

TEMPLATE
EU SDS MEMBER STATES' INPUT

1. General Information/Introduction

1.1. Name of Member State: **POLAND**

1.2. Coordinating body:

Ministry of the Environment, in cooperation with other relevant Ministries is responsible for implementation in Poland of the Renewed Strategy for Sustainable Development of the European Union. Department of Global Environmental Issues and Climate Change perform the leading role at the Ministry in this regard.

1.3. Contact information

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2. Progress on UE SDS key challenges

2.1. Climate change and clean energy

The overall objective is to limit climate change and reduce its costs to and negative impacts on the general public and the environment

2.1.1. EU SDS implementation

Topics as set out in the European Council conclusions on EU SDS. Example:

2.1.1.1. Kyoto Protocol commitments

Since 13 December 2002, Poland has become the Party to the Kyoto Protocol of the United Nations Framework Convention on Climate Change (UNFCCC). Thus, Poland assumed commitment to reduce its greenhouse gas emissions by 6% during 2008–2012 in relation to the 1988¹⁾ base year emissions. Each year, Poland forwards its detailed greenhouse gas emissions and sinks inventories to the Convention's Secretariat, in Bonn. Poland adopted 1988 as the base year for implementation of its commitments under UNFCCC and the Kyoto Protocol in the scope of emissions of the three basic gases: carbon dioxide, methane and dinitrogen monoxide, and adopted also 1995 as the base year for industrial gases of fluorhydrocarbon (HFCs) and perfluorhydrocarbon (PFCs) group, and sulphur hexafluoride. The political and economic transformation taking place since 1990, as well as a number of pro-environmental investments undertaken by the Polish industries, caused that in 1988–2005 Poland achieved considerable reduction of greenhouse gas emissions by as much as 32%, having thus fulfilled its commitments assumed under the Kyoto Protocol.

However, by the end of the first commitment period, i.e. by 2012, a growth in energy demand is expected, as well as certain related increases in emissions that will be caused by modification of economy and gradual change into a more environmentally friendly technologies and fuels. According to the political line as pursued by the European Union, restructuring of industry and modification of enterprises will tend towards achievement of synergic effects and strategic objectives, including improvement in energy safety, competitiveness, growth in employment, reduction of greenhouse gas emissions, and the air quality improvement. The present fuel structure, since being retained for several subsequent decades in the in Polish energy sector predominated by hard coal and lignite, will make difficult the further meaningful reduction of the emissions. However, notwithstanding the above, the actions are being undertaken to improve energy efficiency, energy saving, thermo-modification, thermo-insulation, as well as to

¹⁾ The 1988 base year covers data from gaseous emissions including: carbon dioxide, methane and dinitrogen monoxide from 1988, and industrial gases of the HFCs and PFCs group, and and sulphur hexafluoride of 1995.

introduce the green certificates, labelling of energy-saving equipment, and other. Transport sector has also a huge reduction potential. Renewable energy sources will also have increasingly growing share in energy generation. New and emerging environmentally friendly technologies will be gradually placed on the market, including also the Polish market.

The issues relating to climate change are considered priorities in both EU and Poland. In 2008, Poland will organise the 14th Meeting of the Conference of Parties (COP14) in its national territory

On 8-9 March 2007, the Council of Europe held its meeting which considered climate change issues the important priorities. So called 3 x 20 objectives were agreed upon there. i.e.:

- 20 % reduction of greenhouse gas emissions by 2020;
- 20% Community average share of energy produced with the renewable sources in the total energy use;
- 20 % energy efficiency.

These ambitious objectives adopted by the European Union must be further structured into concrete specific reduction targets for individual Member States (EU-27). The principle of sharing the commitments („burden sharing” mechanism) has to be followed as it was applied in course of agreeing upon the reduction targets for the period the Kyoto Protocol 2008-2012 commitment period² that consists in different approach to the "old" Member States who took the larger commitment burden, and the newly acceded States, whom the reduced requirements were assigned to, and even were permitted to rise their emissions to benefit from the opportunity to fill in the gap in the level of economic development between them and the "old" Member States. Poland, being the country which develops intensively and exceeds the Kyoto requirements hopes that the post-Kyoto commitments – i.e. those beyond 2012 – will be based upon the same principle. Moreover, the achievements attained by the individual countries in relation to the Kyoto Protocol base year have to be taken into account.

Poland intends to consider jointly the issues of climate change, energy and those of sustainable development, and to transform gradually its economy into low-emission economy. As it is commonly known, the climate protection activities not only reduce the greenhouse gas

² By Decision 2002/358/EC, the Member States (EU-15) agreed upon the allocation scheme of 8-percent emission reduction which in a different degree imposed the burden on the Member States in meeting this commitment, allowing even for emission increases (Greece as much as by 25%, Spain by 15%, Portugal by 27%, Ireland by 13%, or Sweden by 4%). The highest reduction for that period was assigned to Luxemburg by 28%, Germany by 21%, Denmark by 21%, or United Kingdom by 12,5%. According to Article 4 (4) of the Kyoto Protocol, 10 States which acceded the European Union on 1 May 2004 (EU-10, including Poland) are not included into overall EU commitment to reduce greenhouse gas emissions, i.e. 8% reduction in relation to 1990 during the first commitment period being 2008 – 2012.

emissions, but also lead in consequence to improvement in the national energy safety, and Poland tends to aim successively just at such direction. Poland endorses any activity aimed at reduction of environmental pollution, and strongly emphasises effective reduction of greenhouse gas emission, first and foremost, by means of undertaking a broad range of the national activities in line with additional role provided by the Kyoto mechanisms, including emission trading.

For Poland, it is important to recognise the importance of the use of coal as fuel to produce energy, since Poland is interested in its future use in form of clean coal technology. Utilisation of considerable national resources of hard coal and lignite is of specific importance from the point of view of Poland's energy safety and preservation of its own national fuel independence. The issue of the opportunity to further use of coal to generate power is considered a matter of strategic importance. Coal is the major raw material to generate power and it will further remain the principal fuel.

There is no opportunity to reduce radically the share of coal in power generation in Poland.

Table 1. Changes in emissions of carbon dioxide, methane, dinitrogen monoxide, fluorhydrocarbon, perfluorhydrocarbon, and sulphur hexafluoride emissions, as expressed in carbon dioxide equivalent [Gg CO₂ eq.]

Gases	Years				
	2000	2001	2002	2003	2004
CO ₂	314812	317844	308277	319082	316700
CH ₄	45848	38816	37787	37684	39025
N ₂ O	23895	23946	22633	23936	30004
HFCs	595	1073	1523	1825	2436
PFCs	224	270	287	278	285
SF ₆	16	18	21	20	23
Total emission	385390	381967	370528	382825	388473

Source: „The Fourth Governmental report for the Conference of the parties to the United Nations Framework Convention on Climate Change”, Warsaw 2006

2.1.1.2. *Renewable energy*

In Poland, „The 2001 Strategy for Development of Renewable Energy Sector” is the principal document concerning renewable energy that was on 23 August 2001 approved by the Parliament of the Republic of Poland. This document assumes the achievement in 2010 the 7.5% share of renewable energy in the primary energy balance, and the rise in this share up to 14 % in 2020. It was assumed that this target could be achieved through using renewable energy sources to generate electric energy, thermal energy (heating), and production of biofuels.

On its accession to the European Union, Poland assumed commitment to implement the tasks under *acquis communautaire*, including, inter alia, Directive 2001/77/EC on the promotion of the electricity produced from renewable energy sources in the international electricity market, Directive 2003/30/EC on the promotion of the use of biofuels or other renewable fuels for transport, and Directive 2002/91/EC on the energy performance of buildings. The targets set out in the aforementioned Directives have been transposed into the relevant documents setting out the Polish national policies and strategies.

„The National Energy Policy by 2025” is one of such documents and it takes over from „The 2001 Strategy for Development of Renewable Energy Sector” the target to achieve the 7.5% share of renewable energy in the primary energy balance, as a strategic target, but at the same time it sets out new target, i.e. to achieve by 2010 the 7.5 % share in the total gross consumption of electric energy for electric energy generated from renewable sources.

Similarly, „The 2007-2010 National Environmental Policy in View of the 2011–2014 Perspective” sets out in the scope of development of renewable sources an increased share of the renewables in the national fuel-energy balance that is up to 7.5 % (EU 21%) in 2010, and up to 14 % (EU 12%) in 2020, in the structure of use of the primary energy. Recently, the Council of Minister approved „The Long-Term Programme for the Promotion of Biofuels for 2008-2014” which provides for development of biofuels production and use on the transport-fuel-market that is up to 5.75% in 2010, and 10% in 2020.

In order to make implementation of these targets feasible, a system of legal and financial instruments has been established in Poland to support development of renewable energy sources. These instruments are following:

- Provision of two types of income to the producers of renewable energy: one on sales of energy at regulated prices, and another one - on sales of the "green certificates" on the stock exchange of the certificates of origin,
- Introduction of the obligation to purchase energy from renewable sources,
- Introduction of the obligation imposed on providers of electric energy being sold to the end users to obtain and submit for remission the certificate of origin of energy from renewable sources,
- Introduction of the equivalent charge, as corresponding to the interest rates of the total energy sold, to be incurred by the providers of electric energy who cannot prove that they placed their renewables on the market,
- Introduction of penalty for failure to comply with the aforementioned obligation,
- Introduction of 50% reduction of the connection cost of the renewables,
- Introduction of separate principles for balancing of energy from wind power plants,
- Provision of exemption of the charge for granting concession and of the charge for granting and registration of certificate of origin of energy from the sources < 5 MW.

Table 2. Production and consumption of renewable energy by its generation sources

YEARS	Total energy production	Total energy consumption	Generation of renewable energy					The share of renewable energy in the total energy produced [%]
			total	including				
				geothermal	biomass	wind	water	
[thousands toe]								
2000	80070	90050	3801	3	3587	0,46	181	4.75
2001	80260	90039	4076	3	3830	1	200	5.08
2002	80170	89185	4139	6	3901	5	196	5.16
2003	79878	93189	4157	7	3929	11	144	5.20
2004	78654	91713	4315	8	4062	12	179	5.48
2005	78445	92978	4260	9	3898	12	189	5.43

Source: GUS

Irrespective of the above mechanisms, the investors may benefit from the low interest loans, credits or donations as offered by various environmental foundations, banks, and the EU and other countries' assistance funds.

These foundations and institutions are following:

- The National Fund for Environmental Protection and Water Management, and its 16 daughter Voivodship (i.e. Provincial) Funds for Environmental Protection and Water Management.

In 2000 - 2006 the National Fund co-financed 399 projects in the scope of the renewable energy sources and allocated the amount of 519 million PLN to this end.

- Environmental Protection Bank - in the period between 1990 and 2006 granted 1156 credits amounting to about 485 million PLN for biomass fired boilers, heat pumps, solar energy collectors, small hydro-power stations, wind power plants, use of biogas, and use of geothermal energy. The Bank also financed with its own resources the projects in the field of the energy performance of buildings.
- The Eco-Fund Foundation – who in the period between 1990 and 2006 co-financed 83 projects using biomass as the source of heat or power, thus granting donations amounting to 131 million PLN, including installation of ovens, engines or turbines using biomass as fuel, the overall capacity of which amounted to 225 MWth; and also 148 projects on installation of the solar energy collectors were financed, at 22 million PLN, the overall area surface of which amounted to 16 thousand m².

The projects on the renewable energy sources are also being provided with assistance provided through:

- The „Growth of Competitiveness of the Enterprises” Operational Programme,
- Financial Mechanism of the European Economic Area, and the Norwegian Financial Mechanism,
- The „Infrastructure and the Environment ” Operational Programme and its 16 Regional Programmes,
- The Programme for Development of Rural Areas for 2007-13

- The „Innovative Economy 2007-2013” Operational Programme,
- The "Competitiveness and Innovation (CIP)" Framework Programme,
- The INTERREG Programme,
- The R&D Framework Programme,
- The National Framework Programme of Minister of Science and Higher Education.

The above supporting system has underpinned enhanced interest in development of the renewable energy sources in Poland. Following data provided by the President of the Energy Regulatory Office, as of 10 May 2007, the rated power input of the renewable energy sources amounted to 1,560.36 MW and related to 920 sites having concessions (i.e. those participating to green certificates trading scheme). To compare, 826 renewable energy sites having the overall rated power input of 1,307 MW were active in Poland in 2005.

During the Spring European Council held on 8-9 March 2007, the Action Plan was adopted to integrate the Community climate policy and energy policy. In order to limit the growth of the mean global temperature by more than 2°C above the pre-industrial period level, and to reduce the risk to rise in prices and the restricted accessibility of petroleum and gas, it was decided there in the scope of the renewable energy sources, inter alia, to:

- increase the share of the renewables up to 20% of the overall EU consumption by 2020,
- achieve at least a 10% share of commercially available biofuels by 2020 in all Member States

These targets in the scope of development of renewable energy sector relate to the European Union as a whole. Poland commenced work on setting out its national binding target in the scope of renewable energy sources and its intention is to announce a relevant proposal of the National Action Plan in this regard, by the end of 2007.

2.1.2. Specific national / NSDS actions in this field

The Act on the Emission Allowances Trading

For the two years when the Act of 22 December 2004 on the Greenhouse Gas and Other Substances Air Emission Allowances Trading (Official Journal No. 281, Item 2784) is in force, this causes the conclusion that it fails to meet all the relevant expectations which result from both the transposition of Directive 2003/87/EC and the incomplete transposition of Directive 2004/101/EC.

The legal provisions currently in force do not include any regulations which would relate to the principles for approval of the Joint Implementation projects, the principles for operation of the National Emission Inventory Scheme, or the principles for setting out the national, regional, or sectoral limits for substances being released into the air.

Therefore, the objectives of the relevant new Draft Act are to:

- make a more precise the current provisions and explain the issues which emerge from different interpretation of such provisions which could appear in course of operation of the Scheme,
- put in order the provisions relating to operation of the Community and national emission allowance trading schemes,
- provide for legal opportunities to sell the emission allowances through auction with use of the resources gained on such selling with the aim to achieve the targets, as referred to in Article 2 the Protocol of the United Nations Framework Convention on Climate Change, that was done in Kyoto on 11 December 1997,
- reduce, in a cost-effective manner, the emissions of substances released into the air, including in particular those of greenhouse gases being responsible for climate change,
- use of the assigned amount units,
- manage emission units derived from sinks, emission reduction units, and certified emission reduction units,
- set out the air emission levels for greenhouse gas and other substances,
- establish the National Emission Inventory Scheme,
- prepare prognoses of the air emissions of greenhouse gas and other substances.

The Act will lay down the provisions for use of the assigned amount units, emission reduction units, as obtained under Joint Implementation projects, and for implementation of

such projects, certified emission reduction units obtained under the Clean Development Mechanism project, management of the emission units derived from sinks, setting out the levels for emission of greenhouse gas and other substances, the national emission inventory, preparing emission prognoses, performance of the emission allowances and other substances allocation scheme, the objective of which is to reduce these emissions in a cost-effective manner.

CO₂ Sequestration

Not only the actions aimed at delaying of climate change have to be noted and taken into account, but also the underestimated role of forests, forestry, sustainability of forest management, and soil protection within the global carbon circulation and CO₂ sequestration to delay the climate change. To this end, in the future commitment period, a higher importance should be attributed to the role of forest and forestry. Forestry is an effective instrument to make ecological and environmental functions of forest more market-oriented in the international emission trading scheme which will thus become capable of rendering financial support to implementation of the principles for multi-functional, sustainable forest management. In Poland's opinion, that will contribute to stopping deforestation process, enhancing adaptation capability in the countries which are under the highest risk to global warming impacts, and to reversal of negative decline trend in biological diversity.

Forests perform a variety of functions either naturally or in result of anthropogenic activity those are most frequently classified in the following way:

- productive (economic) functions consisting principally in their capability for renewable production of biomass, including primarily wood and by-products;
- ecological (protective) functions demonstrating by, amongst others, the beneficial influence of forests on shaping the global and local climate, the counteracting floods, avalanches and landslides, the protection of soil against erosion, and the landscape protection against stepping;
- social functions which, amongst others, develop the favourable health and recreational conditions for the general public, and enrich the labour market.

In the past, as a consequence of the social and economic processes which were predominated by economic objectives, forest in Poland were subject to considerable transformation with the forestage which at the end of 17th Century (throughout the national

territory of those times) amounted to about 40%, but that have declined to 20.8% by 1945. In result of intensive post-war afforestation and as a consequence of „The National Programme to Expand Woodiness” forestage in Poland has considerably grown to reach 28.8%, in 2006 (following GUS data – as of 31 December 2005). Nowadays, the overall forested areas in Poland cover 9 million ha.

„The National Programme to Expand Woodiness” (NPEW), as approved in 1995 for implementation by the Council of Ministers, forms the basis for the afforestation work in Poland. The principal target of NPEW is to enhance the national woodiness up to 30% in 2020, and up to 33% in 2050, and to provide for optimum time-spatial distribution of forestage, as well as to set out the environmental and economic priorities, and the implementation instruments. Both the State-owned and private areas are subject to afforestation under NPEW. Afforestation of the post-agricultural land is currently carried out mainly under implementation of the European Union Programme for Development of Rural Areas.

Allocation of the Emission Allowances for 2008 – 2012

On 26 March 2007, the Commission of European Communities notified to Poland the Commission Decision dated 26 March 2007 on the National Allocation Plan for the allowances of greenhouse gas emissions, as submitted by Poland according to Directive 2003/87/EC of the European Parliament and of the Council³. Polish Government is of the opinion that, in their decisions, the European Commission should to a higher extent take into account the degree of implementation of the Kyoto Protocol's objectives by the individual States (particularly those which have met these objectives and yet obtained considerable surplus in this regard). Moreover, in Poland's opinion, the Commission's decisions do not sufficiently reflect the efforts being made by the countries who by means of their policies have met the relevant obligations under the Kyoto Protocol.

Poland endorses any action aiming at the further reduction of greenhouse gas emissions, while emphasizing that it has achieved considerable reduction of this gas. On ratification of the Kyoto Protocol of the United Nations Framework Convention on Climate Change, Poland assumed the obligation to reduce its greenhouse gas emissions by 6% in relation to the 1988 base year. By 2005, Poland reduced its greenhouse gas emissions by 32% in relation to the 1988 base year, i.e. achieved several times as much as in the target it has assumed. The Polish economy

³ K(2007)1295 final.

provides for regular reduction of the emissions. Also, the awareness of the responsibility for reduction of the greenhouse effect has risen in Poland. It is noteworthy that the number of the allowances which Poland applied for in its 2nd National Allocation Plan is a compromise between its commitment and its willingness to reduce further the greenhouse gas emission, on one hand, and the aspiration to provide for the best possible development opportunities for the Polish economy, on the other hand.

The number of the emission allowances, which Poland applied for is concurrent with its needs in the scope of CO₂ emission reductions in 2008-2012, following the report titled "Poland's needs in the scope of CO₂ emission reductions in 2008-2012 in the contexts of implementation of the objectives of the National Development Strategy, including the programmes financed with use of the Cohesion Fund's and the Structural Fund's resources". The condition imposed by the European Commission to restrict the overall quantity of the allowances to about 208.5 million allowances per annum will undoubtedly have strong impact on restraining the national economic growth and causing disturbances to sustainable development.

Inadequate – in relation to the needs resulting under development trends – the allocation of the emission allowances in 2008-2012 will cause numerous negative consequences, including first and foremost:

- hampering of Poland's economic growth and in consequence the unavailability of the opportunities to eliminate the development gap those have emerged after Poland's integration with the European Union,
- essential growth in competitiveness of the manufactures from outside the European Union and discrimination of the Polish and the Community ones,
- relocation of the manufactures' production processes from Poland to outside of its national and the Community borders (to Ukraine, Belarus, Russia, China, for example those concerning cement, steel, paper, glass), and
- in consequence, growth in unemployment, drop of the budgetary income, negative impacts on the public finance, decline of the economic growth rate (as expressed in increase of GDP),
- reduction of Poland's attractiveness to foreign investors and in consequence slowing down the economic innovation,
- failure to use the Cohesion Fund and Structural Funds financial resources as presented to Poland to use during 2007– 2013 budgetary period.

Equal treatment of the Member States by the European Commission requires that the "new" ones (including Poland) are provided with guarantee to uniform development conditions as expressed, inter alia, in different growth rates of the allowable CO₂ emissions.

Poland meets its emission reduction target, as provided for in the Kyoto Protocol. At the same time, Poland endorses the activities aimed at the further reduction of greenhouse gas emission. However, one has to be aware that the number of the allowances, which Poland applied for in its 2nd National Allocation Plan is a compromise between the obligation and willingness to the further reduction of its greenhouse gas emission, on one hand, and its aspiration to provide for the best possible development opportunities for the Polish economy, on the other hand. Progressing economic modification (including continuously higher use of the energy saving potential, and the growing share of the renewable energy sources) will not be able to compensate for growing emissions which result from dynamic national development. This development relates in particular to housing and road infrastructure, and it is catalysed by the direct investments and by the resources of the Cohesion Fund and Structural Funds of the European Union.

CCS

Acceptance of CCS in the National Systems

Technology of capturing and storage of carbon dioxide in geological deposits (Carbon Capture and Storage - CCS) is – following the European Commission's point of view – of specific importance within the group of clean coal technologies. The energy package adopted in January 2007 by the European Parliament, the conclusions made by the European Union Environment Council on 20 February 2007, and the conclusions of the European Union Council dated 9 March 2007 (made on the Head's of Governments level) indicate that the European Union has attributed priority to this technology in the scope of reduction of carbon dioxide emissions from coal combustion processes for energy purposes. The CCS technology is to be applied beyond 2020 in the European Union Member States on mandatory basis in all new coal-fired power plants, whereas the existing installations will also have to adapt gradually to its implementation. The Commission of the European Union began preparation to implement 12 large demonstration projects by 2015 using CCS in commercial coal-fired power plants. To this end, the Commission will set out the methods for the best possible support to planning, construction and operation of these projects.

The Commission concluded agreement on the partnership cooperation with China that aims at a joint CCS demonstration project. The first phase of this project will be complete by 2008 and setting up of the demonstration project has been preliminary planned in 2020.

The achievement of anticipated project results will be possible to assess no earlier than in line with the monitoring results and reporting carried out in a longer time-period which, in the Commission opinion, will last for at least 5 years. The Commission's plan is to carry out in 2007 the assessment of potential risk relating to CCS technology and to lay down the permitting requirements on CCS activities and suitable management of the risks and effects identified.

According to Communiqué of the Commission of the European Union dated 10 January 2007 on “Sustainable power generation from fossil fuels: aiming for near-zero emissions from coal after 2020”, one could expect that application of the CCS technology will bring about measurable benefits from emission reduction, primarily, in form of the high, reaching 90%, efficiency of CO₂ emission elimination from power plants fired with fossil fuels. The Commission estimates that thanks to application of CCS, the overall emission reduction from EU-27 could even amount to 25-30% by 2030, when related to the 2000 level.

Moreover, the overall emission of the major pollutants resulting from coal combustion that are considered the principal sources of acidification, eutrophication and ground ozone will be also considerably reduced with application of sustainable fossil fuel technologies. According to the Commission estimates, certain technologies, depending upon each specific process, are capable to reduce SO₂ and NO_x emissions by about 80% and 95%, respectively, when compared against the conventional power plants.

Currently, Poland has about 30%-reserve of greenhouse gas emissions under the Kyoto requirements. Given the considerable differentiation of the economic situation in each particular Member State of the European Union, including their fuel basis, Poland speaks for a differentiated approach to particular European Union countries in the scope of the future findings in the scope of CO₂ emission reduction.

Poland accepts the actions proposed by the European Commission those would consist in:

- continuation of the activities for the Global Agreement aimed at limitation and further reduction of CO₂ and other greenhouse gases worldwide emissions pursuant to assumption

to limit the mean temperature on Earth to the level exceeding by maximum 2 °C the temperature of the pre-industrial era,

- supporting the activities relating to examination of the carbon dioxide capture and storage for energy purposes, according to regulations concerning natural environment, as an element within a wide range of the opportunities required to implement the Global Agreement.

However, Poland's position is that at the present stage one has to be moderately optimistic in relation to promoting CCS technology, since this technology has not been so far available on the market in full commercial scale and yet many aspects have been still remained unknown, such likewise its durability and leaks, and its sustainability has been questioned by both the non-governmental organisations and the scientific groups. Moreover, no full cost and benefits analyses and assessment of social, environmental, economic, and also legal effects of its application have been performed. No Green Book for CCS has been prepared. Moreover, it has to be pointed out here that a non-predictable decline in the European Union economic competitiveness relating to increase in the production costs of electric energy with application of CCS technology and a drop of the power plants' efficiency could yet occur. Nevertheless, an increased share of coal in the improvement of energy supplies security will appear that means, to certain extent, a positive effect, particularly for Poland having considerable resources of this raw material. However, on the other hand, the future use of coal will have to meet the objectives of sustainable development and climate change policy. According to the Commission's opinion, this technology could create new development opportunities for new technologies with application of other fossil fuels, primarily for gas-fired power plants.

It is still too early to assess the costs and benefit which would emerge from the future CCS projects in Poland. However, despite numerous information gaps which pertain to CCS, Poland has considered the opportunities to cooperate with other countries, including USA, on implementation of a CCS pilot project

In 2001, experiment co-financed by the European Union and Poland, named the RECOPOL Project was begun. That project being implemented on a mining site of the METANEL S.A. consisted in pumping CO₂ into coal deposits through a well specially drilled to this end. Pushing out methane adsorbed in coal deposits with simultaneous storage of carbon dioxide instead was a direct objective of this project. At the same time, that experiment had to test the opportunity to store CO₂ in coal deposits with simultaneous intensifying of methane

extraction, the particles of which were to be replaced by CO₂ molecules. The project was complete in 2005. A lot experience was gained during its implementation, particularly in surveying the tightness of the deep structures with application of the carbon isotopes identification methodology which could be utilised on the future sites of greenhouse gas sequestration.

2.2. Sustainable Transport

"The Draft Strategy for Development of Transport in 2007-2013" is considered key document in the scope of sustainable transport. Currently, the inter-sectoral harmonisation of this Draft has been complete and it will be subject to discussion during debates of the Council of Ministers' Committee.

The aim of the above Strategy for Development of Transport is to reconcile the economic and development objectives, on one hand, and the protection of the environment and the concern about preservation of natural resources, on the other hand. The principle of sustainable development, which is considered a Constitutional Standard in Poland and that sets out the method to provide for environmental protection, forms a rational way towards reconciliation of the aforementioned objectives, while sustainable development is understood as „the ability to satisfy current needs without compromising the ability to future generations to meet their needs.” Sustainable development concentrates on improvement of the quality of life in such a way which does not lead to infringement of environmental protection principles.

The principles of sustainable development that are considered binding in the course of implementation of the transport development strategy are following:

1. The transport system has to be established and operated in a way which first and foremost provides for human safety.
2. The efficiency and competitiveness of the Polish transport benefits from support rendered by means of any method available, including the relevant development policies and programmes.
3. The mechanisms of gradual loading on transport the burden of economic, social and environmental costs it generates is to be introduced.
4. The availability of transport must be enhanced.

5. The transportation needs are to be satisfied by means which provide for reduction of environmental emissions of adverse substances and reduce the risks to both human health and the environment.
6. Development of the transport system are implemented in line with rational use of space and other natural resources, preservation of essential animal habitats, and conservation of biological diversity.
7. The institutions responsible for preparation and implementation of investments diligently care that their activities, both internal and external, comply with the principles of sustainable development. In particular, they have to provide for high standards of preparation of the environmental impacts assessment documents.

Ministry of Transport is the authority competent for exercising supervision over implementation of the relevant investments so that their implementation complies with the principle of sustainable development.

The Strategy identifies the following four strategic objectives:

Objective 1: Establishment of transport network conforming to the future national transportation needs.

Objective 2: Development of market relations in transport.

Objective 3: Territorial and branch integration of transport.

Objective 4: Improvement in traffic safety.

Each of these strategic objectives is further structured below into specific targets to be implemented by 2013:

Objective 1: Establishment of transport network conforming to the future national transportation needs

By 2020, implement the first phase of the work aimed at establishment in Poland of up-to-date transportation network.

The national roads:

- Put into operation more than 1000 km highways (including about 470 km under commercial scheme and the PPP system),

- Put into operation about 2300 km new express roads,
- Adapt the roads to a more stringent wheel load standard for trucks according to the time-schedule as set out in the Accession Treaty,
- Improve the condition of the national roads maintenance, so that the following indicators are achieved by 2013:
 - good condition - 75 %
 - unsatisfactory condition - 15 %
 - poor condition - 10 %

Remove the national roads from cities through construction of their ring roads.

Railway network:

- continue modification of the railways which are the elements of the trans-European transport network,
- commence preparatory works to implement high-speed rail system and develop the conventional lines adapted to 200 km/h velocity of the passenger stock,
- improve technical condition of the railway infrastructure,
- eliminate the bottlenecks which cause limitation of velocity on railways.

Marine harbours:

- provide for efficient road and railway access to marine harbours,
- improve the marine harbour infrastructure and the access from sea to harbours.

Aviation:

- develop the aviation infrastructure with a tempo exceeding the growth of demand of the aviation services through expansion of throughput of both the Polish airport and the national air space,
- support selected infrastructure investments in airports and the navigation investments,
- improve the road and railway access to airports,
- continue works on conception of the second central airport according to „The Programme for Development of the Airports and the Aviation Ground Facilities”.

Inland waterway transport:

- support development of the inland waterways,
- improve the state of the inland waterways.

Objective 2: Development of market relations in transport

Provide for the basis for up-to-date transport market offering high quality services to both enterprises and the general public through implementation of the following actions:

- implement economic and financial, and administrative mechanisms to stimulate development of transport market and the alternative in relation to the road transport the passenger and cargo mobility modes,
- finalise restructuring of the Polish National Railways Group,
- develop a short-range navigation scheme,
- finalise the ownership transformation process in aviation sector,
- apply up-to-date Information Technology in a more intensive way for transport purpose.

According to the guidelines of the European Commission, the support will be granted to such sectors of the transport market which provide the alternatives of the road transport.

Railway transport:

- finalise restructuring of daughter companies of the Polish National Railways Group,
- stabilise the conditions to organise and finalise financing of the passenger transport schemes being the public services,
- improve technical and operating status of the commonly accessible public railway infrastructure,
- rationalise the charge rates for access to the railway infrastructure with regard to compensations from both the national budget and the public resources to managers of the public railway infrastructure,
- adapt the structure of the railway stock to the magnitude of the haulage tasks,
- enhance the railway interoperability,
- stimulate development of the railway operators' market,
- improve the railway offer.

Marine transport:

- improve the competitive capacity of the Polish shipowners to and cause that the Polish ships return back under the Polish flag,

- develop market for the marine highway and short-range navigation,
- enhance the container and the general cargo handling,
- improve the quality of the harbour services,
- provide support to small harbours as the regional enterprise centres,
- improve the safety level of navigation and the protection of marine environment.

Air transport:

- continue the ownership transformation processes in aviation sector,
- stimulate development of the aviation market through application of the regulatory tools,
- put in order the legal status of the airports being under joint operation with the national defence sector,
- achieve the highest safety standards in aviation transport,
- reduce environmental nuisance from aviation transport.

Inland waterway transport:

- support the restoration of the tonnage of the inland waterway navigation,
- develop the long- and medium-term development plans for the inland waterways in Poland,
- amend the legal regulations aimed at supporting development of the inland waterway transport,
- revitalise passenger haulage and tourism traffic on selected waterways.

Intelligent Transport Systems:

- establish the national architecture of the Intelligent Transport Systems (ITS) to provide for compatibility between their particular constituent schemes,
- implement pilot projects in the scope of the ITS,
- support the traffic management projects in the urban areas and the non-urban networks,
- implement other ITS projects,
- establish an organisational entity with the Ministry of Transport to deal with the ITS issues,
- support the R&D initiatives in the field of the ITS.

Objective 3: Territorial and branch integration of transport

Establish an integrated transport system through:

- supporting selected projects in the field of urban transport,
- supporting development of the intermodal transport systems.

The integrated urban transport:

- support selected projects in the following fields:
 - modification of the infrastructure and the stock for high speed urban railway,
 - development of tram and trolleybus transport,
 - establish integrated communication nodes,
 - enhance attractiveness of urban transport, including through the improvement of its standard and safety,
 - enhance the accessibility by the disabled to the public urban transport,
 - support construction of bike-lanes,
 - construct another metro line in Warsaw.
- prepare comprehensive regulation on the collective public transport issues in form of a new Parliamentary Act,
- establish an organisational entity with the Ministry of Transport to deal with the urban transport issues.

The intermodal transport:

- establish economic conditions for operation of the intermodal transport system,
- organise the intermodal transport servicing system based on up-to-date technique and technology,
- enhance the share of the intermodal transport in general haulage of the railway cargo from the current 1.5 % up to 3 %, by 2013,
- support construction and modification of the generally accessible container terminals on railway stations and in marine harbours, and provide support to construction of the passenger and the "ro-ro" terminals in marine harbours,
- support construction and modification of the generally accessible logistic centres and provide assistance to such already existing centres.

Objective 4: Improvement in traffic safety

Provide for essential reduction of the fatal road accidents.

Traffic safety:

- by 2003, reduce by 50 %, in relation to 2013, the number of victims of traffic accidents, i.e. to the level not exceeding 2,800 fatal victims,

The above is to be achieved by means of implementation of the following specific objectives:

- establish the basis for carrying out efficient and long-term activities aimed at the road traffic safety,
- develop safety attitudes of the traffic participants,
- protect pedestrians, children and cyclists,
- construct and maintain safe road infrastructure,
- reduce the weight and consequences of traffic accidents.

It is noteworthy that a considerable part of the objectives for transport sector as included in the Renewed Strategy for Sustainable Development of the European Union could be only implemented once the respective actions are undertaken by the relevant sectors (including administration) other than transport sector. That refers in particular to the activities in the sphere of shaping demand of transport that results from policies in the field of physical planning and management, employment, agriculture, development of production and consumption patterns, tourism, trade, etc.

Table 3. Automobile vehicles and tractors

	2000	2001	2002	2003	2004	2005
	thousands					
T O T A L	14106	14724	15525	15899	16701	16816
including:						
cars	9991	10503	11029	11244	11975	12339

Source: GUS

Table 4. Pollutant emissions from transportation means

	2000		2001 ^a	2002 ^a	2003 ^a	2004 ^a
	Total	Incl. road				
Gigagrams						
Carbon dioxide	37173	28942	28358	28179	28989	30874
Methane	5.97	4.20	4.62	4.4	4.20	4.33
Dinitrogen monoxide	2.41	1.93	1.90	1.88	1.94	2.09
Carbon monoxide	860.2	717.5	646.0	626.0	609.3	655.4
Non-methane volatile organic compounds	199.3	148.2	128.8	117.7	111.1	144.7
Nitrogen oxides	385.5	251.5	244.1	236.5	234.5	249.2
Solid particles	29.35	17.9	17.46	15.75	14.94	15.52
Sulphur dioxide	44.20	14.98	7.15	6.97	2.52	2.60
Lead	0.043	0.041	0.034	0.032	0.021	0.020

^aEmissions only from the Road transportation means

Source: GUS

3. Progress on EU SDS cross-cutting issues

3.1. Education and Training

3.4. Communication, Mobilising Actors and Multiplying Success

Education is one key element achievement of sustainable development. In 1997, "The National Strategy for Environmental Education" was approved. It identifies and provides for hierarchy of the major objectives of environmental education, setting out at the same time their implementation opportunities. One of the basic provisions in that document is that environmental education has to focus on the whole society, including its all age and professional groups, as well as the decision-makers, on the national, regional and local levels.

Ministry of the Environment participates to activities aimed at education and promotion of sustainable development, primarily in the scope of so called informal education, such like information and education events, e.g. the Earth Day, the World Environmental Day, the „Eco-Media” International Forum for Environmental Education, European Mobility Week, thematic information and education campaigns, such like those for development of sustainable consumption patterns, and also various contests, exhibitions and conferences.

Cooperation with non-governmental environmental organisations forms an important element of educational activities performed for many years by Ministry of the Environment that covers regional centres for environmental education, the major aim of which is to develop and promote pro-environmental attitudes among the general public and encourage it to participate in activities aimed at nature conservation in their closest environs. The guidance on selected centres and organisations dealing with environmental education and the database on educational projects managed by non-governmental environmental organisations in Poland are good examples of the actions which were recently completed by Ministry of the Environment in this scope. The aim of such activities is to identify and promote good practices in the field of education for sustainable development and to provide opportunities to all the parties concerned to exchange information and experience in this field.

The aforementioned activities translate well into assumptions of the UN Decade of Education for Sustainable Development as launched by the United Nations for 2005-2014. The basis to introduce the Decade in the UN/ECE Region consists in the UNECE Strategy for Education for Sustainable Development as adapted to this end by the European Ministers of Education and the Environment, including also the Polish Ministers. The Strategy meets the framework recommendations for implementation of the UN Decade of Education for Sustainable Development as prepared by the UNESCO and it constitutes an essential input into this undertaking. The Ministry of the Environment acts for implementation of the Strategy which perceives education for sustainable development in a multi-dimensional way relating not only to

environmental education, but also to the social and economic issues. Therefore, participation by other partners in this process is indispensable. To this end, the Decade of Education for Sustainable Development was established in Poland that groups the representatives of key institutions concerned with the mission and the course of the Decade, as well the representatives of scientific circles and non-governmental organisations.

In 2005, in order to enhance the effectiveness of information activities carried out for the sake of the environment and its protection the Centre for Environmental Information was established with Ministry of the Environment, the aim of which is to provide the relevant environmental information services, thus promoting environmental knowledge.

In 2005, the Centre launched environmental portal on the web (ekoportal.com.pl) that is an instrument to manage publicly accessible reference database on documents containing electronic information on environmental protection. A lot of factual information on the environment and its protection in Poland can be also found on this website. Centre for Environmental Information manages also thematic training courses for the representatives of governmental and self-governmental administration.

3.5. Implementation, Monitoring and Follow-up

- Indicators

Given the dynamically varying and changing in time both the internal and external circumstances conditioning the national development, establishment of continuous monitoring and diagnostic scheme covering such processes was necessary in order to examine their impacts on the development directions, the emerging risks which have essential importance for implementation of the objectives of social and economic development, and the updating of relevant strategies in view of adapted development priorities. Timely perception of certain development opportunities and possibilities is important in this regard.

Implementation of the objectives of the National Strategy for Sustainable Development is subject to evaluation with application of the following measures:

- the dynamics of economic growth;
- the quality of life;
- the environmental quality and rational resources use;
- the employment level.

- **Advisory boards for sustainable development**

Advisory board for sustainable development was appointed under Prime Minister's Regulation Nr 107 of 11 September 2002 (Governmental Gazette No. 40, Item 629) which performs the role of advisory and opinion-making body on the matters concerning sustainable development issues within the responsibility scope and competence of the Prime Minister and other Ministers.

4. Elaboration of NSDS

4.1 Process and Organisation

Title of the basic Polish national document on the strategy for sustainable development is “Poland 2025 – A Long-Term Strategy for Sustainable Development”.

Parliamentary Resolution adopted in 1999 made the Council of Ministers obliged to prepare "The Strategy for Sustainable Development of Poland by 2025" (Governmental Gazette No. 8 of 11 March 1999, Item 96).

The Polish Government approved the aforementioned Parliamentary Resolution for its implementation in form of "The Strategy for Sustainable Development of Poland by 2025" to be prepared by the Council of Ministers, and that was thought as a broadening the scope of and making a more operational the Second National Environmental Policy which the Ministry of Environment began to prepare at the end of 1998.

On 26 July 2000, the Council of Ministers approved document titled "Poland 2025" and made the Ministry of the Environment responsible for coordination of this National Strategy in collaboration with other Ministries, in the scope of their specific competence. The overall responsibility for implementation of the Strategy lies on the Government who is obliged – jointly with territorial self-governments – to its implementation. The Parliament and President of the Republic of Poland exercise supervision over this implementation.

Document titled „Poland 2025” constituted a reference background for preparation by particular central administrative authorities their sectoral partial, medium- and short-term strategies which – when made more specific and concrete – have paved the path towards the current social and economic policies of the Government.

4.2. Strategic Priorities and Instruments

General Objective of the social and economic policies is to provide for growing well being of the families in Poland and to strengthen their material self-dependence and feeling safe.

Its interrelated targets are following:

- Reduce the distance in Poland's development when related to the highly developed countries, and to reach the life quality level comparable to the average level in EU-15 countries;
- Develop economy built upon knowledge;
- Provide for common environmental safety and preserve the values of natural environment for future generations;
- Protect cultural heritage.

The preparation and implementation processes of sustainable development in a longer time-horizon required different institutional solutions and the management methods different than those of traditional development based exclusively upon the economic consumption indicators. Sustainable development must be based upon parallel integration of political activities in all three dimensions - economic, environmental and social.

The dynamics of economic growth is one of the indicators included in „Poland 2025 – Long-Term Strategy for Sustainable Development”. The Table below presents the dynamics of GDP (steady prices) per capita in 2000-2005.

Table 5. Dynamics of GDP (steady prices) per capita in 2000-2005

	2000	2001	2002	2003	2004	2005	
	previous year = 100						Year 2000 = 100
GDP per capita	104.2	101.1	101.4	103.9	105.4	103.4	116.1

Source: GUS

At the same time, individual income also grew – being one of the indicators for assessment of the quality of life. The Table below presents the dynamics of the disposable gross real income in the household sector.

Table 6. Dynamics of the disposable gross real income in the household sector

	2000	2001	2002	2003	2004
	Previous year = 100				
Real income per capita	100.9	102.2	100.4	101.1	102.3

Source: GUS

Table 7. Changes in emissions of carbon dioxide, methane, dinitrogen monoxide, fluorhydrocarbons, perfluorhydrocarbons and sulphur hexafluoride as expressed in carbon dioxide equivalent [Gg eq. CO₂]

Gases	Years				
	2000	2001	2002	2003	2004
CO ₂	314812	317844	308277	319082	316700
CO ₂ *	278212	277990	275359	290871	290541
CH ₄	45848	38816	37787	37684	39025
N ₂ O	23895	23946	22633	23936	30004
HFCs	595	1073	1523	1825	2436
PFCs	224	270	287	278	285
SF ₆	16	18	21	20	23
Total emissions	385390	381967	370528	382825	388473

* CO₂ sinks by forests included

Source: „The Fourth Governmental report for the Conference of the parties to the United Nations Framework Convention on Climate Change”, Warsaw 2006

Table 8. The areas protected legally that have significant natural values (as for 31 December 2005)

	2000	2003	2004	2005			
	thousands of hectares				percentage	% of the national territory	per capita in m ²
TOTAL	10163.8	10173.2	10168.4	10175.9	100.0	32.5	2667
National Parks	306.5	314.5	317.4	317.2	3.1	1.0	83
Nature Reserves	148.7	160.6	162.4	165.2	1.6	0.5	43
Landscape Parks ^a	2446.9 ^c	2489.3 ^c	2517.2 ^c	2516.9 ^c	24.7	8.0	660
Protected Landscape Areas ^a	7137.7 ^c	7080.9 ^c	7042.6 ^c	7044.5 ^c	69.2	22.5	1846
Including those established by resolution of the Municipal Boards	58.2	50.7	52.2	52.7	0.5	0.2	14
Other forms ^b	124.0	127.9	128.8	132.1	1.3	0.4	35
Including those established by resolution of the Municipal Boards	52.8	48.1	42.8	44.4	0.4	0.1	12

^a Nature Reserves excluded in order to avoid double counting of the same areas

^b documentation posts, ecological uses, nature-landscape complexes

^c without other forms of nature conservation – see note b

Source: GUS

Nowadays, the document titled „Poland 2025” requires updating, since it was prepared yet before Poland accessed the European Union and does not take into account other relevant domestic documents which were prepared later on, already in the framework of the European Union. When compared to the Renewed Strategy for Sustainable Development of the European

Union, the document titled „Poland 2025” is broader in scope and covers not only the sole environmental issues.

The aim of that document to compare the short- and medium-term partial strategies prepared in the framework of Poland's integration with the European Union, against the objectives and priorities of social and economic development in a longer time-horizon.

On 31 January 2007, the Council of Minister approved assumptions to prepare "The National Development Strategy for 2007-2015" being an overriding strategy in relation to other strategies and programmes, and thus forming a multi-year development strategy for social and economic development of Poland.

„Poland 2025” reflects the principles for sustainable development, i.e. equal treatment of the three basic pillars, namely: the economy, the society and the environment. Instead, the aforementioned National Development Strategy will form the basis for development of the National Strategic Reference Framework, operating programmes, and any Governmental and self-governmental development programmes.

Its assumptions are determined by the following strategic priorities:

- Growth in economic competitiveness and innovation,
- Improvement of the state of the basic technical and social infrastructure,
- Growth in employment and upgrading its quality,
- Building integrated community, safety system, and cooperation principles,
- Regional growth and improvement in the national territorial integrity.

The National Development Strategy will help Poland to use the development resources for implementation of the social and economic objectives in a more effective way, in the 2007-2015. It will provide for adequate use of financial resources coming from the European Union in 2007-2013, as allocated to the objectives of the cohesion policy, the common agricultural policy, and the common fishery policy.

4.3. Monitoring and Evaluation

The following are practical measures for implementation of the overriding objective assumed:

- The dynamics of economic growth – it is commonly approved the GDP growth rate has to be suitably high and exceeding the growth rates of the EU Member States;
- The quality of life, being understood as social well being and growth in individual incomes, depends upon implementation of so important objectives likewise education and availability of knowledge, right to employment, and unrestrained use of the leisure time (for recreational, cultural and amusement purposes), adequate housing conditions, health care and protection of human life, healthy environment, and also broadly understood safety;
- The employment level with its most important elements such like the employment dynamics and the rate of unemployment. It is necessary to provide for active pro-employment policy and creation of new attitudes of the public, including their self-dependence, creativity, accountability, and flexibility in their responses to changing circumstances.

Environmental impact assessment from the "Strategy" has not been done because the procedures for strategic environmental impact assessment have not been yet implemented in Poland in the time when that document was under preparation.