity; in 2014, there were 769 of them. In the third trading

period covering 2013-2020, significant changes were introduced to the principles of the allocation of emission allowances. The allocation of free emission allowances was restricted to installations which did not generate electricity.

In the sectors which are not covered by the EU ETS scheme, pursuant to the Effort Sharing Decision 2013/162/EU (ESD), annual greenhouse gas emission allocations are set out for the period from 2013 to 2020. The strategy for managing the national allocation which is approved by the Council of Ministers lays down, *inter alia*, the assumptions and guidelines for the methodology for the accounting for and projections of the greenhouse gas emissions which are not covered by the emission allowance trading scheme.

The National Green Investment Scheme (GIS) derives from the international emissions trading mechanism introduced in the Kyoto Protocol. The GIS Scheme is a mechanism for the so-called greening of AAUs sold to countries or entities which need these units to meet their reduction targets under the Kyoto Protocol. The proceeds from the sales of AAUs are allocated to co-financing of tasks carried out within the framework of the programmes and projects covered by the National Green Investment Scheme. As part of this Scheme, a dozen or so agreements are implemented, with the total value of about EUR 195 million.

The basic institutional and financial mechanism supporting the implementation of climate policy, particularly in the scope of energy efficiency improvements, the development of renewable energy sources and the modernisation of energy generation processes, is the system of financing environment-friendly measures based on the resources from the National Fund and Voivodship Funds for Environmental Protection and Water Management as well as the EU Funds and the Norwegian Fund. In 2014, this mechanism was used to support, under 20 large programmes, measures to reduce emissions in all the sectors with significant greenhouse gas emissions.

The most important sectoral policies include policies and measures designed to reduce greenhouse gas emissions from energy production and consumption, including e.g. those intended to improve energy efficiency, to enhance the use of energy from renewable sources and to introduce nuclear energy generation. Moreover, in this area there are important measures which focus on reductions in methane emissions, both from hard coal mines and from fuel production and distribution processes.

In industry, efforts are taken to improve energy eficiency (required in the energy production and comsumption sector) and to reduce greenhouse gas emisisons from industrial processes, in particular the emissions of fluorinated greenhouse gases. The application of fluorinated greenhouse gases and the use of products, equipment and systems containing them was regulated by the Act of 15 May 2015 on Substances That Deplete the Ozone Layer and on Certain Fluorinated Greenhouse Gases.

The basic planning document in the transport sector is the *Transport Development Strategy until 2020 (with an Outlook until 2030).* One of the detailed objectives is to “limit the adverse impact of transport on the environment”.

The measures in the transport sector are systematised in the form of the packages addressing the different transport modes, i.e. road transport, rail transport, domestic and international air transport, inland navigation and maritime shipping. These packages cover, *inter alia*, energy efficiency improvements and technical and infrastructural modernisation. However, the mobility growth will cause greater transport volume and the substantial efforts taken in the area of transport to reduce greenhouse gas emissions from this sector can only mitigate the overall emissions from the growing transport volume.

In agriculture, measures are taken in several areas, including, *inter alia*, the rationalisation of the use of fertilisers, including nitrogen fertilisers, through the limitation of the natural fertiliser dose, the introduction of a ban on the use of fertilisers in specific conditions and the establishment of the obligation to train farmers in the application of fertilisers.

Another measure is the afforestation of agricultural and non-agricultural land. The projects launched are designed to augment forest areas and to maintain and strengthen their ecological stability through diminishing the fragmentation of forest complexes and the creation of ecological corridors. The afforestations contribute to greater carbon dioxide sequestration, i.e. reductions in net CO_2 emissions, while, at the same time, producing wood biomass. Another measure related to the above one is the one designed to restore the forestry production potential damaged by disasters and to prevent such incidents.

An important direction of measures to reduce greenhouse gas emissions in agriculture is the promotion and meeting of the standards of good agricultural culture, such as the minimum soil cover and crop rotation, the use of mulching systems or crop diversification. In the scope of animal production, measures are implemented to Improve the systems of keeping monogastric livestock, to reduce the methane emissions from animal excreta and to eliminate gas pollutants emitted from livestock buildings.

Another measure is support for adaptation and mitigation activities at farm holdings designed to enhance the efficiency of farms holdings, *inter alia*, through the harmonisation of the conditions of agricultural production with the requirements of the protection of the natural environment.

The measures to reduce emissions taken in waste management include the use of waste as a source of energy in the process of waste incineration and the use of municipal waste landfills as a source generating electricity and heat by processing landfill gas. Other objectives include enhanced municipal waste recycling and reduced quantities of waste, including biodegradable waste deposited at landfills of non-hazardous and inert (municipal) waste.

In the area of forestry, the purpose of measures is to augment the forest areas, *inter alia*, through the afforestation of land and the protection of the ecological stability of forests, and to prevent the conversion of forest areas to non-forestry purposes.

The policy pursued by Poland to minimise the adverse impacts of climate change in accordance with Article 3.14 of the Kyoto Protocol through the reduction of its greenhouse gas emissions is consistent with the EU policy and its measures take into account the magnitude and scope of these impacts. The Eastern Partnership Programme plays a special role in these activities, particularly with such countries as Ukraine, Moldova, Belarus, Georgia, Armenia and Azerbaijan. Support is provided to both emission reducing technologies and the measures building capacity in these countries, such as training, education and other forms.

Projections of greenhouse gas emissions and removals

The presented national projections covered the anticipated levels of greenhouse gas emissions and removals until 2030 (broken down into those in 2015, 2020, 2025 and 2030), taking into account the policies and measures adopted and implemented to reduce greenhouse gas emissions. They represent the option of projections “with measures”.

The emission projections were carried out for the following greenhouse gases: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), HFCs (hydrofluorocarbons), PFCs (perfluorocarbons) and sulphur hexafluoride (SF_6). In the case of emissions of trichloride (NF_3), there were insufficient data to estimate the future changes.

The sources of information used as input data in the emission projections for the key greenhouse gas emission sources primarily included data on activities, including those on the forecast fuel consumption, the production of major industrial goods and agricultural production, which were provided by the competent Ministries.

Given the absence of forecast data for HFCs, PFCs and SF_6, the analysis was based on the available trends in the emissions of F-gases, taking into account the market trends for each of the substances reported upon. As a result of the analysis, it was assumed that the emissions of F-gases would grow further and the growing trend in the use of refrigeration and air-conditioning systems was indicated as the dominating factor which would cause higher HFC emissions.

The projected total greenhouse gas emissions in 2030 are 358.8 million tonnes of CO_2 eq. They are lower by 38% than the emissions in 1988, by 24.3% than those in 1990 and by 9.1% than those in 2013. The largest fall in emissions by 2030 is projected for CO_2, while in the case of CH_4, N_2O and fluorinated gases the emissions are expected to gradually grow by 2030. The main source of CO_2 emissions is fuel combustion at stationary sources. The share of methane grows from about 11% of the national emissions in 2015 to 12% in 2030, while the share of nitrous oxide increases from 5% to 6%, respectively. The other emissions are those of fluorinated gases (HFCs, PFCs and SF_6), the total emissions of which grow from 2% to 3% in the period from 2015 to 2030.

Financial and technical assistance and support for capacity building in developing countries and the Eastern Partnership countries

The Republic of Poland is not one of the Parties listed in Annex II to the Climate Convention; therefore, it is not obliged to fulfil the commitments under Articles 4.3, 4.4 and 4.5 of the Convention. When Poland Joined the EU in 2004 it took on international commitments concerning the level of development cooperation and its quality. Poland carried out many assistance projects, discerning and understanding the need to support the sustainable development in developing countries and in countries with economies in transition. As a Member State of the European Union, Poland provided most of its assistance as a contribution to its general budget.

Some resources were disposed of within the framework of bilateral assistance, implemented according to the priorities set out by the Ministry of Foreign Affairs, based on the assessment of the needs of the individual countries or regions of the world. In the period reported on this assistance systematically grew. Within the framework of bilateral activities, the main countries which received development assistance in the fields related to environmental protection were the Eastern Partnership countries (Ukraine, Belarus, Georgia, Moldova, Azerbaijan and Armenia), African countries (Ethiopia, Kenya and Guinea), as well as North and Palestine.

Technology transfer is carried out, *inter alia*, through the GreenEvo Project, which is a market-based tool designed for the transfer of Polish green technologies. The Project supports the identification of the technological needs of developing countries and the assessment of the capacity of Polish suppliers to meet these needs To date, 72 proven green technologies, which had been commercialised in Poland, have been selected. The companies had an opportunity to take part in the meetings with potential partners, e.g. in such countries as Papua New Guinea, Moldova, Georgia, Kazakhstan, Iran, Armenia, Azerbaijan, India, China, Vietnam, Thailand, Malaysia, United Arab Emirates, Oman, Algeria, Nigeria, Zambia, Republic of South Africa, Egypt, Chile, Mexico, and others.

CTF Table 7 concerning financial assistance presents examples of measures to support capacity building developing countries through training.

1. THE INVENTORY OF GREENHOUSE GAS EMISSIONS

As the Report was prepared the results of the inventories of greenhouse gas emissions until 2013 were available. The inventories were prepared in accordance with the Decision 18/CP. 8, on the basis of the IPCC 2006 methodology and national methodologies.

1.1. Summary information on emission trends (CTF Table 1)

1.1.1. The trend of change in greenhouse gas emissions in Poland by gas types

Carbon dioxide dominated in the total greenhouse gas emissions in 2013, as its share in the total emissions was 81.8%, methane represented 10.7% and nitrous oxide 5.1%. Industrial gases accounted for about 2.4% of the aggregated greenhouse gas emissions. In the period from the base year to 2013 the total greenhouse gas emissions fell by about 37% with Land Use, Land-Use Change and Forestry (LULUCF) and about 32% without LULUCF.

With respect to the latter level, the carbon dioxide emissions diminished by 32.0%, those of methane by 45.5% and those of nitrous oxide by 29.8 %. From 2008 onwards the emissions stabilised, except for their distinct fall in 2009 as a result of a global economic slowdown. The emissions per capita amounted to 9.28 t of CO_2 eq.

Table 1.1. National greenhouse gas emissions trend according to gases

Greenhouse gas emissions	Base year*	1990	1995	2000	2005	2010	2011	2012	2013	Change from base to latest reported year
	kt CO_2 eq.									%
CO_2 emissions without net CO2 from LULUCF	474 657.36	379 464.82	363 900.96	319 482.57	323 586.36	336 695.02	333 947.03	326 969.55	322 900.21	-31.97
CO_2 emissions with net CO2 from LULUCF	460 160.19	352 503.13	348 448.09	288 498.87	279 010.67	308 474.02	298 872.40	292 423.36	285 272.89	-38.01
CH_4 emissions without CH4 from LULUCF	77 250.07	67 435.57	58 402.66	49 171.84	46 981.85	43 515.17	42 273.51	42 726.61	42 097.14	-45.51
CH_4 emissions with CH4 from LULUCF	77 294.20	67 479.63	58 448.56	49 204.39	47 015.34	43 546.82	42 304.59	42 758.38	42 134.12	-45.49
N_2O emissions without N2O from LULUCF	28 841.35	26 866.85	22 738.14	22 205.75	22 168.36	19 542.95	19 882.64	19 826.27	20 233.61	-29.85
N_2O emissions with N2O from LULUCF	28 852.52	27 759.56	22 747.56	22 214.48	22 356.38	19 546.80	19 887.18	19 835.40	20 236.95	-29.86
HFCs	NA.NO	NA.NO	97.34	1 739.19	5 317.72	8 304.03	8 992.69	9 234.01	9 606.78	
PFCs	147.26	141.87	171.97	176.68	187.41	17.07	16.22	15.41	14.64	-90.06
Unspecified mix of HFCs and PFCs	NA	NA	NA	NA	NA	NA	NA	NA	NA	
SF_6	NA,NO	NA,NO	29,12	23,07	26,80	35,37	39,02	40,13	39,15	
NF_3	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	
Total (without LULUCF)	580 896.03	473 909.11	445 340.19	392 799.10	398 268.49	408 109.60	405 151.11	398 811.96	394 891.52	-32.02
Total (with LULUCF)	566 454.17	447 884.19	429 942.65	361 856.67	353 914.31	379 924.10	370 112.09	364 306.67	357 304.53	-36.92
Total (without LULUCF, with indirect)	580 896.03	473 909.11	445 340.19	392 799.10	398 268.49	408 109.60	405 151.11	398 811.96	394 891.52	-32.02
Total (with LULUCF, with indirect)	566 454.17	447 884.19	429 942.65	361 856.67	353 914.31	379 924.10	370 112.09	364 306.67	357 304.53	-36.92

NO – Not occurring
NA – Not applicable
*
Poland uses 1988 as the base year for CO_2, CH_4, N_2O, the year 1995 as the base for groups of gases: HFCs, PFCs and for sulphur hexafluoride (SF6), the year 2000 is adopted as the base year for the nitrogen trifluoride (NF3)

Source: KOBiZE, IEP-NRI

1.1.2. The trend of change in greenhouse gas emissions in Poland by sectors

The balance of greenhouse gas emissions and carbon dioxide removals in Sector 4. *Land Use, Land Use Change and Forestry* was estimated at -37.6 million tonnes of CO_2 eq., where CO_2 removals (mostly by forest lands) amounted to -42,2 million tonnes of CO_2 eq., while the emissions were 4.6 million tonnes of CO_2 eq. Sector 1. *Energy* had the largest share in the total greenhouse gas emissions (expressed as CO_2 equivalent) in Poland in 2013 (almost 82%, without LULUCF), and, within this Sector, so had where fuel combustion processes. Compared with the base year the emissions were reduced in all the sectors.

Table 1.2. National greenhouse gas emissions trend according to sectors

Greenhouse gas source and sink categories	Base year	1990	1995	2000	2005	2010	2011	2012	2013	Change from base to latest reported year
	kt CO_2 eq.									(%)
1. Energy	483 466.81	386 536.68	372 445.51	322 702.24	328 523.40	338 562.43	332 755.32	327 734.72	323 470.71	-33.09
2. Industrial processes and product use	34 248.55	25 372.91	25 019.47	25 788.57	27 947.50	28 038.05	30 966.26	30 000.45	30 290.96	-11.56
3. Agriculture	48 438.01	47 608.57	34 720.57	31 347.23	29 860.99	29 962.73	30 305.15	30 086.67	30 100.41	-37.86
4. Land use, land-use change and forestry (LULUCF)	-14 441.86	-26 024.92	-15 397.54	-30 942.43	-44 354.18	-28 185.50	-35 039.02	-34 505.29	-37 586.99	160.26
5. Waste	14 742.65	14 390.95	13 154.63	12 961.06	11 936.60	11 546.40	11 124.39	10 990.11	11 029.45	-25.19
6. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	
Total (including LULUCF)	566 454.17	447 884.19	429 942.65	361 856.67	353 914.31	379 924.10	370 112.09	364 306.67	357 304.53	-36.92

NO – Not occurring

Source: KOBiZE, IEP-NRI

1.2. The inventory of greenhouse gas emissions

The unit responsible for preparing greenhouse gas inventories is the National Centre for Emissions Management (KOBiZE) at the Institute of Environmental Protection-National Research Institute, established pursuant to the Act of 17 July 2009 on the System to Manage the Emissions of Greenhouse Gases and Other Substances (Official Journal of the Laws No. 130, Item 1070, as amended). Pursuant to Article 11 of the abovementioned Act, the National Centre prepares and submits to the Minister responsible for the environment annual inventories of greenhouse gases and substances laid down in the *Convention on Long-Range Transboundary Air Pollution* (UNECE CLRTAP). The tasks of the National Centre also include the preparation of information sets, including those on emissions, for the purposes of the public statistics.

The national greenhouse gas inventory is carried out every year and submitted in the format and by the date required by the Climate Convention. The last National Communication submitted in 2015 presented the results of the national inventory of greenhouse emissions and removals in Poland in 2013, along with their trend since 1988. The national inventory report was prepared in accordance with the UNFCCC reporting guidelines on annual inventories for Parties included in Annex I to the Convention as laid down in Decision 24/CP.19, while the greenhouse emissions and removals were estimated using the methodology published in 2006 by the Intergovernmental Panel on Climate Change (*2006 IPCC Guidelines for National Greenhouse Gas Inventories*). In accordance with the IPCC

Guidelines in effect, where possible the national methodology for estimating emissions was applied to obtain more specific emission data.

KOBiZE administers the Polish Registry of Kyoto Units, connected with the Independent Transaction Log, and accounts for the commitments under Kyoto Protocol. The Registry of Units is managed together with those of the other Member States of the European Union. It is connected by a teleinformation network with International Transaction Log, administered by the Secretariat of the *United Nations Framework Convention on Climate Change* (UNFCCC), and the European Union Transaction Log (EUTL), which plays the role of an additional transaction log (EUTL).

Both the participants in the emissions trading scheme and the administrator access the registry through a secured website at the following address:
https://ets-registry.webgate.ec.europa.eu/euregistry/PL/index.xhtml.

The database of the Registry stores information on the entities participating in the scheme, installations, verified emissions, national holding accounts, operator holding accounts and person holding accounts. The current information and changes in the national registry are presented annually in *the National Inventory Report* (NIR) submitted to the UNFCCC Secretariat.

2. THE QUANTIFIED ECONOMY-WIDE EMISSION REDUCTION TARGET (CTF TABLE 2: A-F)

In accordance with Decision 9/CP.2, Poland as a Party to the Convention and the Kyoto Protocol (KP) adopted 1988 as the base year for the reductions of basic greenhouse gases under the United Nations Framework Convention on Climate Change and the Kyoto Protocol. 1995 was adopted for F-gases. In accordance with Annex B to the Kyoto Protocol, Poland committed to achieving a 6% emission reduction by 2012. This target was achieved with a surplus.

The reduction targets for 2013-2020 were adopted at the EU level. As a Member State of the EU, together with its other countries, Poland made joint reduction commitments in order to achieve a 20% emission reduction by 2020 with respect to 1990.

As part of the joint commitments, the EU undertook to reduce its emissions in the sectors covered by the European Union emissions trading scheme (EU ETS) by 21% with respect to their levels in 2005. In the sectors not covered by the EU ETS scheme, in accordance with Effort Sharing Decision 406/2009/EC[1] (ESD), Poland may increase its emissions by 14% with respect to 2005. The annual emission allocations of the Member States for 2013-2020 and their adjustments were approved in Commission Decisions: 2013/162/EU of 26.03.2013 and 2013/634/EU of 31.10.2013. Table 2.1 shows the allocations for Poland in the sectors not covered by the EU ETS.

Table 2.1. ESD emission caps for Poland 2013-2020 (t CO_2 equivalents)

2013	2014	2015	2016	2017	2018	2019	2020
193 642 822	194 885 546	196 128 269	197 370 991	198 613 714	199 856 437	201 099 161	202 341 884

Source: European Commission (EC)

In 2013, the national greenhouse gas emissions amounted to 394,891.524 kt of CO_2 eq., while the emissions from the installations participating in the EU ETS scheme amounted to 205,735.395 kt of CO_2 eq., representing 52% of the national emissions. This means that the emissions from the sectors included in the ESD in 2013 amounted to 189,007.089 kt of CO_2 eq., after deducting the emissions (149 kt CO_2) from the domestic aviation indicated in the inventory.

1 Decision of the European Parliament and of the Council No 2009/406/EC of 23 April 2009 on the efforts of the Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020.

Poland's reduction commitment as part of the EU covers the following greenhouse gases: CO_2, CH_4, N_2O, HFCs, PFCs and SF_6. In the 2nd commitment period of the Kyoto Protocol, the emission calculations as CO_2 equivalent are based on global warming potential (GWP) values featured in the IPPC 4th Assessment Report (so-called AR4). The emissions are estimated for all the sectors covered by the IPPC guidelines.

Table 2.2. Summary of international and Community commitments for Poland

Specification	International commitments (UNFCCC)		EU law	
	Kyoto Protocol		Climate and Energy Package	
			EU ETS	ESD
Commitment period and target year	First commitment period (2008-2012)	Second commitment period (2013-2020)[2]	2013-2020	2013-2020
Emission reduction target	-6%	-20%	Emission reduction as a total in the EU by 21% with respect to 2005.	Emission growth by 14% with respect to 2005, in accordance with the annual emission allocations
Other commitments			Enhancing the share of RES to 15% in the final energy consumption and energy efficiency by 20%	
Base year	1988 for CO_2, CH_4, N_2O 1995 for HFCs, PFCs, SF_6	1988 for CO_2, CH_4, N_2O 1995 for HFCs, PFCs, SF_6, 2000 for NF_3	1990 for total emissions; 2005 for RES and energy efficiency and for emissions under ETS and ESD	
LULUCF	Including ARD and other selected measures	Including ARD and forest management, other selected measures (new accounting principles)	Excluded	
Aviation	Domestic aviation included	Domestic aviation included	Domestic and international aviation covered by the ETS scheme	CO_2 emissions from domestic aviation indicated in the inventory, excluded from ESD
Use of international credits	Use of KP mechanisms in accordance with the KP provisions	Use of KP mechanisms in accordance with the KP provisions	Subject to quantitative and qualitative restrictions	Subject to quantitative and qualitative restrictions
Transfer of units from previous periods	Not implemented	In accordance with the KP principles, along with the provisions of the Doha Amendment	EU ETS allowances may be banked for successive ETS trading periods from the second trading period	Transfer from the previous period not allowed; restrictions on the transfer between the years
Gases covered	CO_2, CH_4, N_2O, HFCs, PFCs, SF_6,	CO_2, CH_4, N_2O, HFCs, PFCs, SF_6, NF_3	CO_2, CH_4, N_2O, HFCs, PFCs, SF_6	
Sectors	In accordance with Annex I to KP and LULUCF in accordance with the accounting principles in CP1	In accordance with Annex I to KP and LULUCF in accordance with the accounting principles in CP2	Electricity and heat production and industry, including: cement, chemical, coking, refinery and other industries, aviation	Transport (excluding domestic aviation), housing, institutions, commerce, services, other industries , agriculture and waste
Global warming potential (GWP) values applied	IPCC AR2	IPCC AR4	IPCC AR4	

Source: Own elaboration

2.1. Accounting for flexibility mechanisms as part of the 2020 target

Information on the flexibility mechanisms used by operators as part of EU ETS will be publicly available at the level of installations after 3 years, i.e. the information from 2013 will be available in 2016. In turn, the Government is responsible for not exceeding the annual emission limits allocated

[2] The commitments by 2020 will become binding for Poland after its ratification of the Doha Amendment to the Kyoto Protocol.

by the Commission Decision of 26 March 2013 and adjusted with the Commission Decision of 31 October 2013 and for attaining the final target of the ESD (Decision2009/406/EC of the European Parliament and of the Council). However, the units acquired from the mechanisms may only be used for accounting for the ESD limits after their correct origin has been evaluated; this will be carried out in 2016.

2.2. Progress in the achievement of the quantified economy-wide emission reduction target (QEWER)

Compared with the emissions reported in the First Biennial Report (2011), just as in the whole period, there was a further reduction in the emissions in all the sectors by 3.5% as CO_2 eq., primarily in the energy and industrial production sectors as a result of energy efficiency improvements. With respect to gases the emissions grew only for the HFCs and N_2O.

Table 2.3. Greenhouse gas emissions trend for 2011–2013 according to gases and source categories

Greenhouse gases	Emission changes [%]
CO_2 emissions without net CO_2 from LULUCF	-3.3
CO_2 emissions with net CO_2 from LULUCF	-4.6
CH_4 emissions without CH_4 from LULUCF	-0.4
CH_4 emissions with CH_4 from LULUCF	-0.4
N_2O emissions without N_2O from LULUCF	1.8
N_2O emissions with N_2O from LULUCF	1.8
HFCs	6.8
PFCs	-9.7
SF_6	0.3
NF_3	NO*
Total (without LULUCF)	-2.5
Total (with LULUCF)	-3.5
Total (without LULUCF, with indirect)	-2.5
Total (with LULUCF, with indirect)	-3.5
IPCC sector	Emission changes [%]
1. Energy	-2.8
2. Industrial processes and product use	-2.2
3. Agriculture	-0.7
4. Land use, land-use change and forestry (LULUCF)	7.3
5. Waste	-0.9
6. Other	NA
Total (including LULUCF)	-3.5

* Not occurring

Source: KOBiZE, IEP-NRI

2.3. Monitoring of progress until 2020

The progress in the fulfilment of the adopted commitments is monitored annually in accordance with the *Monitoring Mechanism Regulation* No 525/2013; MMR). This mechanism covers e.g. the reporting on the following elements:

- past emissions, using the results of greenhouse gas emission inventories,
- the implemented and planned policies and measures, also including low-carbon strategies,
- the projections of greenhouse gas emissions,
- the financial support provided to developing countries,
- the use of revenues from the auctions of allowances under EU ETS,
- the progress in the implementation of the adaptation strategy.

2.4. Monitoring and reporting under the European Emission Allowance Trading Scheme

The greenhouse gas emission levels from installations covered by the European Emission Allowance Trading Scheme in 2013-2014 are calculated in accordance with Commission Regulation (EU) No 601/2012 of 21 June 2012 on the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council. The greenhouse gas emissions calculated by the operators of installations covered by EU ETS are verified by external, independent and accredited auditors. The reliable determination of emissions from installations is of crucial importance for trading in surplus allowances and for balancing the emission allowance trading scheme. Verified greenhouse gas emission levels are transferred to the Union Registry where they diminish the pool of emission allowances allocated to a given installation.

A correct indicator for assessing the functioning of the EU ETS scheme is the production-specific emission factor since it reflects the real emissions related to the manufacture of a unit product and it is not vulnerable to a change in the number of installations covered by the scheme or a change in the Gross Domestic Product (GDP). Changes in the value of this indicator show the real effects of measures taken by the operators of installations covered by EU ETS to reduce their CO_2 emissions. Table 2.4 shows the emission factors for selected sectors in 2008-2014. In the case of power plants, CHP plants and heating plants, the emission factor for equivalent production was used, given the need to take into account for certain installations in these groups the production of both electricity and heat.

Table 2.4. The emission factors for selected sectors in 2008-2014

Sector	Emission factor [$MgCO_2/GJ$] EQUIVALENT PRODUCTION							Emission factor [$MgCO_2/Mg$] MAIN PRODUCT						
	2008	2009	2010	2011	2012	2013	2014	2008	2009	2010	2011	2012	2013	2014
Industrial heating plants	0.113	0.110	0.108	0.107	0.108	0.099	0.105	-	-	-	-	-	-	-
Industrial CHP	0.134	0.133	0.137	0.125	0.123	0.120	0.150	-	-	-	-	-	-	-
Public CHP	0.115	0.112	0.108	0.108	0.104	0.106	0.109	-	-	-	-	-	-	-
Public power plants	0.252	0.251	0.249	0.252	0.249	0.250	0.250	-	-	-	-	-	-	-
Coking plants	-	-	-	-	-	-	-	0.314	0.287	0.282	0.278	0.254	0.217	0.210
Cement industry	-	-	-	-	-	-	-	0.845	0.840	0.842	0.847	0.834	0.819	0.816
Ceramic industry	-	-	-	-	-	-	-	0.165	0.158	0.153	0.145	0.141	0.191	0.189
Paper-making industry	-	-	-	-	-	-	-	0.449	0.468	0.481	0.527	0.506	0.553	0.511
Lime industry	-	-	-	-	-	-	-	1.062	1.077	1.070	1.067	1.090	1.090	1.075

Source: KOBiZE, IEP-NRI

There was a reduction in the emission intensity of the production in the energy sector, including heat producers, i.e. public and industrial CHP plants and public heating plants. The change in the emission factors of the other industrial sectors cannot be assessed unequivocally. In the coking plants, the emission factor diminished, whereas in the lime or paper-making industries its values are characterised by large variability with a growing tendency. The very diverse manufacture of products, also varied in the individual years, in certain industries (e.g. glassmaking) practically prevents the determination of an objective emission factor for the whole sector, without going into a division into specific types of products, e.g. packaging glass, flat glass, industrial glass, special glass or mineral

wool. A distinct increase in the emission factor to be seen in recent two years in the ceramic industry can be explained by the fact that new installations manufacturing different types of ceramic goods were included in the EU ETS. In addition, it should be emphasised that there are limited possibilities for improving the emission factors of industrial installations where CO_2 emissions are mainly generated from technological processes rather than from fuel combustion due to the technological and raw materials related requirements of these processes.

2.5. Changes in the national institutional and organisational system, taking into account the legal, administrative and procedural aspects, including the fulfilment of commitments, monitoring, reporting, archiving of information and assessment of progress towards the achievement of the reduction targets

The fundamental legal document regulating the issues related to the fulfilment of commitments, monitoring, reporting, archiving of information and assessment of progress towards the achievement of the reduction targets is the Act of 17 July 2009 on the System to Manage the Emissions of Greenhouse Gases and Other Substance (the consolidated text in the Official Journal of the Laws of 2013, Item 1107, as amended), laying down the tasks of the National Centre for Managing Emissions (KOBiZE), the principles of the functioning of the National System for Managing Emissions, the principles of the management of the emissions of greenhouse gases and other substances, the principles of the functioning of the National Registry of Kyoto Units, the principles of the trading in and management of Kyoto units, the principles of the functioning of the National Green Investment Scheme and the climate account, the conditions and principles of the implementation of Joint Implementation projects in the territory of the Republic of Poland, the conditions and principles of the implementation of Joint Implementation and Clean Development projects outside of the territory of the Republic of Poland.

It was complemented by the Act of 12 June 2015 on the Greenhouse Gas Emission Allowance Trading Scheme (Official Journal of the Laws of 2015, Item 1223), which completed the implementation of Directive 2009/29/EC into the Polish law. It also served to improve and expand the Community greenhouse gas emission allowance trading scheme and introduced regulations indispensable for the correct functioning of the scheme in the country.

The Act created a legal basis for establishing a system for comprehensive monitoring of the implementation of policies and measures with a view to reducing greenhouse gas emissions. A leading role in this monitoring system will be played by KOBiZE, which has been entrusted with the execution of tasks related to:

- the monitoring of measures in the scope of climate policy as well as the preparation of analyses, reviews and assessments of its functioning;
- the forecasting of the effects of the implementation of climate policy;
- the development of tools to support the implementation of the objectives of the system for managing emissions and tools for modelling the economic, financial and social effects of the implementation of climate policy;
- the integration of environmental reporting systems.

3. POLICIES AND MEASURES (CTF TABLE 3)

This Chapter presents the national policies and measures which affect the fulfilment of the commitment which Poland has made to reduce greenhouse gas emissions by 2020. This commitment will become binding for Poland after it has ratified the Doha Amendment to the Kyoto Protocol.

The effects of the implemented policies and measures in the form of greenhouse gas emission levels are shown in CTF Table 3.

3.1. Cross-sectoral policies and measures

3.1.1. The greenhouse gas emission allowance trading scheme (EU ETS)

In accordance with the requirements of Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 and its amendments, an emission allowance trading scheme was set up in Poland. The last change was introduced pursuant to the provisions of Directive 2009/29/EC of the European Parliament and of the Council of 23 April 2009. The changes introduced by the provisions of Directive 2009/29/EC significantly modified the operating principles of EU ETS. The new operating principles of the EU ETS scheme have been in effect since 1 January 2013. The main reason for the change was the adoption of new ambitious reduction targets by the EU. Starting in 2013, the sale of allowances at auctions was adopted as the main rule of their allocation in the EU ETS scheme. In the previous trading periods, the EU ETS scheme was principally based on free allowances determined on the basis of past emissions, while allowances were sold to a limited extent.

Directive 2003/87/EC was transposed into the national legal regime with the provisions of the Act of 22 December 2004 on the Air Emission Allowance Trading Scheme for Greenhouse Gases and Other Substances (Official Journal of the Laws of 2004, No. 281, Item 2784; this Act has been repealed), the Act of 28 April 2011 on the Greenhouse Gas Emission Allowance Trading Scheme (Official Journal of the Laws of 2011, No. 122, Item 695; this Act has been repealed) and the Act of 12 June 2015 on the Greenhouse Gas Emission Allowance Trading Scheme (Official Journal of the Laws of 2015, Item 1223), which transposed into the national regulations the amendments adopted pursuant to Directive 2009/29/EC.

Table 3.1. The number of installations participating in the EU ETS, the CO_2 emission levels in the EU ETS in 2008–2014 and their comparison with the GDP

Year	Number of installations	CO_2 emissions [Mg CO_2]	Change in CO_2 emissions relative to the previous year [%]	GDP (constant prices)[3] previous year=100
2008	832	204 107 419	-2.63	103.9
2009	828	191 174 249	-6.34	102.6
2010	810	199 726 907	4.47	103.7
2011	811	203 026 525	1.65	105.0
2012	764	196 636 280	-3.15	101.6
2013	784	205 735 395	4.63	101.3
2014	769	197 129 387	-4.18	103.3

Source: KOBiZE, IEP-NRI

The number of installations covered by the EU ETS slightly varied due to changes in the National Allocation Plan (NAP) or in the National Implementing Measures NIMs), caused by the inclusion of new installations meeting the criteria for the participation in the EU ETS and the exclusion of installations ceasing to operate or significantly reducing their production capacity, or caused by a the integration or division of installations.

[3] The data are consistent with the European System of National and Regional Accounts (ESA 2010). The average prices of the previous year were adopted as constant prices.

In the third trading period covering 2013-2020, significant changes were introduced to the principles of the allocation of allowances. The allocation of free emission allowances was restricted to installations which did not generate electricity, excluding the so-called derogation (under Article 10c of Directive 2003/87/EC). Poland meets the criteria defined as the dependence of electricity generation on one type of fossil fuel to an extent exceeding 30% and the GDP level per capita of less than 50% of the average GDP in the EU. The total number of emission allowances which Poland will be able to allocate under the derogation is about 404.65 million EUAs. The maximum allocation of free allowances to be allocated over 7 years will be gradually phased out to none in 2020.

The implementation of the derogation required the adoption of the National Investment Plan (NIP). In Poland's case, the National Investment Plan covers primarily investments in new electricity generators and the modernisation of old generators. Moreover, the NIP limits energy price increases which could occur in the absence of the derogation.

Moreover, throughout the EU harmonised principles of the allocation of emission allowances were adopted. They were based on the emission factors for the product, heat, fuel and process emissions defined by the European Commission in its Decision of 27 April 2011 determining transitional Union-wide rules for harmonised free allocation of emission allowances pursuant to Article 10a of Directive 2003/87/EC of the European Parliament and of the Council. Table 3.2 shows the main differences in the approach to the free allocation of allowances between the trading periods.

Table 3.2. Comparison of the principles of the allowance allocation between the first two trading periods and the third one

First and second trading periods	Third trading period
National caps	A cap for the whole EU
A fixed cap	A cap reduced from year to year
3- and 5-year trading periods	8-year trading period
Limited auctioning	A large share of allowances sold at auctions
Free allocation of allowances to industry and electricity production	Temporary free allocation to industry and heat production (no allocation to electricity production)
Free allocation based on emissions at the installation level	Free allocation calculated using emission intensity and the Historical Activity Level (HAL)
Free allocation based on historical emissions	Free allocation calculated using emission intensity benchmarks for products
-	The allocation adjustment mechanism: – a significant increase in the production capacity; – a significant decrease in the production capacity; – complete cessation of operations; – partial cessation of operations.
Legal basis: - Directive 2003/87/EC - National Allocation Plan - EC Decisions on the NAP - Decisions to upload the NAP table into the Community-wide registry	Legal basis: - Amended Directive 2003/87/EC - Principles of a harmonised allowance allocation in the EU as a whole (CIMs) - National Implementation Measures (NIMs) – The table of the National Allocation Plan.

Source: KOBiZE, IEP-NRI

3.1.2. The Effort Sharing Decision (ESD)

The greenhouse gas emission levels (the so-called national allocations) are set out for the sectors which are not covered by the EU ETS scheme (non-ETS sectors) in Commission Decision 2013/162/EE

of 26 March 2013 on determining Member States' annual emission allocations for the period from 2013 to 2020 pursuant to Decision No 406/2009/EC of the European Parliament and of the Council. The national allocation is expressed in units of annual emission allocations. This allocation also includes NF_3 emissions and the emissions from the LULUCF Sector.

The strategy for managing the national allocation is prepared by the Minister responsible for the environment and it is agreed with the members of the Council of Ministers. The Council of Ministers approves the strategy by way of a resolution. In particular, the strategy lays downs the assumptions and guidelines for the methodology for accounting for and projections of the greenhouse gas emissions which are not covered by the emission allowance trading scheme, taking into account:

1) the real greenhouse gas emissions which are not covered by the emission allowance trading scheme in a given year in the Republic of Poland and other Member States of the European Union;
2) the projections of the national greenhouse gas emissions which are not covered by the emission allowance trading scheme in the Republic of Poland and other Member States of the European Union for successive years;
3) the prices of Kyoto units, the units of the annual emission allocations, the temporary certified emission reductions and long-term certified emission reductions;
4) the geographical distribution of the projects which generate the units referred to in point 3;
5) the levels of the demand for and supply of units on the EU and international markets;
6) the tendencies for the greenhouse gas emissions covered by the emission allowance trading scheme to move out of this scheme.

3.1.3. The National Green Investment Scheme (GIS)

The GIS Scheme derives from the emissions trading mechanism. The idea and objective of the GIS are basically to generate and strengthen the environment-friendly effect of the sales of surplus Assigned Amount Units (AAUs).

The GIS Scheme is a mechanism of the sales of AAUs to countries or entities (authorised by these countries) which need the units to achieve their reduction target under the Kyoto Protocol. The legal framework for the National Green Investment Scheme was adopted by the Act of 17 July 2009 on the System to Manage the Emissions of Greenhouse Gas Emissions and Other Substances (the consolidated text in the Official Journal of the Laws of 2013, Item 1107, as amended). This Act regulates the principles of the functioning of the Green Investment Scheme, including its organisation and the selection of projects. In turn, the Regulation of the Council of Ministers of 20 October 2009 on the types of programmes and projects designated for implementation within the framework of the National Green Investment Scheme (Official Journal of the Laws, No. 187, Item 1445) defines the types of programmes and projects designated for implementation within the framework of the GIS Scheme. They are projects designed to avoid or reduce greenhouse gas emissions and those involving CO_2 removals and sequestration, the measures to adapt to climate change and other measures to protect the air. Each time the choice of specific areas is negotiated with the buyer.

To date, the Minister of the Environment has signed eleven agreements on the sales of AAUs for the total price of more than 195 million EUR. Negotiations are underway with other partners interested in the purchase of surplus AAU units from Poland.

The proceeds from the sales of AAUs are allocated to co-financing of tasks supporting the activities carried out within the framework of the programmes and projects covered by the National Green Investment Scheme.

Table 3.3 lists the priority programmes carried out within the framework of the GIS Scheme.

Table 3.3. The priority programmes implemented within the framework of GIS

Programme	Implementation period	CO_2 emission reductions [kt CO_2 eq.] in the years	
		2015	2020
Energy management in public utility buildings	2010–2017	34.0	221.0
Agricultural biogas plants	2010–2017	13.7	164.6
Biomass-fired CHP plants and heating plants	2010–2016	11.7	26.7
Construction, expansion and modification of power lines to enable the connection of the wind power generating sources (renewable energy sources - RES)	2010–2020	*	784.1
Energy management in the buildings of selected entities of the public finance sector	2010–2015	74.6	77.2
SOWA – Energy-saving street lighting systems	2013–2017	*	28.8
GAZELA – Low-emission urban transport	2013–2018	*	1.5

* Its effect to be gained after 2015.

Source: National Fund for Environmental Protection and Water Management

3.1.4. The financial mechanisms supporting measures to reduce greenhouse gas emissions

The basic institutional and financial mechanism supporting the implementation of climate policy, particularly in the scope of energy efficiency improvements, the development of renewable energy sources and the modernisation of energy generation processes, is the system of financing environment-friendly measures based on the resources from the National Fund and Voivodship Funds for Environmental Protection and Water Management (Table 3.4) and the EU Funds and the Norwegian Fund.

Table 3.4. The programmes carried out by the National Fund and Voivodship Funds for Environmental Protection and Water Management

Name of programme	Sector affected by the measure	Short description	Implementation period
Air quality improvement Part 1. The development of air protection programmes and short-term action plans	Health protection as a result of air quality improvement	Co-financing of the development of air protection programmes in the zones where there are significant exceedances of the limit and target concentrations of particulate matter PM2.5 and PM10 and CO_2 to reduce pollutant emissions and the exposure of the population to the impacts of such pollutants in the abovementioned zones, to liquidate low emissions, to improve energy efficiency and to develop dispersed RES.	2013–2018
Air quality improvement Part 2. KAWKA – Liquidation of low emissions to support energy efficiency improvement and the development of dispersed renewable energy sources	Health protection as a result of air quality improvement; dispersed RES		2013–2018
Energy efficiency improvement Part 1. Intelligent Power Grids (IPGs)	Energy sector	Co-financing of measures to optimise and rationalise energy consumption.	2014–2017

Name of programme	Sector affected by the measure	Short description	Implementation period
Energy efficiency improvement Part 2. LEMUR – Energy-saving public utility buildings	Construction	Co-financing in the form of grants for the elaboration of project documentation and in the form of loans for covering part of the eligible costs of construction and supervision. The amount of the financial support depends on the achieved energy efficiency class of public utility buildings and collective housing.	2013–2020
Efficient energy use Part 2. Co-financing of investment projects to save energy or improve the energy efficiency of enterprises	Industry	Co-financing of projects in the scope of investments, modernisations and improvements to introduce new facilities, control systems, installations and technical equipment in plants in order to improve energy efficiency and also the related technological changes in the existing facilities, installations and technical equipment.	2011–2017
Support for entrepreneurs in the scope of a low-emission and resource-saving economy Part 2. Energy efficiency improvement	Industry	Co-financing of projects, *inter alia*, those consistent with the Notice of the Minister of the Economy of 21 December 2012 laying down a detailed list of projects designed to improve energy efficiency (M.P. 2013, Item 15), aimed at improving energy efficiency and also the related technological changes in the existing facilities, installations and technical equipment.	2014–2017
Energy efficiency improvement Part 3. Energy-saving investments in small and medium-sized enterprises	Industry; Dispersed energy generation (RES)	Partial co-financing of the repayment of the principal of bank credits taken to implement investment projects in the scope of energy efficiency improvement and RES use by SMEs.	2014–2016
Energy efficiency improvement Part 2. Subsidies to credits for the construction of energy-saving houses	Construction	Co-financing of the partial repayment of the principal of bank credit; the amount of the co-financing depends on the achieved annual indicator of the unit energy demand for energy for heating and ventilation (EUco), calculated pursuant to the Regulation of the Minister of Infrastructure laying down a methodology for the energy performance of a building and a dwelling.	2013–2022
Support for dispersed renewable energy sources Part. 1. BOCIAN – Dispersed renewable energy sources	Dispersed energy generation (RES)	Reducing or avoiding CO_2 emissions by enhancing energy production from installations using renewable energy sources.	2014–2023
Support for dispersed renewable energy sources Part 2. Prosumer – A co-financing line intended for the purchase and assembly of micro-installations of renewable energy sources	Construction	Enhancing energy production from installations using renewable energy sources through the purchase and assembly of small installations or micro-installations of renewable energy sources to generate electricity or heat. The programme promotes new RES technologies and prosumer attitudes. The programme continues and expands the programme “Support for dispersed renewable energy sources. Part 3. Subsidies for partial repayments of the principal of bank credits taken to purchase and assemble solar collectors for natural persons and tenants’ associations”, which was completed in 2014.	2014–2022
Support for dispersed renewable energy sources Part 2. The programme for projects related to renewable energy sources and high-efficiency cogeneration plants	Dispersed energy generation (RES)	Co-financing of investment projects to reduce or avoid CO_2 emissions as a result of enhanced energy production from renewable energy sources.	2009–2019

Name of programme	Sector affected by the measure	Short description	Implementation period
Support for dispersed renewable energy sources Part 3. Subsidies for partial repayments of the principal of bank credits taken to purchase and assemble solar collectors for natural persons and tenants' associations	Dispersed energy generation (RES)	Co-financing of investment projects to reduce or avoid CO_2 emissions as a result of enhanced energy production from renewable energy sources.	2010–2014
The GIS Scheme Part 1. Energy management in public utility buildings	Construction	Co-financing of projects to improve energy efficiency in public utility buildings.	2010–2017
The GIS Scheme Part 2. Agricultural biogas plants	Agriculture; Dispersed energy generation (RES)	Co-financing of the construction of agricultural biogas plants using renewable energy raw materials.	2010–2017
The GIS Scheme Part 3. Biomass-fired CHP plants and heating plants	Dispersed energy generation (RES)	Co-financing of the modernisation or construction of biomass-fired heating plants and CHP plants with a rated thermal input below 20 MW.	2010–2016
The GIS Scheme Part 4. Construction, expansion and modification of power lines to enable the connection of the wind power generating sources (RES)	Dispersed energy generation (RES)	Co-financing of the connection of new wind power generating sources to the national power grid.	2010–2020
The GIS Scheme Part 5. Energy management in the buildings of selected entities of the public finance sector	Construction	Co-financing of projects to improve energy efficiency in the buildings of selected entities of the public finance sector.	2010–2015
The GIS Scheme Part 6. SOWA – Energy-saving street lighting systems	Infrastructure	Co-financing of projects to improve energy efficiency of street lighting systems.	2013–2017
The GIS Scheme Part 7. GAZELA – Low-emission urban transport	Transport	Co-financing of projects to reduce the consumption of energy and fuels in urban transport.	2013–2018
Support for projects in the scope of a low-emission and resource-saving economy Part 1. E-KUMULATOR – Ecological Accumulator for Industry	Industry	Co-financing of projects to reduce the consumption of primary raw materials and to limit or avoid the emissions of CO_2, SO_2, NOx and particulate matter which are not covered by the Notice of the Minister of the Economy of 21 December 2012 laying down a detailed list of projects designed to improve energy efficiency (M.P. 2013, Item 15).	2015–2023

Source: National Fund and Voivodship Funds for Environmental Protection and Water Management

3.2. Sectoral policies and measures: Energy production and consumption

3.2.1. The legal basis

The Energy Policy of Poland until 2030, adopted by the Council of Ministers on 10 November 2009, set out the following basic directions of the development of the energy sector:

1. Improvement in energy efficiency;
2. Enhanced security of fuel and energy supplies;
3. Diversification of the electricity generation structure by introducing nuclear energy;
4. Development of the use of renewable energy sources;
5. Development of competitive fuel and energy markets;
6. Limitation of the environmental impact of the energy sector.

The improvement in energy efficiency is treated as a priority. The main goals in this area include the commitment to maintain the zero-energy economic growth and the consistent reduction of the energy intensity of the Polish economy to the level of the EU-15.

Support will be given to the development of efficient and low-emission technologies enabling the supply of liquid and gaseous fuels from national raw materials.

The main tools for the implementation of the present energy policy include:

- legal regulations setting out the principles of the operations of the fuel and energy sector and establishing the relevant technical standards;
- systemic mechanisms of support for the implementation of measures to achieve the basic objectives of energy policy (e.g. the market of "certificates", tax reliefs and exemptions);
- the ongoing monitoring of the situation on the fuel and energy market by the President of the Office of Competition and Consumer Protection and the President of the Energy Regulatory Office and their launch of intervention measures in accordance with their competence;
- information measures carried out by the government authorities and the cooperating research and development institutions;
- support from public resources, including the European funds, for the implementation of projects of national importance in the scope of the energy sector (e.g. investment projects and research and development work).

Table 3.5. The major documents and legal acts concerning the energy sector, industry, construction and housing economy in Poland

Title of document	Description of document
The Energy Policy of Poland until 2030, adopted by the Notice of the Minister of the Economy of 21 December 2009 on the National Energy Policy until 2030 (M.P. of 2009, No 2, Item 11).	The document contains a long-term development strategy for the energy sector, a forecast of the demand for fuels and energy and the executive action programme until 2012. The implementation of the solutions indicated in the document can help meet the growing demand for energy, develop the production and transport infrastructure, reduce the dependence on external natural gas and oil imports and fulfil the international commitments in the scope of environmental protection.
The Act of 10 April 1997 on Energy Law (consolidated text in the Official Journal of the Laws of 2012, Item 1059, as amended).	The Act introduces the regulations laying down the principles of energy generation and use and the saving of its resources, and supporting the use of renewable energy sources; in this respect, the so-called "green certificates" play an important role. It also establishes the certificates of origin for energy generated in cogeneration[4].
The Act of 15 April 2011 on Energy Efficiency (Official Journal of the Laws of 2011, No. 94, Item 551, as amended).	The Act lays down the national target for economical energy management until 2016 at the level of 9% of the average national final energy consumption, averaged from 2001-2005. One of the basic mechanisms of the Act is the introduction of the system of energy efficiency certificates, the so-called "white certificates", which confirm that measures leading to specific energy savings have been taken.

[4] High-efficiency cogeneration is the generation of electricity or mechanical energy and useful heat in cogeneration which ensures primary energy savings. In accordance with the Act on Energy Law, support for high-efficiency cogeneration was available until 31 December 2012. At present, the Government of the Republic of Poland proposes to extend the support for high-efficiency cogeneration until 2015, i.e. support under the existing rules for electricity and heat generation using a high-efficiency cogeneration technology. On 2 January 2013, the Council of Ministers adopted a draft amendment in this scope to the Act on Energy Law.

Title of document	Description of document
The Act of 14 September 2012 on the Obligations to Report on the Energy Consumption by Energy-Using Products (Official Journal of the Laws of 2012, No. 1203, as amended).	The Act lays down the obligations to report on the consumption of energy and other basic resources by energy-using products for which the requirements for the preparation of technical documentation and the use of labels and sheets are laid down by the acts of the European Commission or on the impact of these products on energy consumption. It introduces the principles of the organisation and operation of the systems for controlling the fulfilment of the reporting obligations.
The Act of 20 February 2015 on Renewable Energy Sources (Official Journal of the Laws of 2015, Item 478).	The purpose of the Act is, *inter alia:* to fulfil the commitments under international agreements and to improve the innovativeness and competitiveness of Poland's economy; to develop mechanisms and instruments to support the production of electricity, heat or cold, or agricultural biogas in RES installations; to ensure the optimum and sustainable supplies of electricity, heat or agricultural biogas from RES installations to end users; to create new jobs as a result of a growing number of new commissioned RES installations; to ensure the use for energy purposes of by-products and residues from agriculture and industry using agricultural raw materials.
The National Reform Programme for the Implementation of the Europe 2020 Strategy. The 2013/2014 Update adopted by the Council of Ministers on 25 April 2012.	The document sets out the most important measures for 2012-2013 which support economic growth, competitiveness and employment.
The Act of 25 August 2006 on Bio-components and Liquid Biofuels (consolidated text in the Official Journal of the Laws of 2015, Item 775).	Amendments to the regulations which were made in the Act of 21 March 2014 Amending the Act on Bio-components and Liquid Biofuels and Certain Other Acts (Official Journal of the Laws of 2014, Item 457) concern in particular the issues related to the mandatory target of a 10% share of renewable energy in transport in 2020 as adopted by Directive 2009/28/EC and the issues related to the adoption of the sustainability criteria for bio-components and liquid biofuels. The fulfilment of these criteria, e.g. those regarding the source of origin of the raw material for the production of biocomponents and the minimum levels of greenhouse gas emission reductions for biocomponents, as well as their verification, will be the conditions for them to be considered part of the National Overall Target and the provision of financial support for the production of biocomponents and their use in liquid biofuels and liquid biofuels. The amendments introduced the registration obligations for newly defined entities and new reporting regulations applicable to selected entities operating on the market of bio-components and liquid biofuels, which will enable more effective monitoring of this market following the adoption in the Act of provisions on the need to meet the sustainability criteria.
The Act of 25 August 2006 on the System for the Monitoring and Control of Fuel Quality (consolidated text in the Official Journal of the Laws of 2014, Item 1728, as amended).	As from 1 January 2007, the Act allowed for the use of biofuels with an enhanced share of bio-components in vehicles and machinery (a group of at least 10 types of vehicles).
The Act of 27 May 2011 Amending the Act on the System for the Monitoring and Control of Fuel Quality and Certain Other Acts (Official Journal of the Laws of 2011, No. 153, Item 902, as amended) and the Regulation of the Minister of the Economy of 7 February 2012 amending the Regulation on the quality requirements for liquid fuels (Official Journal of the Laws of 2012, Item 136).	The amended regulations introduced the possibility of using diesel oil containing up to 7% of fatty acid methyl esters (so-called B7 fuel).
The Act of 11 July 2014 Amending the Act on the System for the Monitoring and Control of Fuel Quality and Certain Other Acts (Official Journal of the Laws	The Act implemented the provisions of Directive 2009/30/EC of 23 April 2009 amending Directive 98/70/EC as regards the specification of petrol, diesel oil in the scope of monitoring and reducing greenhouse gas emissions in the lifecycles of transport fuels and enhancing from to 5% to 10% the allowable

Title of document	Description of document
of 2014, Item 1088) and the Regulation of the Minister of the Economy of 3 November 2014 amending the Regulation on the quality requirements for liquid fuels (Official Journal of the Laws of 2014, Item 1547).	quantity of *biocomponents in motor petrols (the* so-called E10 petrol). After the entry into force of the Act, the implementing regulations were also issued; they laid down the quality parameters for E10 petrol.
The Act of 6 December 2008 on the Excise Tax (consolidated text in the Official Journal of the Laws of 2014, Item 752, as amended).	The Act lays down the excise tax rates for motor petrol and diesel oil.
The Resolution No. 134/2007 of the Council of Ministers of 24 July 2007 on the Long-term Programme to Promote Biofuels or Other Renewable Fuels for 2008–2014 (M.P. 2007, No. 53 Item 607).	The aim of the Programme is to create the conditions for the cost-effective production and use of biofuels in Poland. The Programme covers measures to support the production of bio-components and liquid fuels and those to stimulate the demand for them.
The Resolution No. 15/2014 of the Council of Ministers of 28 January 2014 on the multiannual programme called "The Programme for Polish Nuclear Energy Generation" (M.P. 2014, Item 502).	The Programme for Polish Nuclear Energy Generation sets out, *inter alia*, the timetable for the construction of two nuclear power plants and the preparation of regulatory and organisational infrastructure for these investment projects. This document defines the roles and scope of responsibility of institutions for the implementation of the Programme, as well as the issues related to ensuring nuclear safety and radiological protection. The Programme also provides the economic rationale for the implementation of nuclear energy in Poland and addresses the feasibility of its financing and the ways of handling spent fuel and radioactive waste.
The Directions of the Development of Agricultural Biogas Plants in Poland in 2010–2020, adopted by the Council of Ministers on 13 July 2010.	The document provides that by 2020 in each Polish commune on average one biogas plant will be set up to use biomass of agricultural origin, provided that the commune has adequate conditions for launching such a project. The basic aim of the document is to optimise the legal and administrative system for the establishment of agricultural biogas plants in Poland and to indicate the opportunities for installations of this type to be co-financed from public resources, both national and those from the European Union, which are available within the framework of national and regional operational programmes.
The Act of 21 November 2008 on Support for Thermal Modernisation and Repairs (consolidated text in the Official Journal of the Laws of 2014, Item 712).	The Act sets out the principles of financing of part of the costs of thermal modernisation projects and repair projects related to thermal modernisation from the resources of the state budget-supported Thermal Modernisation and Repair Fund.
The Regulation of the Minister of Infrastructure of 12 April 2002 on the technical conditions to be met by buildings and their situation (consolidated text in the Official Journal of the Laws of 2015, Item 1422).	The Regulation sets out the technical conditions to be met by buildings, including energy saving and thermal insulation levels. Its provisions apply to the design, construction, reconstruction and change in the use of buildings. The application of the regulations contributes to lower energy consumption in the construction sector.
The Regulation of the Minister of Internal Affairs and Administration of 16 August 1999 on the technical conditions for the use of residential buildings (Official Journal of the Laws of 1999, No. 74, Item 836, as amended).	It sets out the technical conditions for the use of residential buildings, along with the related installations and technical equipment, *inter alia*, ensuring the correct technical condition of the elements of a building, taking into account their impact on the environment.
The Regulation of the Minister of Transport, Construction and Maritime Economy of 25 April 2012 on the detailed scope and form of the construction design (Official Journal of the Laws of 2012, Item 462, as amended).	The Regulation lays down a detailed scope and form of the construction design which provides the basis for the issue of a decision on the construction permit. Its amended content imposes the obligation to consider the implementation of high-efficiency alternative systems using energy from renewable sources and heat pumps, prior to the launch of the construction.
The Act of 27 March 2003 on Spatial Planning and Development (consolidated text in the Official Journal of the Laws of 2015, Item 199, as	The Act sets out e.g. the principles of the shaping of spatial policy by territorial self-government units and Government administration authorities. Spatial planning and development take into account, *inter alia*, the requirements of environmental protection, including those related to water management and

Title of document	Description of document
amended).	the protection of farmland and forest land.
The Act of 29 August 2014 on the energy performance of buildings (Official Journal of the Laws of 2014, Item 1200, as amended).	The Act regulates the issues related to: the preparation and issue of energy performance certificates; the inspection of heating and air-conditioning systems in buildings in the scope of their energy performance; the management of the central register of the energy performance of buildings.
The Resolution No. 91 of the Council of Ministers of 22 June 2015 to adopt the National Plan to Enhance the Number of Buildings with Low Energy Consumption (M.P. 2015, Item 614).	The Resolution is the result of a the analysis of initiatives to improve energy efficiency of buildings, including the possibilities and barriers of importance for the stakeholders in the construction sector – self-government administration, engineers, designers and the scientific community. The content of the Plan includes information and promotion measures and proposals for instruments to support investors who plan to build or purchase a building with high energy performance.
The Strategy on Energy Security and the Environment – The Perspective until 2020, adopted by the Council of Ministers on 15 April 2014.	It sets out the objectives of the sustainable development policy of the country until 2020. Detailed objectives and directions of the Strategy include: (i) sustainable management of environmental resources; (ii) ensuring secure and competitive energy supplies for the national economy, implemented, *inter alia*, through energy efficiency improvements and modernisation of the electricity sector; (iii) improvements in the state of the environment, *inter alia*, through air protection, including the limitation of the impact of the energy sector, support for and promotion of new Polish energy technologies and the promotion of environmentally friendly behaviour.

Source: Ministry of the Environment

3.2.2. Enhanced use of renewable energy sources, including biofuels

The targets for the national share of energy from renewable sources (cf. Chapter 2) in the transport sector, the electricity sector and the heating and cooling sector in 2020 were adopted on 7 December 2010 in the document called *The National Action Plan on Energy from Renewable Sources*, updated with *A Complement to the National Action Plan on Energy from Renewable Sources*, adopted by the Council of Ministers on 2 December 2011.

The Plan defined the measures which needed to be taken in order to achieve the overall national targets for the share of RES in the final energy consumption. It was assumed that the pillars for the enhanced share of energy from renewable sources in Poland would be the greater use of biomass and electricity generated from the wind.

In order to support the development of energy from renewable sources in Poland, a system of instruments was adopted, including e.g.: the obligation to buy energy from renewable sources and the obligation to obtain certificates of origin for energy from renewable sources, the so-called “green certificates”, and to submit them to the President of the Energy Regulatory Office (ERO) for cancellation or to make a compensatory payment.

The Act of 20 February 2015 on Renewable Energy Sources (Official Journal of the Laws of 2015, Item 478) provided for solutions to ensure the sustainable development of renewable energy in Poland through optimising the flow of the streams of financial resources for the individual RES technologies.

The minimum required share of bio-components in transport fuels was defined in the Regulations of the Council of Ministers on the National Overall Targets for 2008–2013 (the Regulation of 15 June 2007, the Official of the Laws of 2007, No. 110, Item 757) and for 2013-2018 (the Regulation of 23 July of 2013, the Official of the Laws of 2013, Item 918). The results of the achievement of this target in Poland are shown in Table 3.6. In recent years, the utilisation of the national production capacity increased to 77% for bioethanol and 87% for esters. In 2013, biofuels were produced using mainly corn in a quantity of about 379,000 tonnes for the production of bioethanol and about 1.6 million tonnes of rapeseed for the production of esters.

Table 3.6. The utilisation of bio-components in transport fuels in Poland

Specification	Years			
	2010	2011	2012	2013
Consumption of bioethanol [TJ]	7 909	7 479	6 443	6 043
Consumption of esters [TJ]	29 221	31 621	28 028	24 902
Share of domestically produced bioethanol [%]	68	55	70	77
Share of domestically produced esters [%]	42	38	80	87

Source: Central Statistical Office (GUS)

Legislative work is underway on the use of fuels from renewable sources of agricultural origin, including biogas, fuels from animal fats and used cooking oil, to propel tractors.

As of the end of 2013, in Poland 44 agricultural biogas plants were in operation, generating as a total 112.4 million m^3 of biogas, from which about 228 GWh of electricity was generated. In 2013, the basic substrates used for biogas production included waste, residues and by-products of agriculture and agri-food production (80% of all the raw materials) which did not compete with the food market. Liquid manure and distilling dregs had the largest shares of substrates, representing, respectively, 28.8% and 22.4% of the total weight of the raw materials used in agricultural biogas plants. Target crops, e.g. corns and grasess, represented together about 18.2% of the weight subjected to methane fermentation in agricultural biogas plants.

The rationalisation of energy management in agriculture encompassed the continued process of adaptation of local boiler-houses to burn wood biomass and straw. In 2013, the share of renewable carriers (including biomass) in energy supply was about 11.9%.

As of 30 June 2015, the capacity of RES installations was: wind power plants – 4,117.421 MW; hydro-power plants – 980.323 MW; biomass-fired power plants – 1,008.245 MW; biomass power plants – 191.381 MW and solar power plants – 35.586 MW.

Table 3.7. *S*hare of renewable energy in the gross final energy consumption in 2011-2013 and 2020

*S*hare of renewable energy in sectors [%]	**Years**					
	2009	2010	2011	2012	2013	2020
Transport	4.82	5.49	6.51	6.09	6.03	11.36
Electric power sector	5.87	6.67	8.15	10.68	10.73	19.13
Heat supply and cooling	11.92	11.91	13.38	13.66	13.89	17.05
*S*hare of renewable energy in the gross final energy consumption	8.87	9.39	10.42	11.04	11.25	15.85

Source: Central Statistical Office GUS/ Energy Regulatory Office (URE)/Ministry of Economy (MG)

3.2.3. The Polish nuclear energy programme

It is planned that two nuclear power plants will be built and that the regulatory and organisational infrastructure will be prepared for the purposes of these investment projects. In 2014–2016, as part of Stage One of the investment project, the location will be defined and a contract on the supply of the technology for the first power plant will be signed. At Stage Two, in 2017–2018, it is foreseen that the technical design will be prepared and the decisions and opinions required by the law will be obtained. It is expected that in 2019–2024 the construction permit will be obtained, the first unit of

the nuclear power plant will be built, the construction of successive units will begin and the first unit will be started up. It is assumed that at Stage Four, in 2025–2030, successive units will be built and the construction of the first nuclear power plant will be completed. It is planned that the construction of the second nuclear power plant will be completed in 2035. The nuclear power plants will have the capacity of about 3,000 MW each.

3.2.4. The National Action Plan for Energy Efficiency for Poland 2014

The National Action Plan for Energy Efficiency for Poland 2014 was prepared pursuant to the Act of 15 April 2011 on Energy Efficiency (Official Journal of the Laws of 2011, No. 94, Item 551, as amended) and adopted in October 2014. The Plan lays down the adopted and planned measures to improve energy efficiency in the individual sectors which are necessary to achieve in 2016 final energy savings representing at least 9% of the average national final energy consumption in 2001–2005. Moreover, it indicates the measures designed to achieve 20% savings in primary energy consumption in the EU by 2020.

Over the last dozen year or so, the energy intensity of the GDP significantly fell and the distance between Poland and the European average for the most important energy efficiency indicators diminished to a dozen or so percent; however, this distance still remains a significant one with respect to the most efficient economies. The industry sector made the largest contribution to improvements in energy efficiency, as its improved its sectoral indicators and underwent favourable structural changes.

Among the measures to improve energy efficiency, the following priority ones were laid down:

Horizontal measures:

- A system obliging to seek energy efficiency (white certificates);
- The priority programme on Intelligent Power Grids (IPGs);
- The development and implementation of intelligent distribution grids at medium and low voltage levels;
- The nationwide advisory programme on Intelligent Power Grids (IPGs) and RES;
- Information and education campaigns focused on energy efficiency.

A special action area includes construction and housing economy which are regarded as one of the sectors where there are the greatest and most cost-effective opportunities for reducing its energy intensity and lowering greenhouse gas emission levels.

Measures to improve the energy efficiency of buildings and the energy efficiency in public institutions:

1) Enhancement of the thermal protection of buildings in terms of the quantities of heat, cold and electricity;
2) The assessment of the energy performance of buildings. The obligation to prepare energy performance certificates for new and expanded buildings and inspections of heating and air-conditioning systems were introduced;
3) The Thermal Modernisation and Repair Fund; thermal modernisation of public utility and residential buildings. Support in the form of the repayment of part of the credit taken for the implementation of a thermal modernisation project at a building, including repair projects implemented in multi-family residential buildings the use of which began before 1961;

4) The Green Investment Scheme; Energy management in public utility buildings and energy management in the buildings of selected entities of the public finance sector;

5) Support for energy efficiency, intelligent energy management and the use of renewable energy sources in public infrastructure, including public utility buildings and the housing sector;

6) Subsidies to credits for the construction of energy-saving houses;

7) Energy saving and the promotion of renewable energy sources (PL 04 "Energy saving and promotion of renewable energy sources" – a programme financed from the EEA and Norway Grants). Thermal modernisation of public utility buildings or the replacement of existing energy sources by advanced, energy-saving and environment-friendly heat or electricity sources, including RES, as well as the installation, modernisation or replacement of district heating substations supplying public utility buildings. The introduction of the obligation to analyse the possibilities for the rational use of high-efficiency alternative systems for electricity and heat supplies using energy from renewable sources, including heat pumps;

8) The Swiss-Polish Cooperation Programme. Objective 2: To increase energy efficiency and to reduce emissions, in particular greenhouse gases and hazardous substances;

9) The LEMUR Programme – Energy-saving public utility buildings;

10) The SOWA Programme – Energy-saving street lighting systems;

11) The raising of the awareness of managers, owners and users of buildings concerning energy savings. The popularisation of measures to save energy.

Measures to improve the energy efficiency in industry and small and medium-sized enterprises

1) Support for entrepreneurs in the scope of low-emission and resource-saving economy. An energy/electricity audit of the enterprise;

2) The programme to enable SMEs to have access to financial instruments;

3) High-efficiency energy generation;

4) Efficient energy distribution;

5) The Operational Programme PL 04 – Energy saving and promotion of renewable energy sources (a programme financed from the EEA and Norway Grants). Modernisation or replacement of existing heat sources, along with modernisation of the combustion process or the use of a different energy carrier;

6) The promotion of energy efficiency and the use of renewable energy sources in enterprises.

Measures to improve the energy efficiency in transport

1) Urban transport in metropolitan areas. The development of intelligent transport systems;

2) The Green Investment Scheme: the GAZELA Programme – Low-emission urban transport.

Measures to improve the efficiency of energy production and supplies

1) The promotion of low-emission strategies for all types of areas, in particular for urban areas, including support for sustainable multi-modal urban mobility and adaptation measures to mitigate climate change;

2) The promotion of the use of high-efficiency cogeneration of heat and power based on the demand for useful heat.

Moreover, measures were taken to improve the energy efficiency in agriculture

1) The technical modernisation of farms, consisting primarily in purchases of new, more energy efficient machinery and equipment;

2) In order to limit the consumption of motor fuels, work is also conducted on changes in field work technologies, including mainly the simplification of tillage, the possibilities of combining machinery and changes in harvesting technologies, particularly for sugar beet.

3.2.5. Support for the use of coalbed methane to produce electricity and heat

The industrial-scale use of captured methane in heat and power generating installations gradually developed. The measures to enhance the use of coalbed methane from mines included, *inter alia*:

- Support for electricity produced in high-efficiency cogeneration in plants firing gaseous fuels, in the form of methane released and captured in the course of underground mining operations in coal mines which are in operation, being liquidated and liquidated, in the form of violet certificates awarded to energy producers using cogeneration units fired by coalbed methane or biogas.
- The development of economically viable methods for methane recovery and its use as a source of clean energy from the hard coal mining sector, waste landfills, wastewater management, agriculture and the systems related to the use of oil and gas – the work was carried out as part of the international programme *Global Methane Initiative.*

3.2.6. Reductions in methane emissions from fuel production and distribution processes

For this purpose, legal regulations were issued on the air-tightening of fuel distribution, imposing the obligation to equip liquid fuel storage facilities with installations for air-tight storage, filling and emptying of Class I oil products, which reduced the annual losses of these oil products in the storage installation of a liquid fuel storage facility to a value of less than 0.01% of their capacity.[5.]

3.3. Sectoral policies and measures: industrial processes and product use

This section presents the measures to reduce greenhouse gas emissions from industrial processes (excluding the emissions from energy use which are addressed in 3.2.4), focused on fluorinated greenhouse gases.

3.3.1. Fluorinated greenhouse gases

The application of fluorinated greenhouse gases and the use of products, equipment and systems containing them was regulated by the Act of 15 May 2015 on Substances That Deplete the Ozone Layer (Official Journal of the Laws of 2015, Item 881) which implemented the provisions of Regulation (EC) No 1005/2009 of the European Parliament and of the Council of 16 September 2009 on substances that deplete the ozone layer (OJ L 286 of 31.10.2009, p. 1, as amended) and Regulation (EC) No 842/2006 of the European Parliament and of the Council of 17 May 2006 on certain fluorinated greenhouse gases (OJ L 161 of 14.06.2006, p. 1, as amended), concerning, *inter alia*:

[5]The Regulation of the Minister of the Economy of 21 November 2005 on the technical conditions to be met by liquid fuel storage facilities and stations, long-distance pipelines for the transport of crude oil and oil products and their situation (Official Journal of the Laws, No. 243, Item 2063, as amended).

- the obligations of entities carrying out economic activities involving the production and services related to the use of substances that deplete the ozone layer and fluorinated greenhouse gases,
- the penalties for a violation of the regulations concerning substances that deplete the ozone layer and fluorinated greenhouse gases, products, equipment, fire protection systems and extinguishers, as well as air-conditioning systems in certain motor vehicles containing these agents,
- the establishment of a system for certifying persons who carry out specific activities and enterprises which execute specific activities in the area of fluorinated greenhouse gases and substances that deplete the ozone layer.

The measures undertaken in the scope of service activities in the area of fluorinated greenhouse gases will contribute to a substantial reduction in the air emissions of certain fluorinated greenhouse gases in the refrigeration, air-conditioning, fire protection and electricity sectors.

3.4. Sectoral policies and measures: transport

3.4.1. Strategic and programming documents

In 2008-2012, the basic planning document in the area of transport was the *National Transport Policy for 2006-2025.* On 22 January 2013, the Council of Ministers adopted the *Transport Development Strategy until 2020 (with an Outlook until 2030*), a planning document, indicating the objectives and directions of measures in the area of transport. The main goal of the Strategy is to enhance territorial accessibility and to improve the safety of traffic participants and the efficiency of the transport sector by creating a consistent, sustainable and user-friendly transport system at the local, national, European and global levels. One of the detailed objectives is to "limit the adverse impact of transport on the environment*".*

Table 3.8. The major strategic and programming documents concerning transport

Title of document	Description of document
The National Transport Policy for 2006-2025, adopted by the Council of Ministers on 29 June 2005. On 13 March 2014, the Council of Ministers declared this document to be non-binding.	The Transport Policy adopted as its basic goal an improvement in the quality of the transport system and its expansion, in accordance with the principles of sustainable development. The problems considered in this document were integrated into the Transport Development Strategy until 2020 (with an Outlook until 2030).
The Transport Development Strategy until 2020 (with an Outlook until 2030), adopted by the Council of Ministers on 22 January 2013 (specified in the Implementation Document adopted by the Council of Ministers on 13 October 2014).	The Strategy is a basic planning document for the development of the transport sector in a medium term, i.e. by 2020/2030. The achievement of the main goal (see above) involves the implementation of five detailed objectives specific of each mode of transport: the creation of a modern, consistent network of transport infrastructure; improvements in the manner of organisation and management of the transport system; improved safety of transport users and the goods carried; the mitigation of an adverse impact of transport on the environment; the building of a rational model of financing infrastructural investment projects. Measures related to the organisational system, investments and technological innovation are expected to be taken to mitigate the adverse impact of transport on the environment.

Title of document	Description of document
The Programme for the Construction of National Roads for 2011-2015, adopted by the Resolution No. 10/2011 of the Council of Ministers of 25 January 2011 and replaced by the Programme for the Construction of National Roads for 2014-2023 (with an Outlook until 2025) adopted by the Resolution No. 156/2015 of the Council of Ministers of 8 September 2015.	The medium-term programmes for the development of road infrastructure provide a financial framework for the construction of motorways, expressways and ring roads – the infrastructure enabling the elimination of bottlenecks in road transport. Their aim is to enhance traffic fluidity and also to improve safety by taking out transit traffic of agglomerations and cities. The measures intended to improve road traffic safety result in the mitigation of the adverse impact on the environment and the unfavourable impact on the health and the quality of living of residents along the course of the routes. The current document provides for the completion of the sequences of expressways and motorways and the construction of 56 ring roads in the sequences of national roads. It is expected that PLN 107 billion will be spent on the investment projects included in the Programme.
The National Road Traffic Safety Programme 2005-2007-2013 GAMBIT 2005, adopted by the Council of Ministers on 19 April 2005 and replaced by the National Road Traffic Safety Programme *2013-2020* adopted by the National Road Traffic Safety Council on 20 June 2013.	The aim of this programme of road traffic safety measures to be taken by the Government administration is to implement the main goal and the detailed objectives of Vision Zero adopted by Poland.
The Master Plan for Rail Transport in Poland until 2030, adopted by the Council of Ministers on 19 December 2008.	The Master Plan covers all the aspects of rail transport until 2030. Its main goal is to make rail transport a competitive segment of the transport market, on the basis of cooperation among national and local authorities, rail companies and infrastructure managers. Its major tasks include e.g. the limitation of environmental damage caused by higher demand for transport.
The Long-Term Rail Investment Programme until 2015 with an Outlook until 2020, adopted by the Council of Ministers on 13 March 2015 (valid until 31 December 2015, except for Annexes 2 and 3 to the Resolution No. 196/2013 of the Council of Ministers to establish the Long-Term Rail Investment Programme until 2015 with an Outlook until 2020, which were replaced on 15 September 2015 by the National Rail Programme until 2023).	The Programme is a tool designed to achieve the effects provided for in strategic documents setting out the directions of rail infrastructure development in Poland. The overriding goal of the Programme is "*to enhance the availability and to improve the quality of rail transport in a way which would meet the needs of carriers, passengers, senders and receivers of the commodities transported by rail*". One of the effects of the implementation of this objective is the limitation of an adverse impact of rail on the environment.
The National Plan for the Implementation of the European Rail Traffic Management System in Poland, adopted by the Council of Ministers on 6 March 2007.	The purpose of the Plan is to implement of a more effective and safer rail traffic management system – the European Rail Traffic Management System (ERTMS) – at the key sections of the railway network. The implementation of the ERTMS system will enhance the energy efficiency of this mode of transport by improving rail traffic fluidity.
The Programme for the Construction and Setting in Operation of High-Speed Railways in Poland, adopted by the Resolution No. 276/2008 of the Council of Ministers of 19 December 2008.	The aim of the Programme is to propose a means of transport which would be alternative to road and air transport and cause a lower unit environmental load per passenger-kilometre (measured by the CO_2 emission factor).
The Assumptions of the Maritime Policy of the Republic of Poland until 2020, adopted on 14 September 2009 by the Standing Committee of the Council of Ministers.	A huge potential for a transition of the economy towards a low-emission one is related to the development of sea shipping as a transport mode characterised by low energy intensity which translates into the levels of greenhouse gas emissions.
The Strategy for the Development of Seaports until 2015, adopted by the Resolution No. 292/2007 of the Council of Ministers of 13 November 2007.	One of the priorities conditioning the ability of sea shipping to develop includes improvements in the infrastructure of seaports and access to them from both the land and the sea and an expansion of port infrastructure connections with the national and European transport networks.

Title of document	Description of document
The Programme for the Development of a Network of Airfields and Aviation Ground Facilities, adopted by the Resolution No. 86/2007 of the Council of Ministers on 8 May 2007.	The aim of the measures included in the Programme is to optimise air travels (the flights to airfields situated closer to destinations) and to build or modernise the ground facilities which are part of the system to manage the traffic in the air and also in the airfield area.
The Operational Programme Infrastructure and Environment. The National Strategic Reference Framework 2007-2013. The version approved by the European Commission on 5 December 2007, as amended.	The implementation of Priority Axis VII: *Environmentally friendly transport* contributes to enhancing the share of transport modes which are alternative to road transport (rail transport, sea transport, public transport in metropolitan areas, intermodal transport and inland waterway transport) in the goods and passenger transport, leading to a better balanced transport system, the limitation of an adverse impact of transport on the environment and a reduction in traffic congestion.
The Operational Programme for the Development of Eastern Poland for 2007-2013.	This document, which focuses on the implementation of the objectives included in the National Cohesion Strategy and the Development Strategies, provides e.g. for measures related to the transport system, including public urban transport, and the construction of ring roads or cycle routes.
Regional Operating Programmes for 2007-2013.	In Poland, 16 Regional Operating Programmes were established for 2007-2013, in accordance with the administrative division of Poland into Voivodships. The Regional Operating Programmes for 2007-2013 provide e.g. for measures related to environmentally friendly transport, energy efficiency, renewable energy sources and environmental protection.

Source: Ministry of Infrastructure and Development

3.4.2. Measures in transport

The economic growth and the related greater affluence of society, as well as the continued process of the socioeconomic convergence with the EU caused the mobility level in Poland to come closer to the average level in the EU; therefore, it is forecast that the demand for transport will grow significantly in both a medium and long term (in 2030, the volume of transport will grow by more than 60% compared with 2010). The mobility growth underway will translate into a greater transport volume and the substantial efforts taken in the area of transport to reduce the greenhouse gas emissions from this sector can only mitigate the overall emissions resulting from the growing transport volumes.

The measures in the transport sector can be systematised in the form of the following packages addressing the different transport modes.

The package for road transport

1) The modernisation and construction of road infrastructure to make road traffic more fluid on non-urban roads due to non-collision intersections (at different levels) and bypassing of areas of substantial local traffic (the ring roads of towns) and due to traffic calming in urban areas.

2) Energy efficiency improvements and the reduction of emission factors of road vehicles due to the applicable lower limit values for the pollutant emissions from light-duty vehicles Euro 6 and heavy duty vehicles Euro VI and due to the limit CO_2 emission levels for new passenger cars and delivery trucks registered in the EU, which are annually strengthened for their producers. The system of technical inspections of motor vehicles and their trailers contribute to the elimination of non-roadworthy or end-of-life vehicles, which have an adverse effect on the energy and emission efficiency of this transport mode. Moreover, the charges imposed on vehicles with the gross weight exceeding 3.5 tonnes for travels on specific sections of the motorway network, expressways and national roads, which depend on their Euro emission class, the charges for the use of the environment which are differentiated depending on the types of vehicles and fuels or much cheaper gaseous fuels can affect decisions to replace a vehicle by a more environment-

friendly one. Since 2011 an additional energy and emission-based criterion has had to be applied to the purchases of road vehicles by public entities and by vehicle operators to enable them to provide public services involving passenger transports, and there has been the obligation to provide information on fuel consumption and CO_2 emissions for cars offered for sales or leasing.

3) The promotion of collective transport in towns/cities and their functional areas. This measure includes, *inter alia*, the general establishment of traffic preferences in towns/cities in the form of the separation of bus lanes, the right of way at intersections, financial support for the replacement and modernisation of the means of public transport, the integration of lines, information for travellers and the tickets of different public transport operators, as well as the constriction of Park&Ride infrastructure. The use of Integrated Territorial Investments (ITIs),a new form of cooperation among local governments, translating into greater effects of their jointly implemented projects, is particularly important for the development of a sustainable, efficient transport system connecting a city and its functional area.

4) The optimum traffic management based on integrated spatial, transport and low-emission planning and the dissemination of traffic management systems, including the implementation of Intelligent Transport Systems in 11 cities and 2 Regional Transport Associations, as well as support for the development of logistics services. With respect to cities, the optimisation of traffic speeds, parking policy or support for services in the scope of urban logistics are of key importance.

5) The shaping of environmentally aware drivers' behaviour by disseminating an environment-friendly driving technique (it is part of the driving courses for amateurs and professionals and the examinations for a driving licence) and public campaigns, e.g. on the occasion of the European Mobility Week or In Town Without My Car! It is also important to mention many projects addressed to drivers and passengers and launched as civic initiatives, such as the ad hoc offering of joint travels according to the carpooling formula (e.g. the initiatives called "Bla Bla Car" or "Otodojazd.pl").

6) The dissemination of alternative fuels, including mainly biofuels and gaseous fuels: liquefied petroleum gas (LPG) and compressed natural gas (CNG). Instruments were also introduced to support purchases of low-emission vehicles, e.g. natural gas-propelled, hybrid and electric buses, by public entities. At present, the LPG consumption in transport is about 1.8 million tonnes a year, representing about 12-15% of the transport fuel market, there are about 6 stations offering this fuel and the users' market consists of about 3 million cars with an LPG installation. There are 25 CNG refuelling stations (in more than 20 cities, natural gas-propelled buses are operated) and about 3,500 vehicles use approximately of a dozen or so million cubic metres of CNG natural gas for propulsion purposes. In Poland, electric drives have also begun to be introduced and at present a fleet of more than 1,000 vehicles can use about 100 publicly accessible charging stations.

7) Support for the development of non-motorised transport, in particular for the dynamically developing cycling transport, due to amendments to the road traffic regulations to promote and improve the safety of these traffic participants (the right of way, the right to overtake, separate cycle road crossings and contra-flow lanes etc.), and primarily due to widely launched investments in cycle tracks, service points, cycle parking lots and city cycle rental systems (there are already a dozen or so such systems, primarily in big cities, e.g. in Wrocław, Cracow, Poznań, Warsaw, Opole, Sopot, Białystok, Szczecin, Lublin, Toruń, Rzeszów, Bydgoszcz, Bielsko-Biała, Katowice, but also in smaller towns, such as e.g. in Grodzisk, Konstancin-Jeziorna or Juchnowiec Kościelny). These investment projects were mainly implemented by territorial self-government units, but also by infrastructure managers, e.g. the General Directorate of National Roads and Motorways (GDDKiA). In 2014–2020, Voivodships will allocate as a total about EUR 375.5 million to cycling transport. One of the largest projects now being implemented is "The Green Velo

Eastern Bike Trail", which will consist of 2,000 km of routes located in five Polish Voivodships: Warmińsko-Mazurskie, Podlaskie, Lubelskie, Podkarpackie and Świętokrzyskie. The value of the project is PLN 297.5 million, including PLN 236.3 million co-financed from the European Regional Development Fund.

The package for rail transport

1) The modernisation of rail infrastructure: lines, junctions, stations and stops. In 2007-2013, almost EUR 5 billion was allocated to investments in railway lines and so will another EUR 9.5 billion as part of the new perspective.

2) The modernisation of rolling stock for passenger and goods transport, e.g. support for the purchases of engines, including multi-system ones, multiple units and lightweight rail vehicles (also including those for the underground and tramways) and carriages. In addition, since the beginning of 2012 engines and rail motor cars have been subjected to more rigorous (level IIIB) requirements for the limit emission values of pollutants in accordance with the Regulation of the Minister of the Economy on the detailed requirements for internal-combustion engines as regards the limitation of the emissions of gaseous pollutants and particulate matter by these engines (Official Journal of the Laws of 2014, Item 588), which are indirectly related to greenhouse gas emissions.

3) The strengthening of intermodal integration by supporting the development of intermodal terminals and rolling stock and logistics services (e.g. transport operator services in the "port to door" systems – rail transports between the Tri-City ports and conventional terminals in Kąty Wrocławskie and broad-gauge terminals in Sławków). In 2007–2013, more than EUR 145 million was allocated to the construction and modernisation of intermodal terminals and also the purchase of necessary equipment and rolling stock, while the resources intended for this purpose as part of the new perspective will be five time as much. They can be used to finance e.g. the reconstruction of terminals situated at logistics centres (not only rail centres, but also e.g. those at seaports).

4) The promotion of collective rail transport by developing public passenger transport based on key transport axes operated using rail transport (railways, including agglomeration and urban networks, tramways and the underground) and by integrating with it the other passenger transport services (connections, Park&Ride and Kiss&Ride). A detailed outline of the plan for sustainable development of public collective transport in interregional and international passenger transport services in rail transport was laid down by way of a Regulation of the Minister responsible for transport. At the same time, the integration of information for travellers and tickets of different operators is underway and the abovementioned financial support is provided for the construction and modernisation of infrastructure and the replacements and modernisation of the rolling stock for public rail transport (including the support under all the operational programmes as part of both the previous and new financial perspectives).

5) The modernisation of the traffic management systems, including the implementation of the European Rail Traffic Management System (ERTMS) on Polish railway lines, will contribute to enhancing the safety and operational efficiency of rail transport, thus leading to a better balanced transport system and reducing its adverse impacts on humans and the environment. At present, implementation projects are underway. The rail sector is preparing for the use of financial resources dedicated to research and development work as part of the initiative of the European Commission called SHIFT2RAIL aimed at shifting part of the share of road transport to rail transport.

The package for domestic air transport

1) The improvement of operating efficiency. By optimising air corridors and enhancing the capacity of taxiways the fuel consumption can be reduced by up to 15% and so also can CO_2 emissions. In order to make it fully feasible, it is necessary to expand and develop radio communication infrastructure (ATM), which will improve the safety of air traffic by reducing errors in the information transferred and diminish the number of voice connections. This purpose is also served by the Airport Collaborative Decision Making Solution (A-CDM), which consists in the cooperation among all the airfield services and the sharing of the information on the current and foreseen situations at the airfield .
2) The Polish Airlines LOT has introduced the CDA (*Continuous Descent Approach*) operating procedures. They consist in that an aircraft descends continuously until the moment when pilot lowers the landing gear and flaps and it is only then that the engines are revved up. The CDA procedure shortens the landing time with revved up engines, reducing carbon dioxide emissions.
3) Efficiency is also improved due to the gradual implementation of the Single European Sky, including the integration of the airspace by creating the Functional Airspace Blocks, and also due to the implementation of a technological package related to advance navigation infrastructure (*Single European Sky ATM Research- SESAR)*.

The package for international air transport

1) Improvements in operating efficiency, certificates for aircraft and the optimisation of the flights carried out as described in the package for domestic air transport are measures which are taken for the whole air transport sector and also bring effects in the area of international aviation.
2) The modernisation of the aircraft fleet through the purchase of Boeing 787 Dreamliners by the Polish Airlines LOT, making it possible to save fuel and to substantially reduce CO_2 emissions.
3) The inclusion into EU ETS – it is expected that using the economic mechanisms contained in the emissions trading scheme it will be possible to control the CO_2 emissions in aviation. It is key for the scheme to be based on market mechanisms, as this makes it possible to maintain competitiveness, without shifting the additional charges onto carriers and, in consequence, onto passengers. The attempts to move away from these mechanisms which are taken at the level of the EU authorities diminish the effectiveness of this instrument.

The package for inland navigation

1) The modernisation of the existing waterways on the Odra and Vistula Rivers (implemented as part of the Operational Programme Infrastructure and Environment).
2) Support for the modernisation of the fleet from the resources of the Inland Navigation Fund, consisting of the co-financing of the purchase, modernisation or rebuilding of vessels and of other projects supporting the restructuring the inland navigation sector. Support is given to vessel owners which introduce innovative technical solutions which also improve the working conditions and safety. Modernisation measures can be encouraged by charges imposed on vessels for the use of the environment which depend on the date of their production and the type of fuel used.
3) The introduction of the limit emission values for pollutants for the internal-combustion engines used in inland navigation, in accordance with the Regulation of the Minister of the Economy on the detailed requirements for internal-combustion engines as regards the limitation of the emissions of gaseous pollutants and particulate matter by these engines (Official Journal of the Laws of 2014, Item 588), which are indirectly related to greenhouse gas emissions.

The package for maritime shipping

1) The legal regulations on the fuels used by chips (the Act of 7 November 2014 Amending the Act on the Prevention of Sea Pollution by Ships and Certain Other Acts, Official Journal of the Laws of 2014, Item 1554, and the Regulation of the Minister of Infrastructure and Development of 6 November 2014 on the requirements for sulphur content in marine fuels, Official Journal of the Laws of 2014, Item 1553) entered into force on 1 January 2015. In accordance with the new requirements, the maximum sulphur content in the fuels used by ships sailing in the Baltic Sea and the North Sea may not exceed 0.1% per unit weight. As an alternative to the use of low-sulphur fuels (0.1%), it is allowed to apply equivalent technologies, i.e. such that the use of them causes a reduction in the sulphur emissions comparable with the use of low-sulphur fuels. This means that it will be possible to equip ships e.g. with on-board systems for removing sulphur from waste gases (so-called scrubbers) and to use such fuels as e.g. liquefied natural gas (LNG), biofuels and methanol (these products do not contain sulphur or contain much less of it than traditional marine fuels).

2) In July 2012, with its Resolution MEPC.203 (62), the International Maritime Organisation (IMO) introduced amendments to Annex VI to the MARPOL Convention, adopting mandatory requirements for the energy efficiency of ships in order to reduce, as a result of them, greenhouse gas emissions. These regulations entered into force on 1 January 2013 and apply to all the conventional ships of 400 gross tonnage or more engaged in international shipping. Two instruments designed to ensure the energy efficiency of ships became mandatory: the Energy Efficiency Design Index (EEDI) required for new ships and those that have undergone a major conversion and the Ship Energy Efficiency Management Plan (SEEMP) required for all the conventional ships. These instruments can be used to support and promote structural solutions with higher energy performance and, hence, lower CO_2 emissions in the course of the operation of a ship.

3) For the purpose of monitoring vessel traffic, including the management and supervision over vessel traffic, the National Vessel Traffic Monitoring and Information System, hereinafter referred to as the National SafeSeaNet System was established (introduced by the Act of 18 August 2011 on Maritime Safety, the consolidated text in the Official Journal of 2015, Item 611, as amended). As part of the SafeSeaNet information management system, the THETIS-S system is used. It is a special EU information system, which has been developed and is operated by the European Maritime Safety Agency as a platform for an exchange of information on the results of individual verifications of compliance in respect of sulphur content in marine fuels pursuant to Directive 1999/32/EC, using port-of-call data on the individual ships. The purpose of the inspection activities carried out by sulphur inspectors using the THETIS-S system is, *inter alia*, the control of marine fuels used and delivered to ships, enabling a fast selection of ships which use a fuel that is an incorrect fuel in a given sea area and thereby the control of waste gas emissions.

4) Intermodal infrastructure in seaports. Their further development towards their transformation into intermodal nodes of the Trans-European Transport Network TEN-T will contribute to enhancing the service capacity of ports and to improving the performance and quality of the services provided and, in consequence, to increasing their competitiveness.

5) More efficient access to ports from the land is ensured by investments in road, rail, inland water and pipeline connections. At the same time, investment projects are implemented to improve access to ports from the sea.

3.5. Sectoral policies and measures: agriculture

3.5.1. The legal basis

The basic principles of the EU rural development policy for 2007-2020 and also the support instruments which can be used by Member States and regions were laid down in Council Regulation (EC) No 1698/2005 of 20 September 2005 on support for rural development by the European Agricultural Fund for Rural Development (EAFRD) (OJ L 277 of 21.10.2005, p. 1) for the Rural Development Programme for 2007–2013 and Regulation (EU) No 1305/2013 of the European Parliament and of the Council of 17 December 2013 on support for rural development by the European Agricultural Fund for Rural Development (EAFRD) and repealing Council Regulation (EC) No 1698/2005 (OJ L 347 of 20.12.2013, p. 487) for the Rural Development Programme for 2014–2020[6].

The abovementioned programmes provide support for rural development by the EAFRD and provide the basis for the implementation of measures based on the concept of multi-functionality of agriculture and rural areas. The main regulations and programming documents, including those concerning environmental protection in Polish agriculture, are presented in Table 3.9.

Table 3.9. The basic legal acts and programming documents setting out measures for environmental protection in Polish agriculture

Title of document	Description of document
The Act of 3 February 1995 on the Protection of Farmland and Forest Land (consolidated text in the Official Journal of the Laws of 2015, Item 909).	The Act regulates the principles of the protection of farmland and forest land, the reclamation and improvement of the utility value of lands, and also lays down the possible modes of conversion of forest areas to non-forestry uses.
The Act of 10 July 2007 on Fertilisers and Fertilisation (Official Journal of the Laws of 2015, No. 625).	The Act regulates the issues related to (i) the placing of fertilisers on the market and their use, (ii) the prevention of risks for humans and the environment which may arise as a result of transport, storage and application of fertilisers, and (iii) the agrochemical services for agriculture.
The Act of 25 June 2009 on Organic Farming (consolidated text in the Official Journal of the Laws of 2015, Item 497).	The Act sets out the tasks and competence of public administration authorities and organisational units in organic farming in the scope of the implementation of the provisions of Council Regulation (EC) No 834/2007 of 28 June 2007 on organic production and labelling of organic products (OJ L 189 of 20.07.2007, p.1).
The Act of 7 March 2007 on Support for Rural Development Using the Resources of the European Agricultural Fund for Rural Development (the consolidated text in the Official Journal of the Laws of 2013, Item 173).	The Act sets out the tasks and competence of authorities and organisational units in the scope of support for rural development using the resources from the European Agricultural Fund for Rural Development laid down in Council Regulation (EC) No 1698/2005 of 20 September 2005.
The Rural Development Programme for 2007-2013 (RDP 2007-2013).	The Programme lays down the objectives, priorities and principles of support for sustainable rural development within the framework of the European Agricultural Fund for Rural Development.
The National Strategic Plan for Rural Development for 2007-2013.	The document provides the basis for the implementation of the measures of the Rural Development Programme for 2007-2013, taking into account the Community strategic guidelines on rural development.

[6] The Rural Development Programme for 2014-2020 was adopted by the Services of the European Commission on 12 December 2014.

Title of document	Description of document
The Strategy for Sustainable Rural Development, Agriculture and Fisheries for 2012-2020, adopted by the Council of Ministers on 25 April 2012.	The aim of the Strategy is to lay down a long-term vision for rural areas and the fisheries sector in Poland and to indicate the measures which would implement this vision by 2020. The Strategy also plays the role of a platform for coordinating support given for rural areas under different policies.
The Act of 20 February 2015 on Support for Rural Development Using the Resources of the European Agricultural Fund for Rural Development within the Framework of the Rural Development Programme for 2014-2020 (Official Journal of the Laws of 2015, Item 349).	The Act sets out the tasks and competence of authorities and organisational units in the scope of support for rural development using the resources from the European Agricultural Fund for Rural Development laid down in Council Regulations 1305/2013, 1306/2013 and 1303/2013. Moreover, the Act lays down the conditions and procedure for the award, payment and return of financial assistance within the framework of the measures covered by the Programme.
The Rural Development Programme for 2014–2020 (RDP 2014-2020).	The Programme lays down the objectives, priorities and principles of support for rural development using the EAFRD resources.
The Act of 26 January 2007 on Payments Under the Direct Support Systems (Official Journal of the Laws of 2012, Item 1164, as amended).	The Act regulates, *inter alia*, the tasks and competence of authorities and organisational units in the scope of direct payments, supplementary payments, sugar payments, tomato payments and special support.

Source: Ministry of the Environment

3.5.2. Measures in agriculture

The rationalisation of the use of fertilisers, including nitrogen fertilisers

As part of the Act on Fertilisers and Fertilisation, *inter alia*, the following measures were introduced: (i) the limitation of the natural fertiliser dose to 170 kg N/ha/year, (ii) a ban on the use of natural fertilisers from the end of November to the beginning of March, (iii)) mandatory training courses for persons who provide services in application of fertilisers, (iv) a ban on the use of fertilisers on water-saturated, snow-covered and frozen soils and (v) in fields with a slope of more than 10%. Apart from that, the mineral nitrogen content in the soils of arable land and grasslands is monitored on a regular basis. In addition, in 2014 the country-wide campaign called Rational Fertiliser Management was carried out to raise farmers' awareness related to the management of nutrients and efficient use of these constituents, while preserving the values of the soil and water environments. In 2014-2020, it is planned that investments will be made, *inter alia*, in the construction of urine and liquid manure tanks and manure plates.

Afforestation of agricultural land and non-agricultural land

The implementation of this measure designed to augment forest areas and to maintain and strengthen their ecological stability was continued. The afforestations contribute to greater carbon dioxide sequestration and CO_2 emission reductions, while, at the same time, producing wood biomass. As part of the Rural Development Plan for 2007-2014 this was the measure "The afforestation of agricultural land and non-agricultural land". In turn, under the RDP 2014-2020 it will be the measure "Investments in the development of forest areas and improving the vitality of forests".

Restoring forestry production potential damaged by disasters and introducing appropriate prevention instruments

In 2014, as part of the RDP 2007–2013, measures implemented for the purpose of renewal and care of tree-stands damaged by biotic and abiotic factors and the introduction of mechanisms to prevent

natural disasters in forests, particularly means of fire protection, are continued. This had a favourable effect on the environmental protection (contributing to carbon dioxide sequestration).

The rational management of farmland

Compliance with the standards of good agricultural culture, such as the minimum soil cover and crop rotation, as part of the system of direct payments or selected measures of the RDP 2007-2013 have a positive effect on the CO_2 balance in soil and the management of nitrogen fertilisers (enhanced effectiveness of the fertilisers used and the limitation of water pollution with nutrients).

The measures undertaken support the dissemination of conservation methods for soil cultivation without tillage, limiting the emissions of gases originating from mineralisation of organic matter. The effectiveness of the use of mulching systems under differentiated habitat and production conditions of the field crop production continued to improve, through: (i) the limitation of the intensity of soil cultivation and, as a result, the limitation of the mineralisation of the organic matter in soil; (ii) an increase in the organic matter in soil which decays into nutrients and, as a result, a reduction in mineral fertilisation; and (iii) an increase in the organic matter in soil, improving its sorption properties and, as a result, e.g. the mineral fertiliser storage capacity.

Apart from this, as part of the system of direct payments, support was continued for the cultivation of leguminous and small-seed papilionacoeus plants the cultivation of which makes it possible to limit the use of mineral nitrogen fertilisers. It also has a significant effect on the balance of the greenhouse gas emissions in agriculture (reducing the energy requirement of production and the use of nitrogen fertilizers) and having a favourable effect on the soil structure and carbon sequestration in soil).

As a result of changes in the Common Agricultural Policy implemented from 2015, in Poland obligatory component of new system direct payments, i.e. greening practices, was introduced.

Greening practices covers crop diversification, the keeping of permanent grasslands and the maintenance of ecological focus areas (EFAs).

The crop diversification practice applies to farms with 10 ha or more of arable land and consists in the obligation to keep at least 2 or 3 different crops on arable land, depending on their surface areas in the farm. It is also covered by the RDP 2014-2020 measure, package 1, “The agri-environment-climate measure”. Moreover, the scope of the requirement related to crop diversification goes beyond the greening requirements in the system of direct payments.

The farmers who have permanent grasslands are obliged to: (i) a ban on the conversion and tillage of ecologically valuable permanent grasslands and (ii) the obligation to restore a specific surface area of permanent grasslands in the case where the permanent grassland indicator has decreased by more than 5% at the national scale compared with the reference indicator in 2015.

The obligation to keep EFAs in the surface area of at least 5% of arable land will apply to farms with a surface area of more than 15 ha of arable land.

Support for adaptation and mitigation measures at farm holdings

As part of the RDP 2007-2013, support was provided for the implementation of investment projects to enhance the efficiency of farms holdings*, inter alia*, through the harmonisation of the conditions of agricultural production with the requirements of the protection of the natural environment. As part of this objective, operations could be carried out e.g. to build or buy distributors for precise dosing of mineral fertilisers, machines for no-tillage soil cultivation, equipment for storage and application of

natural fertilisers (tanks for liquid fertilisers; plates for solid fertilisers; slurry spreaders with a soil injector; units for quick covering of manure in the field).

In addition to this, measures implemented as part of the RDP 2014-2020 will also support e.g. operations improving energy efficiency and contributing indirectly to reductions in the emissions of greenhouse gases and ammonia from agriculture.

Improvements in the systems of keeping monogastric livestock, reductions in the methane emissions from animal excreta

Because of the growing demand for poultry meat and the need to reduce the pork production costs, feed companies were forced to introduce in their commercial offer complete industrial feeds based on the total or partial supplementation with synthetic amino acids. Given the high digestibility of protein contained in these feeds, the greenhouse gas emissions from poultry and hog production related to the storage of natural fertilisers were found to be reduced. In addition, multi-stage feeding was generally implemented in the production of broiler chickens, also as a measure designed to reduce the production costs and to improve the competitiveness of the domestic raw material. As the dairy sector developed and its technical equipment improved, slurry was separated to an increasing extent, ensuring reductions in the emissions of methane and nitrogen oxides from the storage of natural fertilisers.

Moreover, research was carried out e.g. on: (i) the use of flexible, impermeable plastic sheets for covering solid natural fertilisers; (ii) the modification of the methods for filtration and biofiltration of the air vented from buildings; (iii) the impact of enzymatic additives in the feeding of monogastric livestock; and (iv) the acidification of slurry.

The elimination of gaseous pollutants emitted from livestock buildings

Works were carried out to implement the results of research on low-emission livestock buildings (pigsty, cowshed and henhouse) generating more energy than they needed. Research on the elimination of emissions from livestock buildings equipped with conduit-based ventilation air circulation system is at the preparatory stage. This technology generates energy from the methane and nitrous oxide contained in the air vented from livestock rooms.

In addition, research is also underway to enable the determination of national emission factors for specific livestock keeping techniques.

3.6. Sectoral policies and measures: waste

3.6.1. The legal basis

The waste management principles, including the hierarchy of waste handling, are laid down by the Act of 14 December 2012 on Waste (the consolidated text in the Official Journal of the Laws of 2013, Item 1136, as amended), which transposed Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives into the Polish law. The current state of waste management in the country is described by the *National Waste Management Plan 2014,* which corresponds to the strategic documents adopted at the European Union and national levels. The objectives and tasks contained in the Plan concern the period of 2011–2014 and, as an outlook, the period of 2015–2022.

Poland is obliged to achieve by 2020 the levels of recycling and preparing for reuse of at least 50% by weight for the following fractions of municipal waste: paper, metals, plastics and glass, and of at least 70% by weight for construction and demolition waste.

Table 3.10 presents a description of the most important Polish documents concerning waste management.

Table 3.10. The main documents and legal regulations concerning waste in Poland

Title of document	Description of document
The Act of 14 December 2012 on Waste (consolidated text in the Official Journal of the Laws of 2013, Item 1136, as amended).	The Act sets out the principles of waste handling in a manner ensuring the protection of human life and health and environmental protection in accordance with the principle of sustainable development.
The Act of 13 September 1996 on the Keeping of Cleanness and Order in Communes (consolidated text in the Official Journal of the Laws of 2013, Item 1399, as amended).	The Act sets out the tasks of communes and the obligations of real estate owners related to the keeping of cleanness and order, the conditions for the execution of operations in the scope of the collection of municipal waste from real estate owners and the management of this waste, as well as the conditions for the grant of permits to operators rendering services in the scope regulated by the Act.
The National Waste Management Plan 2014, adopted by the Resolution No. 217 of the Council of Ministers on 24 December 2010 (M. P. No. 101, Item 1183).	The Plan covers a full scope of tasks necessary to achieve integrated waste management in the country in a manner ensuring environmental protection, taking into account the present and futures capabilities and economic circumstances and the technological level of the existing infrastructure. The objectives and tasks presented in the Plan concern the period of 2011–2014 and, as an outlook, the period of 2015–2022.
The Act of 20 January 2005 on the Recycling of End of Life Vehicles (consolidated text in the Official Journal of the Laws of 2015, Item 140, as amended).	The Act sets out the principles of handling end of life vehicles in a manner ensuring the protection of human life and health and environmental protection in accordance with the principle of sustainable development.
The Act of 29 July 2005 on Waste Electric and Electronic Equipment (consolidated text in the Official Journal of the Laws of 2013, Item 1155, as emended).	The main goal of the Act is to establish a system for managing waste electric and electronic equipment through reducing the quantity and adverse impact of the waste, in the form of waste electric and electronic equipment, on the environment by introducing the obligations of selective collection and recovery of the waste, including its recycling.
Act of 24 April 2009 on Batteries and Accumulators (consolidated text in the Official Journal of the Laws of 2015, Item 687).	The Act sets out the requirements for products introduced in the form of batteries and accumulators, the waste arising from these products and the equipment which is wholly or partially powered by batteries and accumulators or is suitable to be powered with them.
The Act of 10 July 2008 on Extractive Waste (consolidated text in the Official Journal of the Laws of 2013, Item 1136).	The Act sets out: 1) the principles of managing extractive waste and uncontaminated soil; 2) the principles of managing an extractive waste disposal site; 3) the procedures for obtaining permits and authorisations for extractive waste management; 4) the procedures for preventing major accidents at Category A extractive waste disposal sites.

Source: Ministry of the Environment

3.6.2. Measures in waste management

The enhanced recycling of municipal waste

The achievement of the levels of recycling and preparing for the reuse of paper, metals, plastics and glass of at least 50% by weight by the end of 2020 is planned.

Waste as a source of energy

Energy supply as a result of the application of waste incineration processes and the use of municipal waste landfills as a source generating electricity and heat by processing landfill gas

The reduction of the quantity of waste, including biodegradable waste, going to landfills of non-hazardous and inert (municipal) waste

This measure is implemented by promoting no-waste/low-waste technologies, waste processing by more environment-friendly methods (e.g. recycling) and raising the rates of the charges for the landfill of waste containing a biodegradable fraction.

3.7. Sectoral policies and measures: forestry

3.7.1. The legal basis

The National Forest Policy (NFP), adopted by the Council of Ministers on 22 June 1997, is a document which guides the measures in the forestry sector and indicates the intersectoral and international linkages of forestry; *inter alia*, it also places a large emphasis on the enhancement of the forest area.

The forest resources will be increased through:

- the augmentation of the national forest cover to 30% in 2020 and 33% in the mid-21st century, successively as the lands unsuitable for agriculture are transferred for afforestation and the spatially optimum forest structure is achieved in the landscape through the protection and full utilisation of the productive capacities of habitats,
- the restitution and rehabilitation of forest ecosystems, mainly through the reconstruction, on appropriate sites, of single-species tree-stands into mixed ones, and through biomelioration operations,
- the regeneration of devastated and neglected tree-stands in private forests and their subsequent ecological rehabilitation.

The pursuit of sustainable, multi-functional forest management directly involves the preservation and enhancement of forest resources and the rich biodiversity of forests. An expression of the protection and preservation of biodiversity in forests is the fact that large forest areas have been integrated into the European Ecological Network Natura 2000 (almost 40% of the forest area in Poland).

Table 3.11. The main documents concerning forestry in effect in Poland

Title of document	Description of document
The Act of 28 September 1991 on Forests (consolidated text in the Official Journal of the Laws of 2014, Item 1153, as amended).	The Act sets out the principles of the preservation, protection and enhancement of forest resources and the principles of forest management linked to other elements of the environment and the national economy.
The National Forest Policy (NFP), adopted by the Council of Ministers on 22 April 1997.	This document guides the measures in the forestry sector, indicating its intersectoral and international linkages.
Programme for the Augmentation of the Forest Cover (PAFP), adopted by the Council of Ministers in 1995 and updated in 2003.	The Programme sets out the tasks aimed at the augmentation of the national forest cover rate to 30% by 2020 and 33% after 2050. It defines the quantitative transfer of lands from agriculture to forestry and presents a comprehensive plan of measures to rationalise the use structure of the national natural space. New afforestation projects are part of the implementation of the multi-functional and sustainable development of the country.
The Act of 16 April 2004 on Nature Conservation (consolidated text in the Official Journal of the Laws of 2015, Item 1651, as amended).	The Act implements Article 6(1) of Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora and Article 4 of Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds for the purpose of maintaining or restoring the favourable status of the conservation objects in the Natura 2000 Network, and, thus, contributing to forest protection.

Source: Ministry of the Environment

3.7.2. Measures in forestry

The prevention of land-use change

The conversion of forest land to non-forest uses is of marginal significance in relation to the continuously growing total surface area of forests. In 2013, as a total, 497 ha of forest land was converted to non-forest uses.

The rationalisation of forest management, incentives and measures supporting the afforestation and the protection of the ecological stability of forests

Forest management is conducted in accordance with the Act of 28 September 1991 on Forests and covers both the afforestation of non-forest lands, reforestation, the enhancement of standing timber and timber logging which varies at the level of about 50–60% of the current annual increment.

The afforestation in 2013 took place on a total of 4,078 ha, including 428 ha in public forests (on the State Treasury and communal lands). Altogether in 1995–2013, the (artificial) afforestation was carried out on 133,800 ha of the State Treasury lands, including 129,000 ha in the State Forests National Forest Holding.

3.8. Institutional, legal, administrative and procedural changes in the scope of monitoring, archiving of information and assessment of progress towards the achievement of the reduction target

Cf. section 2.5.

3.9. Information on the minimisation of adverse impacts of climate change, in accordance with Article 3.14 of the Kyoto Protocol

The policy pursued by Poland to reduce its greenhouse gas emissions takes into account the assumptions of the EU policy in this scope and is also subject to the process of an assessment of its impact on the economy and society in other countries. As a member of the EU, Poland is actively involved in the assessment process carried out within the framework of the European Union.

Similar impacts are exerted by the export of new technologies carried out as part of both non-commercial assistance and the export under the GreenEvo Project between Polish entrepreneurs and their partners in numerous developing countries.

The Eastern Partnership Programme plays a special role in these activities, particularly with such countries as Ukraine, Moldova, Belarus, Georgia, Armenia and Azerbaijan. Support is provided to both emission reducing technologies and the measures building capacity in these countries, such as training, education and other forms.

4. PROJECTIONS OF GREENHOUSE GAS EMISSIONS AND REMOVALS

4.1. Introduction

The projections of greenhouse gas emissions were prepared in accordance with Decision 2/CP.17 (Annex I) and the guidelines for the preparation of national communications by Parties included in Annex I to the Convention for the purposes of the *United Nations Framework Convention on Climate Change* (UNFCCC) (doc. FCCC/CP/1999/7).

The presented national projections covered the anticipated levels of greenhouse gas emissions and removals until 2030 (broken down into those in 2015, 2020, 2025 and 2030), taking into account the effects of the policies and measures adopted and implemented to reduce greenhouse gas emissions. These projections represent the option of projections "with measures".

The emission projections were carried out for the following greenhouse gases: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), HFCs (hydrofluorocarbons), PFCs (perfluorocarbons) and sulphur hexafluoride (SF_6). Emissions of trichloride (NF_3) had not been recorded by 2013 and given the absence of forest data it was not included in the emission projections. The results of emission projections are presented in a new system of categories of emission sources laid down in Annex II to Decision 24/CP.19[7] of the Conference of the Parties:

1) Energy (including transport),

2) Industrial processes and product use,

3) Agriculture,

4) Land use, land-use change and forestry,

5) Waste.

The emissions of gases other than CO_2 were recalculated using the GWPs laid down in Annex II to Decision 24/CP.19 (s-called AR4).

4.2. The key assumptions for emission projections (CTF Table 5)

The sources of information used as input data in the emission projections for the key greenhouse gas emission sources primarily included data on activities, including those on the forecast fuel consumption, the production of major industrial goods and agricultural production, which were provided to the Ministry of the Environment by the competent Ministries. In the absence of forecast input data on activities, for some activities use was made of historical data which were used in the emission inventories. However, this was the case of a slight part of emissions only.

The greenhouse gas emission projections were calculated using a methodology which was consistent with the one applied in the inventory for 2013,[8] i.e. in accordance with the PCC 2006 Guidelines[9] now in effect.

The data which determined the national greenhouse gas emissions, in particular those of carbon dioxide emissions, were the data on the forecast consumption and extraction of fuels and industrial production provided in the document entitled *The analysis for the purposes of an assessment of the impact of the climate and energy policy of the European Union on Poland's energy policy* (KAPE 2014[10]), prepared on the basis of the *Forecast of the demand for fuels and energy until 2050*, made on commission from the Ministry of the Economy by the Polish National Energy Conservation Agency S.A. in December 2013 (KAPE 2013[11]).

[7] Revision of the UNFCCC reporting guidelines on annual inventories for Parties included in Annex I to the Convention (FCCC/CP/2013/10/Add.3)

[8] Poland's National Inventory Report 2015. Greenhouse Gas Inventory for 1988-2013. Submission under the United Nations Framework Convention ob. Climate Change (http://unfccc.int/national_reports/annex_i_ghg_inventories/national_ inventories_ submissions/items/8812.php)

[9] 2006 IPCC Guidelines for National Greenhouse Gas Inventories (http://www.ipcc-nggip.iges.or.jp/public/2006gl/index. html)

[10] Analiza na potrzeby oceny wpływu polityki klimatyczno-energetycznej Unii Europejskiej na politykę energetyczna Polski (The analysis for the purposes of an assessment of the impact of the climate and energy policy of the European Union on Poland's energy policy – in Polish). Polish National Energy Conservation Agency S.A. Warsaw, November 2014.

[11] *Prognoza zapotrzebowania na paliwa i energię do 2050 r.* (The forecast of the demand for fuels and energy until 2050 – in Polish*).* Polish National Energy Conservation Agency S.A. Warsaw, December 2013.

Table 4.1 shows detailed input data for Sector 1.A. *Fuel combustion* on the consumption of fuels at stationary sources, as determined by the study KAPE 2014[12], which were used to assess the future changes in greenhouse gas emissions. The emission factors used to estimate the greenhouse gas emissions in the fuel combustion sector were average three-year values of the emission factors for 2011-2013 calculated for sub-categories: 1.A.1.a, 1.A.1.b and c, 1.A.2 – stationary sources and 1.A.4 – stationary sources.

Table 4.1. Input data for Sector 1.A. *Fuel Combustion [PJ]*

Fuel	2015	2020	2025	2030
1.A.1.a. Public Electricity and Heat Production				
Hard coal	958	869	791	767
Lignite	543	536	494	375
Natural gas	39	60	61	60
Fuel wood and wood waste	127	190	151	131
Biogas	5	13	28	48
Industrial waste	1	1	1	1
Coke and semi-coke (including gas coke)	0	0	0	0
Liquid petroleum gas	0	0	0	0
Diesel oil	1	1	1	1
Fuel oil	6	6	6	6
Coke-oven gas	22	23	24	24
Blast furnace gas	11	12	12	12
1.A.1.b. Petroleum Refining				
Hard coal	0	0	0	0
Lignite	0	0	0	0
Natural gas	27	30	31	31
Fuel wood and wood waste	0	0	0	0
Biogas	0	0	0	0
Industrial waste	0	0	0	0
Coke and semi-coke (including gas coke)	0	0	0	0
Liquid petroleum gas	0	0	0	0
Diesel oil	0	0	0	0
Fuel oil	21	18	15	14
Refinery gas	29	36	38	38
Coke-oven gas	0	0	0	0
Blast furnace gas	0	0	0	0
1.A.1.c. Manufacture of Solid Fuels and Other Energy Industries				
Hard coal	1	1	0	0
Lignite	1	1	1	1
Natural gas	14	14	15	16
Industrial waste	0	0	0	0
Liquid petroleum gas	0	0	0	0
Diesel oil	2	2	1	1
Fuel oil	0	0	0	0
Refinery gas	0	0	0	0
Coke-oven gas	38	38	38	38
Blast furnace gas	0	0	0	0
1.A.2. Manufacturing Industries and Construction				
Hard coal	121	106	114	115

[12] Analiza na potrzeby oceny wpływu polityki klimatyczno-energetycznej Unii Europejskiej na politykę energetyczna Polski (The analysis for the purposes of an assessment of the impact of the climate and energy policy of the European Union on Poland's energy policy – in Polish). Polish). National Energy Conservation Agency S.A. Warsaw, November 2014.

Fuel	2015	2020	2025	2030
Lignite	1	1	1	1
Natural gas	120	110	124	131
Fuel wood and wood waste	33	31	35	37
Industrial waste	17	15	17	17
Coke and semi-coke (including gas coke)	24	25	27	27
Liquid petroleum gas	2	2	2	2
Diesel oil	19	16	17	15
Fuel oil	6	5	4	3
Refinery gas	13	8	7	8
Coke-oven gas	11	12	13	13
Blast furnace gas	12	12	13	12
1.A.4. Other Sectors (including institutional, commercial, services, residential, agriculture, fishing)				
Hard coal	281	250	214	184
Lignite	5	5	5	5
Natural gas	267	267	266	264
Fuel wood and wood waste	157	167	171	173
Coke and semi-coke (including gas coke)	6	6	5	5
Liquid petroleum gas	34	32	31	29
Diesel oil	99	96	91	87
Fuel oil	4	4	4	4

Source: KAPE 2014

Table 4.2 shows the input data for the projected fuel consumption in road transport (responsible for about 97% of the total CO_2 emissions from transport in 2013), elaborated by the the Motor Transport Institute on commission of the Ministry of Infrastructure and Development.

Table 4.2. Input data for Sector 1.A.3. Road Transport

Characteristic			Unit	Projection			
				2015	2020	2025	2030
Fuel consumption	Passenger cars	Gasoline	Mg	3 533 192	3 638 333	3 714 918	3 572 006
		Diesel oil	Mg	3 412 499	4 052 051	4 347 310	4 323 698
		LPG	Mg	1 653 177	1 740 764	1 802 939	1 809 585
		Biodiesel	Mg	341 250	486 246	608 623	691 792
		Bioethanol	Mg	176 660	363 833	557 238	714 401
		Natural gas	Mg	2 604	13 559	142 342	394 921
		Electricity	MWh	0.0	6.5	21.3	38.8
		Hydrogen	Mg	NO	NO	NO	NO
	Light Duty Vehicles < 3.5 t	Gasoline	Mg	325 184	260 362	215 794	183 013
		Diesel oil	Mg	1 759 524	1 875 543	1 910 611	1 884 730
		LPG	Mg	238 900	229 104	201 135	191 004
		Biodiesel	Mg	175 952	225 065	267 486	301 557
		Bioethanol	Mg	16 259	26 036	32 369	36 603
		Natural gas	Mg	0,0	3 400	57 746	87 448
		Electricity	MWh	0.0	0.0	3.8	6.5
		Hydrogen	Mg	NO	NO	NO	NO
	Heavy Duty Vehicles > 3.5 t	Diesel oil	Mg	5 055 504	5 722 688	6 094 615	6 427 830
		Biodiesel	Mg	505 550	687 665	858 296	1 040 677
		Natural gas	Mg	2 696	10 380	45 481	95 849
Total fuel consumption		Gasoline	Mg	3 858 376	3 898 695	3 930 711	3 755 019
		Diesel oil	Mg	10 227 528	11 650 282	12 352 536	12 636 258
		LPG	Mg	1 892 078	1 969 868	2 004 074	2 000 589

Characteristic		Unit	Projection			
			2015	2020	2025	2030
	Biodiesel	Mg	1 022 753	1 398 976	1 734 405	2 034 025
	Bioethanol	Mg	192 919	389 869	589 607	751 004
	Natural gas	Mg	5 300	27 340	245 569	578 218
	Electricity	MWh	0	6.5	25.1	45.3

NO – not occuring

Source: Ministry of Infrastructure and Development

The key activities used to estimate the fugitive emissions in Category 1.B included the extraction and processing of fossil fuels (Table 4.3.). The emission factors used in projections in Sector 1.B. corresponded to the values of the factors used in the national greenhouse gas inventory for 2013.

Table 4.3. Input data for sector 1.B. Fugitive emission from fuels

Mining and refinery	2015	2020	2025	2030
	kt			
Extraction:				
- Hard coal	75216	70533	65088	62283
- Lignite	64221	63430	58412	44548
- Crude oil	547	547	547	547
- Natural gas (TJ)	162636	162636	162636	162636
Refining (PJ)	911	977	990	968
Import of crude oil	21781	23383	23685	23152

Source: KAPE 2014

The input data for Sector 2. *Industrial processes and product use* (Table 4.4) were provided by the Ministry of the Economy. The carbonate consumption (other than the one covered by separate sub-categories of the production of specific products), the production of glass and ceramics and newly considered chemical products (vinyl chloride and ethylene oxide) were estimated for the projected years on the basis of the activities adopted in the period 2011-2013.

The emission factors used in projections in Sector 2 corresponded to the average three-year values of the emission factors for 2011-2013 in the national greenhouse gas inventories in given sub-categories.

Table 4.4. Input data for Sector 2. Industrial Processes and Product Use [kt]

2. Industrial Processes	2015	2020	2025	2030
2.A. Mineral Products				
1. Clinker Cement Production	14232	15821	15761	15598
2. Lime Production	1640	1580	1522	1466
2.B. Chemical Industry				
1. Ammonia Production	2489	2508	2527	2546
2. Nitric Acid Production	2287	2310	2333	2357
4. Carbide Production	0	0	0	0
5. Other				
5.a Methanol Production	0	0	430	430
5.b Carbon Black Production	24	28	33	38
5.c Styrene Production	145	156	168	182
5.e Ethylene Production	478	469	460	451
5.j Caprolactam	165	171	177	183
2.C. Metal Production				
1. Iron and Steel Production				
1.a Iron Ore Sinter Production	7818	9382	9835	9733

2. Industrial Processes	2015	2020	2025	2030
1.c Steel Cast Production	152	157	161	166
1.d Iron Cast Production	1097	1177	1263	1355
1.e Pig Iron Production in Blast Furnaces	4618	5542	5809	5749
1.f Basic Oxygen Furnace Steel Production	5000	6000	6290	6225
1.g Electric Furnace Steel Production	4562	4714	5146	5093
1.j Coke	10000	10000	10000	10000
2. Ferroalloys Production	76	73	71	69
5. Other				
5.b Refined Lead Production	105	116	128	140
5.c Technically Pure Zinc Production	94	88	83	77

Source: KAPE 2014

Given the absence of forecast data for HFCs, PFCs and SF_6, the analysis was based on the available trends in the emissions of F-gases, taking into account the market trends for each of the substances reported upon (e.g. growing demand or market saturation). As a result of the analysis, it was assumed that the emissions of F-gases would grow further and the growing emissions of HFCs were indicated as the dominating factor because of the growing trend in the use of refrigeration and air-conditioning systems.

Detailed data on the anticipated rate of changes in the activities in Sector 3. *Agriculture* were obtained from the Ministry of Agriculture and Rural Development in 2014 (Table 4.5). The levels of the projected CH_4 emissions are determined by the livestock population and the share of livestock keeping systems, whereas the greatest impact on changes in the future emissions of N_2O is exerted by the consumption of mineral and organic fertilisers.

For most sub-categories in the agriculture sector, the emission factors of CH_4 and N_2O are the same as those applied in the emission inventory for 2013. The CH_4 factors for enteric fermentation in dairy cows were calculated from data on the forecast mean annual milk production. Changes in the emissions of CH_4 and N_2O from livestock excreta were estimated on the basis of the projected shares of livestock keeping systems. The emissions of CH_4 and N_2O from the burning of agricultural residues were adopted on the basis of their value from 2011–2013.

Table 4.5. Input data for Sector 3. Agriculture

Activities	Unit	2015	2020	2025	2030
Area of farmland	thous. ha	15 000	14 600	14 500	14 350
Total sown area	thous. ha	10 675	10 550	10 425	10 300
Mean annual milk yield per cow	litre/year	5 200	6 800	7 500	7 900
Cattle	thous.	5 800	6 000	6 100	6 200
Incl. dairy cattle	thous.	2 500	2 300	2 000	1 800
Sheep and goats	thous.	300	250	210	180
Horses	thous.	290	280	260	250
Swine	thous.	9 750	10 350	10 400	10 500
Poultry	thous.	400 000	440 000	480 000	500 000
Area of leguminous plants (incl. pulses)	thous. ha	390	380	400	420
Area of other crops	thous. ha	10 060	10 020	9 950	9 880
Nitrogen fertilizers use	thous. tonnes	1 110	1 175	1 250	1 300
Area of histosols under cultivation	thous. ha	680	675	670	665
Production of main crops					
Cereals	thous.	28 650	29 700	30 000	30 000

Activities	Unit	2015	2020	2025	2030
	tonnes				
Leguminous (edible, feed)	thous. tonnes	475	520	570	600
Oil bearing crops	thous. tonnes	2 590	2 900	3 000	3 000
Root crops (incl. potatoes)	thous. tonnes	20 800	20 650	20 450	20 300
Fruits	thous. tonnes	3 700	3 900	4 050	4 150
Vegetables	thous. tonnes	4 550	4 750	4 900	5 525
Animal Waste Management Systems (% head)					
Dairy cattle	solid	75	65	45	30
	liquid	25	35	55	70
	pasture*	40	35	25	20
Other cattle	solid	99	98	97	96
	liquid	1	2	3	4
	pasture*	98	90	87	85
Sheep	solid	100	100	100	100
	liquid	0	0	0	0
	pasture*	100	100	100	100
Horses	solid	100	100	100	100
	liquid	0	0	0	0
	pasture*	100	100	100	100
Swine	solid	65	35	30	25
	liquid	35	65	70	75
	pasture*	0	0	0	0
Poultry	solid	87	85	82	78
	liquid	13	15	18	22
	pasture*	0,1	0,2	0,3	0,4

*The percentage share [%] of the livestock using the pasture was taken into account. The duration of the pasture period in the entire breeding period was not taken into account.

Source: Ministry of Agriculture and Rural Development

Table 4.6 shows the activity data which provided the basis for estimating the greenhouse gas emissions in Sector 5. *Waste.* Here, the data from the 2014 National Waste Management Plan were used (NWMP 2014). The Plan gave the municipal waste quantities projected to be generated in 2013, 2014, 2020 and 2022 and the quantities of generated municipal sewage sludge (for 2014, 2015, 2016, 2018, 2019 and 2022). By interpolation and extrapolation, these quantities were estimated for 2015, 2020, 2025 and 2030. The projection of the national population was taken from the Information Release in the series "CSO Survey Results" issued by the Central Statistical Office, entitled "The Population Projection for Poland for 2008-2035". Given the absence of forecast data, historical data were used for the other data.

Table 4.6. Input data for Sector 5. Waste

Activities	Unit	2015	2020	2025	2030
Quantity of solid municipal waste generated in the country*	kt	13246	14254	15399	16544
Quantity of landfilled industrial waste	kt	191	191	191	191
Quantity of landfilled sewage sludge*	kt	695	773	799	825
Quantity of incinerated municipal waste	kt	46.7	46.7	46.7	46.7

Activities	Unit	2015	2020	2025	2030
Quantity of incinerated industrial waste	kt	124.41	124.41	124.41	124.41
Quantity of incinerated medical waste	kt	31.75	31.75	31.75	31.75
Quantity of incinerated sewage sludge	kt	84.23	84.23	84.23	84.23
Urban population with access to wastewater treatment plants	thous.	21258.5	21258.5	21258.5	21258.5
Rural population with access to wastewater treatment plants	thous.	5012.5	5012.5	5012.5	5012.5
Population of Poland**	million	38.02	37.83	37.44	36.80

*Source: * National Waste Management Plan*
*** the Central Statistical Office, Information Release in the series*
"CSO Survey Results" entitled "The Population Projection for Poland for 2008-2035"

Table 4.7 shows data on the anticipated rate of changes in the activities in Sector 4*. Land Use, Land-Use Change and Forestry.* Land use in Poland is dominated by agriculture and forestry, but in recent years there were substantial changes in this scope. Therefore, for the purposes of projections, an attempt was made to present land-use change taking into account the differentiation of unfolding processes. For this purpose, based on available statistical data, a dynamic analysis of the directions of land-use change was carried out [6NC[13]]. *Inter alia*, consideration was given to: the presents trends in supply of farmland for afforestation and the status of advancement and concept of the augmentation of the forest cover as an element of spatial, environmental and economic policies designed to increase the national forest cover to 30% in 2020 and 33% after 2050, in accordance with the assumptions of the National Programme for the Augmentation of Forest Cover (the Ministry of the Environment; Warsaw, 2003). In the period examined, there was a sustained tendency for the area of farmland to diminish in favour of other land uses, such as e.g. forests or uses related to urban infrastructure. The changes observed in the area of permanent crops indicate that after the accession to the EU the structural changes in agriculture to an increasingly large extent were affected by the Common Agricultural Policy (CAP) and the financial mechanisms related to its implementation. The analysis also indicated that the dynamics and direction of land-use change were significantly affected by the intensity of agricultural production.

Table 4.7. Changes in the area occupied by individual land uses [kha]

4. Land Use. Land Use Change and Forestry (LULUCF)	2015	2020	2025	2030
4.A. Forest Land	9427	9549	9671	9793
4.B. Cropland	14049	13882	13712	13549
4.C. Grassland	4149	4200	4090	4060
4.D. Wetlands	1373	1379	1384	1390
4.E. Settlements	2183	2263	2343	2423
4 F. Other lands	85	74	64	53

Source: Own elaboration, KOBiZE, IEP-NRI

In the case of the development of timber resources, which depends on the overriding principles of the implementation of multi-functional forest management adopted in the national forestry policy, in practice one can see dependencies between the current age structure of forests, the state of resources and the related change in harvesting intensity.

[13] The Sixth National Communication and the First Biennial Report to the Conference of the Parties to the United Nations Framework Convention on Climate Change. Ministry of the Environment. Warsaw, 2013.

Table 4.8. The forecast structure of the thickness of standing timber resources [million m^3]by age classes

Standing timber resources by age classes	2015	2020	2025	2030
Total	2237.15	2352.30	2436.00	2519.70
– I (1-20 years)	13.72	12.60	16.28	19.96
– II (21-40 years)	206.72	199.39	198.60	197.80
– III (41-60 years)	581.36	544.58	486.75	428.92
– IV (61-80 years)	587.33	664.28	733.20	802.12
– V (81-100 years)	423.41	456.99	477.51	498.03
– VI+VII (100-120 - + years)	169.07	173.74	191.88	210.01
– VII and higher (121 years and more)	x	x	x	x
– Other treestands:				
1) in the renewal class. the regeneration class and with a throughfell construction	152.69	191.29	202.20	213.11
2) in the regeneration class	x	x	x	x
3) with a throughfell construction	x	x	x	x

Source: Data of the Department of Forestry and Nature Conservation in the Ministry of the Environment

4.3. The results of projected greenhouse gas emissions and removals in accordance with the scenario "with measures" (CTF Table 6a)

The projected emissions were compared with the results of the inventory for 2013, elaborated following the same methodology (IPCC 2006) and presented in a breakdown by gases (Table 4.9) and categories of emission sources (Table 4.10). The thus projected total emissions in 2030 is 358.8 million tonnes of CO_2 eq. and is lower by 38% than the emissions in 1988, by 24.3% than those in 1990 and by 9.1% than those in 2013.

The largest fall in emissions by 2030 is projected for CO_2, while in the case of CH_4, N_2O and fluorinated gases the emissions by 2030 are expected to gradually grow (Table 4.9). CO_2 has the largest share in the projected national greenhouse gas emissions, as it accounts for almost 82% of emissions in 2015 and 78% in 2030. The main source of the emissions of this gas is fuel combustion at stationary sources. The share of methane grows from about 11% of the national emissions in 2015 to 12% in 2030, while the share of nitrous oxide increases from 5% to 6%, respectively. The other emissions are those of fluorinated gases (HFC, PFC and SF_6), the total emissions of which grow from 2% to 3% in the period 2015−2030.

Table 4.9. GHG Emissions for 2013 and emission projections for 2015, 2020, 2025 and 2030 by gases [kt CO_2 eq]

Greenhouse gases	2013	2015	2020	2025	2030
CO_2	322 900.21	320 980.20	311 662.90	299 099.18	284 508.55
CH_4	42 097.14	42 872.68	43 747.99	42 792.51	41 950.66
N_2O	20 233.61	19 866.31	20 424.27	20 719.26	20 879.32
HFCs	9 606.78	9 790.26	10 512.43	11 036.55	11 448.18
PFCs	14.64	14.75	13.75	13.08	12.57
SF_6	39.15	43.76	46.32	48.18	49.65
Total emission excluding Category 4	394 891.52	393 567.95	386 407.67	373 708.75	358 848.93

Source: KOBiZE, IEP-NRI

The level of the projected summary greenhouse gas emissions is affected to the greatest extent by Sector 1. *Energy* (Table 4.10), which is responsible for about 82% of emissions in 2015 and about 78% in 2030. The changes in the national emissions in the period from 2015 to 2030 reflect primarily the

projected trend in the demand for fuels and energy (KAPE 2013) which shows a gradual fall by 2030. Therefore, the greatest reduction in emissions can be seen in Sector 1.A.1 responsible for electricity and heat production. It is only in the transport sector that the projected emissions grow.

In turn, the projected methane emissions change to a slight extent – from the level of about 43 million tonnes of CO_2 eq. in 2015 to about 42 million tonnes of CO_2 eq. in 2030 (Table 4.9). The projected increase in methane emissions in the sector *Agriculture* was offset by a fall in the fugitive emissions from coal mining and waste management (Table 4.10).

In the case of N_2O a slight increase in its emissions is projected from about 20 million tonnes of CO_2 eq. in 2015 to about 21 million tonnes of CO_2 eq. in 2030 (Table 4.9). The category *Agriculture* has the largest share in N_2O emissions and a slight increase in N_2O emissions is projected in relation to the expected growth of the use of mineral fertilisers (in the sub-category *Agricultural Soils*) and an increase in the populations of cattle, pigs and poultry.

Table 4.10 GHG emissions for 2013 emission projections for 2015, 2020, 2025 and 2030 by source category [kt CO_2 eq]

Source category	2013	2015	2020	2025	2030
1. Energy	323 470.71	319 913.20	308 600.31	294 340.19	278 818.45
A. Fuel combustion	304 647.50	300 776.98	290 208.13	276 905.05	262 122.96
1. Energy industries	170 088.03	166 083.37	158 516.44	146 425.43	130 929.71
2. Manufacturing industries and construction	30 093.08	30 329.86	27 595.58	29 840.24	30 102.29
3. Transport	43 990.35	47 747.63	50 848.09	51 682.05	55 793.01
4. Other sectors	60 476.04	56 616.12	53 248.02	48 957.33	45 297.94
5. Other	0.00	0.00	0.00	0.00	0.00
B. Fugitive emissions from fuels	18 823.21	19 136.22	18 392.18	17 435.14	16 695.49
1. Solid fuels	14 348.47	15 366.03	14 619.34	13 661.80	12 923.02
2. Oil and natural gas	4 474.74	3 770.18	3 772.84	3 773.34	3 772.47
C. Transport and storage of CO_2	0.00	0.00	0.00	0.00	0.00
2. Industrial Processes and Product Use	30 290.96	32 414.79	34 335.00	35 245.11	35 527.90
A. Mineral products	9 255.14	11 132.68	11 955.14	11 880.35	11 751.17
B. Chemical industry	6 677.09	6 741.92	6 776.03	7 124.01	7 160.24
C. Metal production	2 448.28	2 506.55	2 846.45	2 958.06	2 921.22
D. Non-energy products from fuels and solvent use	2 130.68	2 065.68	2 065.68	2 065.68	2 065.68
E. Electronics industry	0.00	0.00	0.00	0.00	0.00
F. Product uses as substitutes for ODS	9 660.57	9 848.77	10 572.51	11 097.81	11 510.39
G. Other product manufacture and use	119.20	119.20	119.20	119.20	119.20
H. Other	0.00	0.00	0.00	0.00	0.00
3. Agriculture	30 100.41	30 628.88	33 292.97	34 234.20	34 828.12
A. Enteric fermentation	11 712.49	12 175.53	13 164.77	13 022.15	12 868.84
B. Manure management	3 844.55	4 309.01	5 528.62	6 188.29	6 634.76
C. Rice cultivation	0.00	0.00	0.00	0.00	0.00
D. Agricultural soils	13 624.47	13 303.29	13 732.20	14 126.63	14 407.57
E. Prescribed burning of savannas	0.00	0.00	0.00	0.00	0.00
F. Field burning of agricultural residues	35.44	26.73	27.86	28.53	28.96
G. Liming	438.83	383.91	383.91	383.91	383.91
H. Urea application	444.63	430.41	455.61	484.70	504.08
I. Other carbon-containing fertilizers	0.00	0.00	0.00	0.00	0.00
J. Other	0.00	0.00	0.00	0.00	0.00
4. Land Use. Land Use Change and Forestry	-37 586.99	-26 681.36	-22 316.20	-16 755.25	-12 963.63
5. Waste	11 029.45	10 611.08	10 179.39	9 889.25	9 674.45

Source category	2013	2015	2020	2025	2030
A. Solid waste disposal	8 547.27	8 261.60	7 833.48	7 550.87	7 348.39
B. Biological treatment of solid waste	260.01	184.45	184.45	184.45	184.45
C. Incineration and open burning of waste	597.57	537.24	537.24	537.24	537.24
D. Wastewater treatment and discharge	1 624.60	1 627.79	1 624.22	1 616.69	1 604.37
Total CO_2 emission excluding Sector 4	394 891.52	393 567.95	386 407.67	373 708.75	358 848.93
CO_2 emission from biomass	34827.58	38182.35	47606.92	46184.83	46614.01

Source: KOBiZE, IEP-NRI

4.4. Quantified progress in emission reductions to achieve the 2020 target (CTF Table 4)

The progress in the achievement of this target is discussed in detail in Chapter 2 (2.2 and 2.3). In CTF format, it is described in Table 4.

Table 4.11. Reporting on progress

	Unit	Base year*	2010	2011	2012	2013	Remarks
Total emissions excluding LULUCF	kt CO_2 eq	580 896.03	408 109.60	405 151.11	398 811.96	394 891.52	-
Contribution from LULUCF	kt CO_2 eq	NA	NA	NA	NA	NA	Not applicable; LULUCF is not included in UNFCCC target
Market based mechanisms under the Convention	number of units	NA	NA	NA	NA	NA	KP mechanisms cannot be evaluated yet
	kt CO_2 eq	-	-	-	-	-	-
Other market based mechanisms	number of units	NA	NA	NA	NA	NA	Other mechanisms are not applied
	kt CO_2 eq	-	-	-	-	-	-

* Base year - 1988
NA – Not applicable

5. FINANCIAL AND TECHNICAL ASSISTANCE AND SUPPORT FOR CAPACITY BUILDING IN DEVELOPING COUNTRIES AND THE EASTERN PARTNERSHIP COUNTRIES

Part A. Financial assistance (CTF Tables 7, 7(a), 7(b))

The Republic of Poland is not one of the Parties listed in Annex II to the Climate Convention; therefore, it is not obliged to fulfil the commitments under Articles 4.3, 4.4 and 4.5 of the Convention. When Poland joined the EU in 2004 it took on international commitments concerning the level of development cooperation and its quality. Poland carried out many assistance projects, discerning and understanding the need to support the sustainable development in developing countries and in countries with economies in transition. As a Member State of the European Union, Poland provided most of its assistance as a contribution to its general budget.

As part of multilateral assistance, resources were also provided as contributions within the United Nations System. The other resources were disposed of within the framework of bilateral assistance, implemented according to the priorities set out by the Ministry of Foreign Affairs, responding to the needs of the individual countries or regions of the world. It should be noted that the burdens incurred by the Polish budget also ensued from the substantially varying exchange rates of the Polish Zloty in relation to other currencies. The levels of Polish development cooperation in the individual

years covered by this report are shown in Table 5.1 (the data for 2012 were given in the First Biennial Report). It shows that in the period reported upon the bilateral assistance systematically grew.

Table 5.1. The total development assistance provided by Poland in 2013-2014

Year	Multilateral assistance		Bilateral assistance	
	USD	EURO	USD	EURO
2013	2 986 073,08	2 249 110,24	342 861,02	258 242,92
2014	2 961 948,01	2 230 939,24	1 979 960,71	1 491 306,41

Source: Ministry of the Environment

Table 7 CTF shows data on the financing of development cooperation in the fields related to environmental protection, including, in particular, the climate. The analysis of financial projects funded directly from the resources of Poland's development cooperation indicates that the assistance was fully allocated to adaptation and capacity building projects (training). The resources distributed via the European institutions were allocated to activities selected in accordance with the priorities of these institutions and it is difficult to classify them unambiguously as a specific category of activities.

The category of climate protection activities also included Poland's contributions to international organisations dealing with climate protection issues, including its broadest aspect, i.e. adaptation to climate change.

Within the framework of bilateral activities, the main countries which received development assistance in the fields related to environmental protection were the Eastern Partnership countries, such as Ukraine, Belarus, Georgia, Moldova, Azerbaijan and Armenia, African countries (Ethiopia, Kenya and Guinea), as well as North Korea and Palestine. Single projects in other developing countries were also funded.

Part B. Technology development and transfer (CTF Table8)

The GreenEvo Project is a market-based tool which serves for the transfer of Polish green technologies. It supports the identification of the technological needs of developing countries, the assessment of the capacity of Polish suppliers to meet these needs and the intermediation to broker contacts between technological companies and potential foreign customers or partners. The GreenEvo platform enables the building of relations between Polish and foreign entrepreneurs operating in the field of environmental protection on win-win principles. The Project also identifies the project financing pathways for developing countries on the basis of reports and analyses of world trends. To date, in the course of 6 editions of the GreenEvo competition, 72 proven green technologies, which had been commercialised in Poland, have been selected. The companies had an opportunity to take part in the meetings with potential partners, e.g. in such countries as Papua New Guinea, Moldova, Ukraine, Belarus, Croatia, Georgia, Kazakhstan, Iran, Armenia, Azerbaijan, India, China, Vietnam, Thailand, Malaysia, South Korea, Turkey, Russia, United Arab Emirates, Oman, Algeria, Nigeria, Zambia, Republic of South Africa, Egypt, Chile, Mexico, Canada and USA.

Examples of specific cases of technology transfer are given in the part concerned with financial assistance.

Part C. Support for capacity building (CTF Table 9)

Examples of specific activities to support capacity building in developing countries through training are presented in CTF Table 7 on financial assistance.