

POLAND'S NATIONAL CLIMATE STRATEGY

1. Introduction

Poland has been a Party to the United Nations Framework Convention on Climate Change (UNFCCC) since 1994 and ratified the Kyoto Protocol on 13 December 2002.

The decision on the ratification by Poland of the UNFCCC and later of the Kyoto Protocol has been driven by its political will to join the international efforts in activities agreed upon jointly under the Convention to slow down climate change and to take both the individual and international responsibility for the processes leading to that change.

Since 1 May 2004 Poland has become a member of the European Union (EU-25), creating favourable conditions for further opening of the Polish market (including the labour market) and for developing foreign trade supporting the inflow of capital and modern technology as well as for providing access of public institutions and economic entities (including farmers) to the European Union funds supporting the implementation of EU policies that are important for the economy.

Poland is a moderately developed country, but among the poorest countries within the enlarged European Union: with its gross domestic product per capita, in terms of purchasing power parity, about 50% of the EU-25 average, and at the same time with the lowest in the Community level of employment for working age people (53.7%) and the highest unemployment rate (13.8% - in 2006).

Poland as a Party to the Kyoto Protocol has made a commitment to reduce its greenhouse gas emissions by **6%** selecting **1988** as the base year for commitments under the UNFCCC and the Kyoto Protocol regarding emissions of the three main gases: carbon dioxide, methane and nitrous oxide, and **1995** as the base year for industrial fluorinated gases: HFCs, PFCs and sulphur hexafluoride.

Political and economic transformation that has taken place since 1990, caused the national GHG emissions to drop much below Poland's target under the Kyoto Protocol. **Over the years 1988–2004, GHG emissions (without Land-use change and forestry) decreased by as much as 32% below the base year.** This reduction has been achieved by implementing a package of policies and measures primarily leading to the improvement of energy efficiency and restructuring of fuel consumption.

Poland as a country undergoing economic modernisation is likely to face an increase of greenhouse gas emissions. The reason for this is mainly the use-structure of fuels (hard coal and lignite), which makes further emission reduction difficult, by switching to gas or to nuclear energy, which does not yet exist in Poland. Modernisation and restructuring processes taking place in enterprises will always be targeted at energy-saving and environmentally friendly measures. Poland wishes to discount the CO₂ emission reductions obtained so far within the framework of the emission trading scheme.

On 4 November 2003 the Council of Ministers has approved *Poland's Climate Policy – the strategies for greenhouse gas emission reductions in Poland until 2020*, whose strategic goal is “for Poland to join the efforts of the international community for the protection of the global climate through the implementation of the principles of sustainable development, particularly within the scope of the improvement of energy consumption, expansion of the national forest and soil resources, rationalisation of the use of raw materials and industrial products as well as rationalisation of waste disposal in a manner ensuring the achievement of maximum long-term economic, social and political benefits”. This goal is consistent with the objectives of the European Union climate policy in which effective climate protection has been given the highest priority in the strategy for sustainable development.

2. National circumstances with respect to greenhouse gas emissions and removals

The Minister of the Environment is the leading body of the state administration responsible for supervising and coordinating work within the Government of the Republic of Poland in the field of environmental protection, including climate change. The Minister of the Environment is responsible for: the protection of the overall environment-related issues and the use of natural resources, meteorology, environmental control and monitoring, as well as forestry. Furthermore, the Minister of the Environment supervises the National Fund for Environmental Protection and Water Management and the 'State Forests' National Forest Holding. Control powers lie within the Chief Inspectorate for Environmental Protection, which is subordinated to the Minister of the Environment. Financial support for environmental activities is provided by the National Fund for Environmental Protection and Water Management and the voivodship (province), *poviat* (county) and *gmina* (commune) level funds. The funds' income comes from fees for utilising the environment and from fines imposed and executed for exceeding the permissible emission standards or for environmental contamination (environmental fees and fines). These financial resources are in return used for financing environment-friendly activities, including air protection, climate protection, environmental education and other fields.

From the point of view of the most important natural resources for social and economic development, Poland is a country with relatively large forest, biodiversity, landscape and mineral resources (including fossil energy fuels), but with rather poor water resources (its resources are four times smaller than the world's average).

Poland lies within moderate geographical latitudes of Central Europe, at the southern coast of the Baltic Sea. Poland's territory amounts to 312,685 km². By the end of 2005 the population of Poland reached 38.2 million. With respect to the population number Poland currently ranks 30th among all the countries in the world and 9th in Europe.

The forest cover index for Poland has a slightly lower level than the European average and is 28.7%. However, the relatively large forest area (over 8.8 million ha) is accompanied by qualitative deficiencies – poor composition of tree species over large forestland parts (large areas of Poland covered with coniferous monocultures, especially pine trees), as well as young age and unsatisfactory condition of a significant part of treestands. Zones of weak, moderate and severe damages connected primarily with the impact of air pollutants emitted by the industry cover 58.7% of the total forest area.

The most important usable mineral deposits found in Poland include: hard coal and brown coal (lignite), crude oil and natural gas, copper ores, zinc and lead ores, sulphur, stone salt and rock resources. There are also medical and geothermal groundwater resources. Poland also has considerable accessible renewable energy resources, mainly from biomass and wind power. High variability of climate and weather conditions causes smaller potential possibilities for using solar energy, whilst the deep location of underground geothermal water deposits affects the use of this source of energy. As for waters, their limited resources and small natural land gradients found over the majority of the country do not allow for increasing their use as hydropower.

The latitude parallel configuration of land relief with the growing altitude from the Baltic Sea basin towards the south constitutes an important factor for the development of climate conditions in Poland, allowing for unrestrained parallel exchange of air streams. In effect, the Polish climate has a typical transient nature, affected by both marine and continental climatic features, depending on the current location and activity of atmospheric pressure configurations over Europe. This causes considerable variability of climate conditions in different years, as well as weather variability in shorter periods.

Foreign trade was an important factor of economic development in 2005 – the export growth for the sixth time in turn has markedly overruled the import growth. Following a significant weakening of the dynamics of economic growth between 2001 and 2002, the year

2003 and especially 2004 have brought considerable improvement of the economic situation. In 2004 the GDP growth totalled 5.3% and was highest over the last seven years. In 2005 the economic growth rate has declined to 3.2%. Nevertheless, the GDP per capita level, in terms of purchasing power parity, has reached half the value of EU-25 average.

Despite significant progress in the improvement of energy efficiency in the Polish economy, Poland still has a high potential in this field. Considering an annual growth of GDP by app. 5% and expected energy demand increase by app. 80% in the perspective of 2025, Poland is likely to achieve further reduction of GDP energy intensity to app. 50% of the present level. This would significantly bring Poland closer to the standards of energy intensity achieved in highly developed countries.

Changes in the structure of final energy consumption in major economy sectors reflect the directions of economic development. The restructuring of industry and measures taken by enterprises that are targeted at energy intensity reduction caused a decrease in energy consumption in these sectors. Constant development of road transport and of the services sector causes a continuing growth of those sectors' share in domestic energy consumption. In the household sector due to a system of thermal insulations that was introduced, and an improvement in the efficiency of heating systems the energy use has reduced in 1995–2004, although this sector still remains most energy consuming from among all sectors of the economy.

Year 2005 was the second in turn in which the role of investment as a factor of developing the growth of GDP has increased, however despite increased gross expenditures on fixed assets (by 6.2% as compared to the 2004 level) the investment rate in the national economy has only reached 18.3% in relation to 23.7% in 2000. Companies with foreign capital are becoming a more significant element of the Polish economy. Transfer of foreign capital in the form of direct investment supports the growth of development-favouring activities. The annual inflation rate (from December 2005 to December 2004) totalled 0.7% against 4.4% in 2004.

There are still a number of state-owned enterprises in the Polish economy that have not accomplished their restructuring processes in the mining industry, metallurgy, energy sector, heavy chemical industry or in shipbuilding industry. The private sector is developing rapidly, not only with large private companies that have been privatised from the former state-owned enterprises, but also the ones that are newly developed.

Despite growing labour demand and high labour supply Poland still has a high unemployment rate, although its level has declined as compared to the recent years. At the end of 2005 there were almost 2.8 million unemployed persons and the unemployment rate dropped to 13.8% (in 2006) from 19% at the end of 2004. Nevertheless, it was the highest rate among the EU-25. By the end of 2005 the unemployment rate of young people (under 24 years of age) was 34.6%. People with the lowest qualifications are mostly affected by long-term unemployment and they constitute the largest group of the unemployed persons. A positive phenomenon is a constant rise in the educational level of Poles.

The health condition of the Polish citizens is systematically improving. The number of deaths per thousand people has declined from 10.2 in 1990 to 9.6 in 2005, including infants as much as from 19.3 to 6.4, respectively. In effect, the average expected lifetime duration has increased over the last 15 years by 4.2 years for men, and by 3.7 years for women.

A significant progress has been achieved in environmental protection over the last dozen years or so. The negative pressure of the economy on the environment has declined by reducing the energy intensity and material intensity of production processes, introducing changes in the system of financing environmental activity, and adjusting protective standards to those of the European Union. The state of the environment, currently, does not differ to a significant degree from the one observed in the developed countries. A positive effect is the constant growth of the protected areas in our country – between 1990 and 2004 this area has grown 1.7 times. At the same time, by becoming the EU member, Poland began to develop

the European Natura 2000 network of protected areas, which covers a significant part of the area already under protection.

3. Information related to greenhouse gas inventory

Each year, Poland submits detailed inventories of GHG emissions and removals to the Climate Convention Secretariat in Bonn. Since 2002, GHG inventory results have been submitted in the form of CRF (Common Reporting Format) – spreadsheet files. National GHG inventories are subject to periodic reviews carried out by expert review teams (ERT) designated by the UNFCCC Secretariat.

Poland, being a Party to the Kyoto Protocol, made a commitment to reduce its GHG emissions by **6%** and selected year **1988** as the base year for the three main GHG gases: carbon dioxide, methane and nitrous oxide, and the year **1995** for fluorinated gases: HFCs, PFCs and sulphur hexafluoride, for its commitments under UNFCCC and its Kyoto Protocol.

Greenhouse gas inventory results show that over the period 1988–2004 emissions decreased significantly (excluding sector 5. *Land use, land-use change and forestry*) reaching the level as much as 32% below the base year. The reduction of GHG emissions has been caused primarily by the decreases of emissions of: carbon dioxide, methane and nitrous oxide that dropped by 33.6%, 23.7% and 25.7%, respectively. The decreasing trend had continued until the year 2002, after which GHG emissions began to grow by 3.3% in 2003 and by further 1.5% in 2004. Total GHG emissions in 2004 were dominated by carbon dioxide, which accounted for 81.52% of the total. Methane emissions contributed 10.1% to the total, while the share of nitrous oxide was 7.7% and F-gases accounted for 0.7% of the aggregated 2004 GHG emission total.

4. Policies and measures

The national GHG emission reduction target pursuant to Annex B to the Kyoto Protocol (6% in the period 2008-2012) is going to be met by Poland. Some of the reduction commitments with respect to CO₂ are allocated – within the emission allowance trading mechanism – among installations in main sectors of the economy according to the National Allocation Plan - NAP (KPRU). The comprehensive GHG emission reduction measures include:

- a system of emission allowance trading,
- the use of the Joint Implementation mechanism,
- the monitoring of emissions and implementation of the Kyoto Protocol (GHG emission monitoring is carried out on a current basis and the results are reported in National Inventory Reports, while implementation of the Kyoto Protocol is presented in National Communications to the Conference of the Parties),
- financial mechanisms that support measures related to GHG emission reduction (financial mechanisms that stimulate emission reduction are introduced by the National Fund for Environmental Protection and Water Management (NFOŚiGW), EkoFund to support measures, inter alia connected with energy efficiency improvement).

Poland's energy policy is based upon the following principles: harmonized energy management under social market economy, full integration of the Polish power sector with the European and world energy market, market competitiveness and support to renewable energy sources. This policy formulates priorities and directions of measures such as: monitoring of the level of energy security, cost reductions in power sector and improvement of energy efficiency as well as strengthening the position of self-governing administration towards enterprises in the power sector.

The reserves of GHG emission reductions in the transport sector lie within broadly understood improvement of organisation of passenger and freight transport and related infrastructural measures, and also in increased use of biofuels.

The ultimate goal of the forest policy formulated in the document entitled the *National Forest Policy*, adopted by the Council of Ministers in April 1997, is to specify measures aimed at maintaining sustained multi-functional role of forests, their usefulness and protection and their role in shaping the environment. This goal is to be achieved by increasing the forest cover nationally to 30% in 2020 and 33% in the mid 21st century, reinstatement and rehabilitation of forest ecosystems and regeneration of devastated forest stands in private forests. Implementation of these measures should result in increased removal and capture of carbon dioxide.

The aim of waste management is to prevent waste generation “at source”, to recover raw materials, to recycle waste and to ensure environmentally safe final disposal of unused waste. The necessary condition to fulfill the aim is to reduce material and energy intensity of production, and to increase the use of alternative renewable energy sources, and to trace product “life-cycle”.

The main measures in individual sectors include:

- 1) In the energy sector:
 - promotion of renewable energy sources,
 - introduction of financial mechanisms that support energy production from renewable sources,
 - promotion of combined heat and power generation,
 - modernisation of existing technologies in energy production and improvement of energy transformation efficiency.
- 2) In industry:
 - improvement of technical standards for appliances and equipment,
 - implementation of best available techniques – integrated permits are granted to installations that implement BAT/BEP,
 - reduction of methane emissions from production and distribution of fuels,
 - development of means to support small and medium-sized enterprises, mainly in implementing innovations and for the improvement of effectiveness,
 - promotion of environment-friendly and effective practices and technologies in industrial activity,
 - support for the development of environment-friendly, technically feasible and cost-effective methods of GHG emission reductions.
- 3) In transport:
 - promotion and use of biofuels,
 - promotion of “ecologically clean” vehicles,
 - construction of motorways, ring-roads and express roads,
 - introduction of more stringent emission standards for motor vehicles,
 - promotion of public transport,
 - improvement of the quality of water transport,
 - measures for reducing GHG emissions from air transport.
- 4) In construction and housing:
 - implementation of energy standards in the construction sector,
 - thermo-modernisation of buildings,
 - increasing awareness of building owners and users with respect to energy saving.
- 5) In agriculture:
 - rational use of fertilizers, including nitrogenous fertilisers,

- efficient use of energy in agriculture, including energy production from biomass waste, slurry and manure,
 - support for the use of other renewable energy sources in production processes,
 - reduction of the demand for solid fuels, coal, coke,
 - technical modernisation of farms,
 - improvement of animal breeding systems, methane reduction from animal manure, the use of techniques to capture methane from litter-free rearing of cattle and other ruminants,
 - preferences to plant production with a high CO₂ removal factor,
 - development of new cultivation and harvesting techniques for plant biomass intended for use as renewable energy source and input material for the industry.
- 6) In forestry:
- counteracting land use change,
 - improvement of forest management,
 - incentives for and measures supporting afforestation,
 - protection of environmental stability of forests,
 - use of wood for energy purposes.
- 7) In waste management:
- recovery and recycling of waste, waste segregation prior to disposal at landfills,
 - modernisation of solid waste disposal at landfills,
 - minimization of waste generation,
 - waste reduction at source,
 - use of landfill gas and biogas for energy generation,
 - implementation of wastewater biological treatment processes based on BAT.

5. Projections of greenhouse gas emissions and the overall effects of policies and measures

Following the guidelines of the Climate Convention, two national projection scenarios were developed for GHG emissions: “with measures” scenario and “without measures” scenario for the years: 2005, 2010, 2015 and 2020. The key scenario is the “with measures” scenario in which currently implemented policies and measures were accounted for. Both scenarios were elaborated in accordance with the requirements for national GHG inventories in line with the methodologies presented in the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*, and in *Good Practice Guidance and Uncertainty Management*.

Macroeconomic assumptions used in the “with measures” scenario expect the annual averaged GDP growth to be 5.1% during 2005–2010, 5.2% in 2011–2015 and 4.8% during 2016–2020. According to demographic projections, Poland’s population will continue to decline in the projected period. In 2005-2020, according to energy forecasts, we may expect steady improvement of the energy efficiency in all sectors of economy, and also a significant increase in the use of natural gas and renewables for electric energy production. The demand for electric energy is expected to grow steadily.

In both scenarios GHG emissions are expected to grow in 2005-2020, whereas the growth is to be higher in the case of the “without measures” scenario. However, the projected emission for 2020 for both scenarios does not exceed the base year level. The projected emission increase would mainly be caused by the increasing demand for energy resulting in emission growth in sector 1. *Energy*.

Emissions of GHG have been reduced in Poland due to the implementation of various policies. The most effective policies and measures include: increased share of biomass in fuel balances, fuel conversion, increased share of cogeneration, use of biogas from landfills and

processing of sewage sludge and implementation of best available techniques as well as energy-saving and material-efficient technologies.

The national GHG emission reduction target is going to be met by Poland in the first commitment period of 2008-2012 without applying additional measures. Therefore, it is not justified to adopt and implement such measures both from the economic point of view and from the point of view of meeting the Kyoto Protocol targets.

A flexible mechanism in the form of emission allowance trading scheme, pursuant to Directive 2003/87/EC establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Directive 96/61/WE has been transposed into Polish law in Act of 22 December 2004 on emission allowance trading for greenhouse gases and other substances. Pursuant to the decision of the European Commission of 8 March 2005, after introducing appropriate changes to the *National Allocation Plan for CO₂ Emission Allowances for the Years 2005-2007* (KPRU I), Poland has been incorporated in the Community emission trading scheme. Pursuant to the provisions of Directive 2003/87/EC, by 30 June 2006 each Member State should have submitted to the European Commission for acceptance its *National Allocation Plan for CO₂ Emission Allowances for 2008-2012*. Such a plan (KPRU II) has been submitted by Poland to the European Commission on 30 June 2006. The Polish NAP (KPRU II) was prepared on the basis of sectoral development strategies elaborated by industry associations representing economic entities covered by the system.

Poland does not take part in the implementation of the Clean Development Mechanism (CDM), but participates actively in the implementation of Joint Implementation (JI) mechanism by undertaking – on the Polish territory – jointly with other countries from Annex I to the United Nations Framework Convention on Climate Change, measures that reduce emissions of greenhouse gases. The common will to jointly undertake activities targeted at the Convention's goal through the mechanism of Joint Implementation was expressed by signing agreements and MoU (Memorandum of Understanding) by the Governments of Finland, Canada, Denmark, the Baltic States and the International Bank for Reconstruction and Development (Prototype Carbon Fund). Poland also participates actively in international programmes and funds dealing with the realisation of Joint Implementation projects, like e.g. the Dutch ERUPT programme. Several projects were carried out during the pilot phase of the mechanism of the Kyoto Protocol (under its Art. 6) – Activities Implemented Jointly (AIJ), as well as under the mechanism of Joint Implementation. Moreover, there are a number of potential Joint Implementation projects in various stages of preparation, beginning with those in initial phase, and ending with those in advanced phase, which are awaiting final approval. A new act is being drafted which will regulate matters concerning Joint Implementation projects in Poland, providing the legal basis for project approvals and for project implementation by the entities.

The major obstacles in the implementation of *Poland's Climate Policy* include:

- coal-based use structure of primary fuels, conditioned historically through availability of domestic resources and accompanying social circumstances,
- still relatively low energy efficiency of the economy,
- dynamic development of road transport.

6. Financial assistance and technology transfer under Art. 4.3, 4.4 and 4.5 of the Climate Convention

Poland as a Party not listed in Annex II to the Convention does not have a duty to fulfil the obligations under Articles 4.3, 4.4 and 4.5 of the Climate Convention. However, by understanding the need for supporting sustainable development in the developing countries and in those with economies in transition, provides such assistance to the extent possible.

The Polish development assistance undergoes constant increase, for instance, in 2004 Poland provided 137.3 million USD to support the development of the developing countries and of those in transition (mainly the developing countries). Additionally, over 20 million USD were transferred primarily to countries in transition. Poland also provides funds for promoting technology development. In 2005 the Polish ODA increased to 204 million USD and in 2006 to 296 million USD.

7. Research and systematic observation

Polish scientific research studies in the field of climatology cover a wide range of topics among which the following can be distinguished:

- physical climatology,
- topoclimatology (climatology of urban areas, in particular),
- dynamic climatology,
- regional climatology, applied climatology and climate change survey.

The following major issues may be identified in climate change research:

- historical research on climate change, modelling of climatic processes, and the development of scenarios for predicted climate change,
- climate change impacts on the natural environment, on the economy and the public,
- impact of human activity on climate,
and
- social and political aspects of climate change.

The *National Framework Programme* in which the environment is among one of its priorities in scientific research has been adopted in 2005. A research theme entitled *The economy as a climate change factor* has been launched under this Programme. Its aim is to define the ways of reducing greenhouse gas emissions in Poland and to increase their capture, reduce the use of non-renewable energy sources in favour of the renewables, as well as to combat the negative consequences of emissions of these gases to the economy and nature.

Around 80 research projects on climate change and on the process of global warming have been carried out between 1994 and 2004. They included both projects of European importance and those considered important at national and local levels, e.g.:

- assessment of climate changes in the 20th century,
- adaptation of living organisms and crops to climate change,
- applied research on the impacts of climate conditions on economic and technical activity,
- extreme meteorological and hydrological events in Poland.

Furthermore, scientists from various Polish research centres participated in numerous projects on climate changes and their specific consequences, which were funded with the use of foreign resources, mainly from the European Union.

8. Education, training and public awareness

Environmental education raises public awareness and awakens public interest in cross-cutting environmental, economic, social and political issues. It allows for every man to obtain knowledge and capabilities essential for environmental improvement, and creates new behavioral patterns, develops proper attitudes, approaches, values and opinions of the individuals and of social groups taking account of the concern for environmental quality. Environmental education covers the entire public, all age and occupational groups, as well as high-level governmental administration at central and local levels in the process carried out

by both the institutional entities specially designated for that purpose and also by non-governmental environmental organisations and the media.

Environmental education in Poland is conducted by a number of institutions, among which is the Ministry of National Education. The Ministry of the Environment is involved in environmental awareness raising of the Poles by organising various competitions, exhibitions, conferences, as well as other information and educational events.

A significant role in the process of developing environmental attitudes is played by mass media. The Minister of the Environment is cooperating with them to disseminate updated and reliable information on environmental protection and water management. The Minister also organises press conferences on climate change as well as seminars for journalists dedicated to this issue. This theme is also present in radio broadcasts commissioned by the Minister of the Environment and financed by the National Fund for Environmental Protection and Water Management.

The Ministry of the Environment publishes an information bulletin on *Climate change*, which contains a broad package of information, inter alia, on greenhouse gas emission trends, research projects, undertakings for preventing and adapting to future climate change, and on domestic and international measures that are taken.