

# **Independent NGO Evaluation of the Third National Communication under United Nations Framework Convention on Climate Change**

**Central and Eastern Europe**

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***Edited by:***

**Lavinia ANDREI - CAN CEE Co-ordinator**

**Lidija ZIVCIC - CAN CEE Promoter**

***Layout by:***

**Daniela STANCIU - TERRA Mileniul III**

**Co-ordinated by**



**Climate Action Network - Central and Eastern Europe**

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**Country Report: Bulgaria**  
**Produced by: Vladimir Dvoretzky**  
**Organization: Climate Foundation**



## I. Introduction

### *1. National circumstances*

Bulgaria is a medium-sized European country with an area of 110,993.6 km<sup>2</sup>. It belongs to the mild continental zone, with a regular rotation of four seasons.

The Bulgarian population was 7.974 million in 2001, the average age being 40 years. Most of the people live in urban areas. Sofia, the capital, has about 1.3 million inhabitants.

Bulgaria is a parliamentary republic. It is a country in transition, with a recognized functioning market economy. More than half of the state enterprises have been privatized.

In 2000 the GDP was \$12.1 billion, with a growth of 5 per cent. Almost 60 per cent of the GDP comes from the service sector, some 30 per cent from industry, and the rest from agriculture and forestry.

The economy is very energy intensive, although the country imports more than 70 per cent of its primary energy resources. Bulgaria is rich in low-grade lignite coal, which is mined basically in open pits in Maritza East, in the central part of the country. Thermal power plants account for almost 50 per cent of the installed capacity.

The country has one nuclear power plant at Kozloduy, on the Danube, with four operating reactors (the two oldest ones were permanently shut down at the end of December 2002). Renewables account for less than 4 per cent of the primary energy resources, with 2% for biomass and 1% for hydro.

Bulgaria has a relatively well-developed transportation network, with 37,288 km of roads and 4,300 km of railroads. There are about 2 million passenger cars in the country, at least 600,000 in Sofia.

During the last few years, residential areas have generated 4 million tons municipal solid waste on the average. 1,843,438 tons of industrial waste were reported in 1999.

Bulgaria enjoys excellent natural conditions for the development of agriculture. Cultivated agricultural land occupies about 4.8 million hectares, or 43% of the total territory of the country. More than one quarter of the economically active population is employed in the agricultural sector. Cereals and pulses dominate crop production with a share of 46-50%, followed by industrial and oil-bearing crops (18%), fruits (6%) and vegetables (2.2%). Livestock production is almost 100% in private hands. In 2000 there were 690,000 cattle and water buffaloes, 2.6 million sheep, 1.05 million goats, 1.356 million pigs, 15.4 million poultry, and 133,000 horses.

Forests cover about 35% of Bulgaria's territory. Over the 1996-2000 period, deciduous forests have increased their share from 65.2 to 67.2%, while the share of coniferous forests has decreased. In 2000 the total area of protected forests was 1.33 million hectares, or 34.1% of the forest area.

### *2. What is the national target for GHGs emissions reduction the government has agreed to?*

According to Annex B of the Kyoto Protocol, the quantified emissions reduction the country has to achieve during the first commitment period (2008-2012) is 8% of the base year emissions.

Bulgaria has adopted 1988 as its base year as it marked its peak of economic development and the maximum of its GHG emissions.

**3. What is the political and legal status of the target (ratification process)?**

The Kyoto Protocol was signed by Bulgaria in 1997. The document was ratified by the Bulgarian Parliament on July 17, 2002.

**4. Does your country have any additional legislation or regulation regarding emission trading?**

No, although the issue has been discussed at the expert level.

**5. Other relevant documents (climate change strategy, climate change action plan)**

The previous government adopted a National Climate Change Action Plan (NCCAP) on July 6, 2000. It envisages a set of GHG mitigation policies and measures. The overall implementation of the plan has to be controlled by the Ministry of Environment and Water. A first update of NCCAP was expected at the end of 2002 but was not published.

Another (partially) relevant government document is the National Strategy for the Environment (adopted in May 2001) that touches upon the climate change issue in the Air and Energy chapters.

**6. For accession countries: Is your specific national legislation in harmony with EU legislation?**

Bulgaria has been trying to harmonize its legislation to the *acquis communautaire* even before it started accession negotiations with the EU in February 2000. Till the end of 2002, more than 50 per cent of the national legislation has been harmonized. Concerning the environment, the Bulgarian Government adopted in October 2000 a National Programme for Introducing the European

Environmental Law to Bulgaria. New draft laws are generally in line with the *acquis*.

Bulgaria should close the Environment chapter in its accession negotiations with the EU by the end of 2003. The country is expected to become a full EU member in 2007 but the harmonization process may take a few more years.

**7. What are the institutions that are established for climate change related activities in the country? Is there a centralized institution or not?**

An Inter-Ministerial Committee was established in 2000 in order to monitor the implementation of the National Climate Change Action Plan. It has to assess the progress of the GHG emissions reduction; to adjust the plan to the changing

conditions in the country; to track violations, and to develop compensatory measures to reach the objectives. A Deputy Minister of Environment and Water chairs the Committee.

## II. Inventory and projections

**8. Which are the national emissions for the base year and data on the most recent year available? Are the data accurate? Does your country have an inventory system or the data are based on estimation??**

In 1988, Bulgaria emitted 103,856 Gg of CO<sub>2</sub>; 28,009 Gg of CH<sub>4</sub> and 25,225 Gg of N<sub>2</sub>O (the last two are in CO<sub>2</sub> equivalent). The quantity of the HFC and PFC emissions was first reported in 1995 (1.76 Gg for HFC and 46.92 Gg for PFC, both in CO<sub>2</sub> equivalent). The most recent data available is for 1999: 48,440 Gg of CO<sub>2</sub>; 10,149 Gg of CH<sub>4</sub>; 18,961 Gg of N<sub>2</sub>O; 103 Gg of HFC and 44 Gg of PFC. It is hard to judge the accuracy of the data.

The authors of the Third National Communication claim that the IPCC Guidelines have been followed in estimating the national GHG inventories, using both "bottom-up" and "top-down" approaches. Yet, they admit that two recalculations have been made so far of the emissions data reported in the First National Communication (which was submitted to the UNFCCC Secretariat in February 1996).

As a result, the emissions data was revised upwards. Moreover, the emission factors' values for GHG emissions from fuel combustion were reportedly determined "by experimental measures or expert judgments, or default emission factors recommended by the IPCC Guidelines". All those operations cast a shadow on the data's accuracy.

Bulgaria's first national GHG inventory has covered the 1988-1994 period. It was developed as a part of the Country Study to Address Climate Change project. Further on, annual inventories were prepared every year.

Till 1995, only seven GHG emissions were covered by the national inventories: carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), three GHG precursors (NO<sub>x</sub>, CO and NMVOCs), and sulphur dioxide (SO<sub>2</sub>).

The emissions of Hydrofluorocarbons (HFCs) and Perfluorocarbons (PFCs) have been added since 1995, which is the base year for those gases for

Bulgaria. The data are taken from the official publications of the National Statistical Institute.

In 2000, a first attempt was made to calculate the emissions of the new fluorine-containing GHGs by sending questionnaires to the importers (they are not produced in Bulgaria). Estimation methods were used in particular cases, e.g. to determine GHG emissions from the transport sector. In this case, a simplified methodology based on the CORINAIR guidelines was followed.

Since 2000, the country has used the Common Reporting Format (CRF). In 2001, together with the CRF, Bulgaria submitted to the UNFCCC Secretariat a National Inventory Report in order to provide additional data for the understanding of emission and removal estimates, and to increase the transparency of the estimation methods.

### ***9. What emissions projections does your country have for different scenarios for 2005, 2010?***

Three scenarios for GHG emission projections until 2015 were developed in Bulgaria: "without measures" (business-as-usual), "with measures" and "with additional measures".

They take into account the expected decommissioning of old nuclear and conventional power units and the projected commissioning of new ones, as well as emission trends in the other sectors.

The "without measures" scenario envisages a steady growth of the aggregated GHG emissions in Bulgaria, up to 150,232 Gg in 2005 and 168,982 Gg in 2010 (in CO<sub>2</sub> equivalent).

The "with measures" scenario promises a slower increase: up to 117,448 Gg in 2005 and 133,694 Gg in 2010. The "with additional measures" scenario

indicates that GHG emissions will rise only to 111,788 Gg in 2005 and to 125,485 Gg in 2010. Under the "without measures" scenario, Bulgaria cannot fulfill its obligation to stabilize its GHG emissions during the first commitment period at the base year level (157,090 Gg of CO<sub>2</sub> equivalent in 1988).

The other two scenarios promise that the country's GHG emissions will be well below its Kyoto target of 144,523 Gg CO<sub>2</sub> equivalent.

The difference between the various emission projections for 2010 is a 26.3% decrease (between "without measures" and "with measures"), and an even greater fall of 34.6% (between "without measures" and "with additional measures"), which underlines the great potential for mitigation.

### ***10. How accurate or misleading is the country's current report?***

***Does it adequately explain emissions and all policies and measures that affect GHG emissions (not controlled by Montreal Protocol)? Does the plan include existing policies that increased emissions such as subsidies for fossil fuel use?***

The current report is an objective picture of the state of the Bulgarian society and economy and their relation to climate change. It presents an

improvement of the previous two National Communications with a better methodology and more reliable data.

The report explains adequately the sources and effects of the GHG emissions. The policies and measures section, however, expresses certain shortcomings due to the sectoral approach of the authors. The energy section, for example, follows

the mainstream logic of the Establishment and fails to pinpoint the best measures that could achieve GHG reduction in the sector. Moreover, there are controversial statements following the opinions of the nuclear lobby.

**11. What are the GHG emission trends?  
In which sector do GHG emissions grow the most?**

Overall GHG emissions in Bulgaria have followed a downward trend from 1988 to 1999 (the last year with reported data), and the last figures are approximately half of the base year quantity. All basic GHG gases show a similar downward trend, with the exception of some new fluorine-containing gases, which are on the rise in the last few years. Sector-by-sector analysis, however, paints a different picture.

factor contributed to the stabilization of N<sub>2</sub>O from fuel combustion. There is a recent rise in N<sub>2</sub>O coming from agricultural soils (48.82 Gg in 1999, up from 33.67 in 1998). It was explained as a consequence of the change of the emission factor in accordance with the IPCC Good Practice Guidance. Without it, the value would remain almost the same.

There is a general decline in the CO<sub>2</sub> emissions from the energy industries, the manufacturing industries and construction, due to the economic restructuring of the last 15 years. In the last few years, however, CO<sub>2</sub> emissions from the transport sector have bucked this trend, reflecting the increasing number of passenger cars. The same

It is hard to estimate the trend in the emissions of new fluorine-containing gases. While there is a growing demand for such gases in industry, refrigerators etc., some of them are being withdrawn in accordance with the Montreal Protocol. The lack of data is worrying because the new gases have high CO<sub>2</sub> equivalent ratio.

**12. Does your country have or is working on a national GHG registry?**

Bulgaria, like the rest of the Parties to the UNFCCC, hasn't yet established a national GHG registry. However, the country was chosen by OECD and IEA to host a pilot study of the conditions and options for the establishment of a national registry. The study, which was concluded at the end of 2001, is supposed to serve all Annex I countries.

Land Use, Land Use Change and Forestry (LULUCF). The other two (more realistic) options envisage Bulgaria's participation in JI and IET, and hence the processing of information concerning assigned amount units. Option III allows not only the government but also legal entities to own assigned amounts, so the registry will also have to keep track of AA ownership and transfer.

It was found out that the structure of the future registry would depend on Bulgaria's policy towards the use of the Flexible Mechanisms. If a political decision is made that Bulgaria wouldn't take part in Joint Implementation (JI) and International Emission Trading (IET), then the registry would only have to process the data on the Assigned Amount (AA) and the changes in it as a result of

Bulgaria has two national environmental databases and 13 public registers in other sectors that may serve as a technological basis for the establishment of a national GHG registry. The government has to decide whether the GHG registry administrator has to be a state institution or a private entity. This issue must be solved by the end of 2004.

**13. If there is an inventory system in place in your country, how adequate the system is? Are there any holes in the system that can be used when the GHG emissions rise above the targeted levels?**

There is a national inventory system that tries to account for the GHG emissions using UNFCCC and IPCC methodology. Till 1994, the initial inventories were carried out by the National Institute of Meteorology and Hydrology. Inventory

preparation was then taken over by the Climate Change team of Research Institute Energoproekt (now called the Energy Institute). The work is coordinated by the Ministry of Environment and Water.

The main source of data is the National Statistical Institute (NSI). Data is also obtained from the two national environmental databases (National Air Quality Monitoring System and National Emission Monitoring and Inventory System) at the Environmental Executive Agency, the Forestry Research Institute and the Ministry of Agriculture and Forestry, the National Electric Company and the Ministry of Energy and Energy Resources etc. Data verification is performed by the NSI and the Energy Institute.

There are certain holes in the inventory system related to national legal, economic and financial circumstances. There is no clear-cut legal obligation on the part of legal entities to report

GHG emissions proper. Change in enterprise ownership (due to privatisation or restitution) may result in stopping the practice of reporting whatsoever. It is very hard to calculate correctly the emissions from mobile sources (i.e. transport) because vehicle owners do not measure, let alone report their emissions.

Emissions from waste may be considerably higher because a lot of solid waste turns out in illegal dumps. All those factors add to the relative uncertainty of national GHG inventory data. They have to be taken into consideration if Bulgaria wants to prove that it meets its obligations under the UNFCCC.

***14. Is the vulnerability assessment in the Third National Communication appropriate? Are climate change impacts assessed realistically? What are the adaptation measures that are proposed or taken?***

The vulnerability assessment in the Third National Communication was based on the transient Global Circulation Models (GCMs) provided by the IPCC. They all predicted that annual temperatures in Bulgaria are to rise: between 0.7 and 1.8 °C in the 2020s, 1.6-3.1 in the 2050s, and 2.9-4.1 in the 2080s.

The vulnerability of agriculture in Bulgaria was determined using the generic grain cereal model CERES v.3.5 included in the computerized Decision Support System for Agro technology Transfer (DSSAT) v.3.5. All climate change scenarios used in the CERES simulation model projected a shorter vegetative and reproductive growing season for maize and winter wheat during the 21st century, due to the predicted temperature increase. Together with the expected reductions in precipitation, this would cause a decrease in maize yield at the end of the century. On the contrary, an increase in winter wheat yield is projected because higher CO<sub>2</sub> levels are favourable for this crop.

Forest vulnerability was evaluated following the GAP models. The results have shown that in case of climate warming over the next 90 years, increased biomass productivity would be accompanied by

increased CO<sub>2</sub> absorption. In the mountains, increased tree biodiversity could be expected, while in the lowlands tree species diversity would be reduced.

The temperature rise is expected to increase the water deficit in soils with low precipitation rates that are prone to droughts. Although precipitation may increase by 5% over the next 30 years, evaporation losses will increase and it is possible that underground water will decrease.

All those predictions follow various models, some of which yield conflicting estimates. As a result, vulnerability assessments of future climate changes range from "critical" to "favourable".

The proposed adaptation measures for agriculture include earlier sowing dates for maize, as well as use of different hybrids and cultivars, in order to offset the negative impact of warming. Substitution for other crops is also recommended in the future.

In forestry, wider use of deciduous species is recommended, together with the introduction of more drought-resistant species like the cedar.

### III. Measures to limit GHG emissions

***15. Does the plan begin a fundamental shift in energy priorities away from fossil fuels and nuclear energy - including the phase-out of subsidies for those energy sources?***

The National Climate Change Action Plan (NCCAP) has been developed as a model set of measures that will allow mitigation of GHG emissions from Bulgarian industry and households without adverse effects on the economic development of the country and population lifestyle.

NCCAP is harmonized with the long-term priorities set in the National Economic Development Plan. Each government institution has to develop its own action plan backed with required funds and resources.

The national energy priorities are enshrined in the present government's programme, the National Energy Strategy and the Law on Energy and Energy Efficiency.

They envisage completion of the structural reform in the energy sector, creating conditions for liberalization and competition, privatization of power generation companies, incentives for energy efficiency, least-cost power generation and improved pricing policy with preservation of state and consumers' interests.

Certain policies and measures in the energy sector, like fuel diversification with optimal participation of indigenous fuels (read: lignite coal), are likely to lead to an increase in GHG emissions. The same is said to be true of the phasing out of the four 440 MW nuclear units at Kozloduy Nuclear Power Plant.

Bulgaria subsidizes through the state budget district heating and coal mining companies but there is a gradual reduction of those subsidies. Since 2000, prices of all types of coal and briquettes have been liberalized. A gradual liberalization of electricity prices is taking place.

A faster rate of price increase for domestic needs is foreseen, aiming at the gradual elimination of cross-subsidies between various consumer categories. The prices have to mirror the long-term marginal costs, including the costs for spent nuclear fuel storage and nuclear reactor decommissioning.

***16. Does the plan indicate a future shift in energy priorities towards increased energy conservation, efficiency, and renewable energy? What are the prospects for such measures?***

Energy efficiency and the utilization of alternative energy sources are priorities in the present government's programme and the Law on Energy and Energy Efficiency.

One of the significant mitigation measures in the field of energy efficiency was the National Action Plan for Energy Saving, elaborated under the SAVE II programme of the EU.

A database of more than 80 energy conservation measures has been established. The most promising ones have been selected for implementation by

2006. For example, tax cuts will be offered to those households that insulate their windows. Energy efficiency in industry is not considered a first priority but privatization has yielded surprising results. As the new owners tend to implement low-cost energy efficiency measures, a GHG reduction of 14% was reported in just two years (1997-1999).

The National Energy Strategy envisages preferential rates for the purchase of electricity of renewable sources but so far there are no mass-scale projects under construction.

***17. Is there a target for the use of renewables?***

No.

**18. What measures are proposed in the transport sector and are they efficient relative to its contribution to CO<sub>2</sub> emissions and emissions growth?**

The key priority of the present government's programme in the field of transport is to develop national transport infrastructure as an integral part of the Pan-European Transport Network. As five of the ten Pan-European Transport Corridors pass through Bulgaria, it means that the country has to complete a lot of projects in this area.

While the National Investment Programme envisages a balanced and inter-related infrastructure development among individual modes of transport, in fact the bulk of funding goes to road building and rehabilitation. It is therefore admitted that "developments in the transport could

have undesirable environmental effects". There are certain measures that may improve the environmental performance of the transport sector and decrease GHG emissions, like promoting the use of cleaner fuels, improving public transport and limiting car traffic promoting rail and combined transport etc.

As the average age of road transport vehicles in Bulgaria is 18 years, the Ministry of the Environment and Water strives to enforce higher emission standards that cannot be met by older cars. In the long run, the renovation of the automobile stock will lead to GHG emission reduction by 30-40%.

**19. Can additional cost-effective measures not contained in the plan be taken to limit CO<sub>2</sub> emissions? What studies indicate this?**

Municipalities are not mentioned as a target group in the National Climate Change Action Plan (NCCAP). However, Bulgaria has a highly effective means of multiplication of energy efficiency methods called the Municipal Energy Efficiency Network "EcoEnergy".

It was established in 1997 on the initiative of 23 Mayors inspired by the example of the city of Gabrovo. It was the successful host of the GEF project "Energy Efficiency Strategy to Mitigate GHG Emissions, Energy Efficiency demonstration

Zone in the City of Gabrovo, Republic of Bulgaria". It started in 1998 and will continue till mid-2003. The project proved that the city could decrease its annual CO<sub>2</sub> emissions by 9030 tons just by replacing its street lighting with a more efficient one.

This effect was highlighted in the 2001 study "Good Practices in Bulgaria of Policies and Measures for GHG Emission Mitigation" done by the Regional Environmental Center for Central and Eastern Europe.

**20. How is the lobby for nuclear power operating vis-à-vis the climate action plan?**

The Bulgarian nuclear lobby, which suffered a blow with the government decision to phase out Kozloduy Nuclear Power Plant Units 1 and 2 at the end of 2002, and Units 3 and 4 in 2006, has embraced the climate change issue as a life-saving buoy. Nuclear lobby representatives claim that

Bulgaria will not be able to fulfill its Kyoto obligations after the second shutdown. They have calculated that if the half-built Belene Nuclear Power Plant were finished (at a price of 1.2 billion dollars), the estimated GHG mitigation potential would amount to 9 million tones of CO<sub>2</sub> equivalent.

**21. Are measures to reduce methane from agriculture and landfills directed towards increased use of biomass and biogas in the energy sector?**

The Ministry of Agriculture and Forestry envisages to reduce 270 kilotonnes of methane in 2005 through improved animal productivity and feeding conditions. Some attempts for landfill gas

generation from municipal solid waste landfills are made but still there is no system for its utilization. In the future, new landfills must recover or flare the methane.



**22. Are there any other measures  
for limiting emissions of GHGs other than CO<sub>2</sub>?**

There are two measures in transportation that may limit some N<sub>2</sub>O emissions: Normative Documents Related to the Law on Road Traffic, and Improvement of the Infrastructure of the Transport

System. The latter's mitigation impact is estimated at 5000 tons of CO<sub>2</sub> equivalent in 2005. Another positive step is the introduction of import control of the new gases (PFCs, HFCs and HF<sub>6</sub>).

**23. How large a share of measures to achieve the national target stabilization is implemented through: reduction in CO<sub>2</sub> emissions? Reduction in emissions of other greenhouse gases? Efforts to reduce emissions through domestic actions? Increase sequestration from sinks? International actions (Joint Implementation, Emission Trading)? Legislation existing at the national level.**

The lion's share of the measures is directed towards reduction in CO<sub>2</sub> emissions (mainly in the energy sector and in industry). Oddly enough, the completion of Belene NPP is considered to be the measure with the greatest mitigation impact (9 Mt). Second comes the closure of non-competitive industrial enterprises (4.3 Mt).

Reduction in emissions of other GHGs is not a priority; it is sometimes bundled together with the CO<sub>2</sub> emission reduction (especially in the energy sector).

More than 99% of GHG emission reduction in Bulgaria is performed through domestic actions. Afforestation is a traditional policy in Bulgaria; sequestration gives it an added value. It is planned

to increase the sequestration from new forest sinks in the country to the extent of 532.58 Gg by 2005.

In 2000 Bulgaria signed a Memorandum of Understanding with the Netherlands on cooperation in reducing GHG emissions. The expected overall quantity of transferred ERUs will be 3 Mt of CO<sub>2</sub> equivalent annually during the first commitment period.

The government adopted an agreement with the Prototype Carbon Fund in 2002. Two JI projects are in preparation under this agreement.

No national legislation has been passed so far related to JI or emission trading.

**24. Are measures to increase and sustain forests (sinks) designed to promote the increased use of biomass residuals in energy sector? Do they also help to promote biodiversity?**

There is no direct link between the measures in forestry and the measures to promote renewables in the energy sector. A number of small-scale biomass projects have been completed for the utilization of industrial wood waste. Biodiversity conservation is

a major concern in the measures addressing forestry in the NCCAP. They not only aim at the preservation of indigenous tree species but also envisage the gradual introduction of more heat- and drought-resistant species.

**25. If JI projects are started, can you please provide a brief negative and positive critique of the projects?**

There is a special JI Unit at the Ministry of Environment and Water whose job is to promote this flexible mechanism in Bulgaria. Only one pilot JI project has been completed so far in this country. It was performed in 2001 in cooperation with the Dutch government (which donated \$480,000). It deals with the implementation of a system for information and control in the district heating company of the town of Pleven. The expected annual CO<sub>2</sub> reduction is 3.5 Gg. 65% of the

emission reduction units (ERUs) will be transferred to the Netherlands in 2008-2012.

Unfortunately, this first JI experience was not quite successful. There were many technical problems, almost no publicity, and little technology transfer. The high investment costs of \$13.75 per tonne of CO<sub>2</sub> make it improbable to hope for a replication. Yet, now one can see that JI can work even in Bulgaria.

**26. Are there any developments for national emission trading systems to be established and if yes, what kind of system is being developed?**

Domestic CO<sub>2</sub> emission trading is considered an important policy measure to reduce the GHG emissions of the biggest emitters. The discussions among experts about the introduction of such a system are still at an initial phase. It may be

coordinated in the future with the complex permit system to be introduced under the EU Directive on Integrated Pollution Prevention and Control (IPPC 96/6.1/EC)

**27. What are the measures taken to establish economic incentives for reducing GHG emissions? (E.g. CO<sub>2</sub> tax, energy tax, cap and trade systems...)**

A law on liquid fuel taxation was passed in 1996, setting new taxes on gasoline (19% of the producer price) and diesel (15%).

Protection Fund (5% for the gasoline and 4% for the diesel).

Most of the proceeds from this surcharge are used for road maintenance. A share of the revenue, however, goes to the National Environmental

There is no mentioning of GHG emission reduction in the law but the measure definitely discourages excessive automobile use and hence contributes to the GHG mitigation efforts.

**28. For the accession countries: what are the measures that are being adopted from the EU package of measures?**

According to the National Programme for Introducing the European Environmental Law to Bulgaria, a Clean Air Act-related regulation had to be completed by the end of 2002. It has to define the competent institutions and procedures for gathering information on pollutants including GHG emissions.

The approximation of EC Directives on energy will also have an impact on GHG emissions in Bulgaria. New policies are being developed for the liberalization of the electricity and gas markets in accordance with the respective Directives 96/92/EC and 98/30/E.

**29. Any particularly innovative policies and measures that could be put in place also in other countries?**

Natural gas market liberalization seems to accelerate its penetration in Bulgaria, and may work in other countries, too. It is good for the consumers because it gives them a choice of options, and good for the climate because GHG

emissions are considerably lower with natural gas than with coal or fuel oil. There is no reported case in Bulgaria of a legal entity reverting to fuel oil after having switched its heating system to natural gas.

**30. Is the mix of measures mostly voluntary or regulatory?**

Most measures are regulatory because the government is the driving force in climate change mitigation. There are, however, remarkable cases of municipal or private initiatives that have achieved

considerable GHG emission reduction while aiming at other objectives (energy saving, security of fuel supply, transport optimisation etc.).

#### IV. Implementation and monitoring

##### ***31. What is the legal status of the package of measures? What has been implemented and what is pending?***

There is an uncertainty about the package of measures contained in the National Climate Change Action Plan (NCCAP) because it was passed by the previous government. Government experts admit in private that some planned administrative and legislative measures are not executed due to political considerations. Other proposed measures, like the completion of Belene

NPP, depend on attracting substantial foreign investment. There is political will to continue to carry out mitigation policies (demonstrated by the ratification of the Kyoto Protocol in 2002) but there may be some changes in the NCCAP. In 2003 the Dutch government is going to assist the Bulgarian government in completing a Policies and Measures project which will involve modification of the plan.

##### ***32. What proposed actions have not or may not be implemented as planned?***

Regulatory measures that are related to the Acquis Communautaire are generally executed on time. Some economic and investment measures may be

postponed or even suspended due to lack of financial resources.

##### ***33. What is the cost of the implementation of the national plan according to the government?***

There is no overall figure because the expenses are expected to be borne by various government

agencies and the legal entities, as well as foreign investors and donors.

##### ***34. How does the plan provide for adequate monitoring of emissions and ongoing assessment?***

The combined application of the "bottom-up" (estimating the emissions by sector and source technology) and the "top-down" (reference) approaches guarantees greater data precision. The deviation of the results received by the application

of both methods was within the range of 0.14-6.2%. The preparation of annual inventories allows further improvement of the emission assessment in accordance with the IPCC Guidelines.

##### ***35. What signal does the plan send to other countries?***

The plan witnesses that Bulgaria is serious about its commitment to reduce its GHG emissions. The set of various measures provides a framework for the achievement of the envisaged GHG emission

mitigation. Of special importance is the use of "win-win" policies and measures that are economically, socially and environmentally beneficial.

##### ***36. Are any efforts underway to promote coordination of planned measures on the international level?***

Bulgaria develops its cooperation in the field of climate change with certain European countries,

which involves coordination of some planned measures.

##### ***37. What provisions on education and public awareness, the National Communication has? What does the role of NGOs in implementing them? What is the transparency of the whole process?***

The Ministry of Environment and Water is implementing a national information and public awareness campaign on climate change. It includes the provision of climate change information on the ministry's website, a series of workshops with various stakeholders, publication of booklets and posters on this issue, media exposure, as well as

special events targeted at the children and the pupils.

The Ministry of Education and Science has included climate change into the curriculum. The issue is dealt with in the context of environmental education and professional training.

A small number of Bulgarian NGOs are active in the field of climate change (basically through its link with energy and transport). They collect databases, issue publications, organize workshops and public events aimed at awareness raising.

The process is not very transparent because the limited financial resources do not allow the achievement of proper results.

***38. What measures for monitoring the implementation of the Third National Communication are provided and how are they applied?***

The Third National Communication enjoys limited popularity in Bulgaria because it was printed in 600 copies in English, and most of them will be submitted to the UNFCCC Secretariat. The

Ministry of Environment and Water intends to publish a summary in Bulgarian so that a broader audience could learn about its findings.

## V. General opinion and observations

The Third National Communication presents a positive step forward in fulfilling Bulgaria's obligations under the UNFCCC. The report is informative and frank, though it sometimes pays lip service to government policy. If we assume that its target group consists of international climate change experts who would like to know more about the efforts and problems of this country, then the report is almost perfect. The third National Communication, however, should be more than that. It is hard to see in it alternative points of view which are typical of a democratic society. The

efforts of the Bulgarian NGOs that are active in the climate change field are duly covered but their opinions have not been consulted.

Finally, there is an annoying time lag between the year of publication (2002) and the used statistics (vintage 1999). It is not the authors' fault but, having in mind the advance in electronic technology, they ought to show more rapid reaction in the preparation of the Fourth National Communication.

**Country Report: Czech Republic**  
**Produced by: Katerina Dobesova**  
**Organization: Centre for Transport and Energy**



## I. Introduction

### *1. National circumstances*

Until recently not much attention was paid in the Czech Republic on the issue of climate change. Since 1997, however, following a series of destructive floods that badly affected the country, this topic has been given more importance among the general public as well as among politicians.

On 13 June 1993 the Czech Republic became the thirty-sixth party to the United Nations Framework Convention on Climate Change, and five years later (on 23 November 1998) the country signed the Kyoto Protocol. The Czech Republic belongs to the group of countries of Annex B. For the first commitment period (2008-2012), the Kyoto Protocol sets its emission reduction target at 8%.

In the last ten years the Czech Republic has decreased and stabilized its aggregated GHG emissions. Between 1990 and 1993, the development of emissions in the Czech Republic recorded a downturn of 24%. In 1995, emissions

stabilized and 1996 showed a 4,6% rise, which slowed in 1997. In 1990 the total value of aggregated GHG emissions in the Czech Republic was estimated at 187,5 Mt CO<sub>2</sub> eq. In 1999 the emissions decreased to 137,7 Mt CO<sub>2</sub> eq., which corresponds to a 26,8% fall. The decline in GHG emissions was predominantly a consequence of the political transformation then taking place.

The energy industry represents a key sector of the Czech economy. At the same time it contributes the most to CO<sub>2</sub> emissions in the country. In spite of the country's reduction in GHG emissions, the Czech Republic is characterized by a high level of GHG emissions per capita. The energy intensity is two or three times higher than the intensity of European Union countries even though the Czech Republic currently depends less on solid fuels.

### *2. What is the national target for GHGs emissions reduction the government has agreed to?*

The national target corresponds to the international target of 8% reduction in GHG emissions. The country officially accepted this target while adopting the Strategy for Protection of the Climate System of the Earth in the Czech Republic in 1999.

The Czech Environmental Policy issued in 2001 sets an emission reduction target of 20% by 2005, which the Czech Republic will fulfil without much effort.

### *3. What is the political and legal status of the target (ratification process)?*

The Czech Republic signed the Kyoto Protocol on 23 November 1998. The ratification process of the

Czech Republic started in September 2001 and the Protocol was ratified on 15 November 2001.

### *4. Does your country have any additional legislation or regulation regarding emission trading?*

The Czech Republic states in its Strategy for Protection of the Climate System of the Earth that it will give clear priority to domestic measures over international mechanisms that reduce greenhouse gas emissions. The Kyoto mechanisms, including emission trading, must be considered as a

supplementary structure to overall emissions reduction. However the country has recently been engaged in preparations for domestic emission trading. So far there is no legislation in place regarding this instrument.

**5. Other relevant documents**  
*(climate change strategy, climate change action plan)*

The Strategy for Protection of the Climate System of the Earth in the Czech Republic (Resolution of the Czech Government 480/1999) is considered one of the most important documents relating to climate change. The Strategy determines a number of tasks for individual sectors of the Czech economy. Most of the measures are oriented towards increased energy efficiency and use of renewable energy sources.

One document which has been constantly updated is the National Greenhouse Gas Emission Inventory Report of the Czech Republic. The last inventory report was issued for the emissions of the year 2000.

The State Environmental Policy of 2001 represents another document dealing with climate change.

**6. For accession countries:**  
*Is your specific national legislation in harmony with EU legislation?*

The national target is in harmony with European Union legislation, since the targets for the Czech

Republic and the European Union are the same.

**7. What are the institutions that are established for climate change related activities in the country? Is there a centralized institution or not?**

The Ministry of the Environment represents the central institution responsible for climate protection. Since 1999 the Department of Global Relations at the Ministry has been in charge of various activities related to climate change.

Commission plays a key role in determining priorities in the field of climate change.

The Inter-ministerial Commission for Climate Change acts as a consultancy body for the Ministry of the Environment. It includes representatives of the Ministries of Agriculture, Environment, Industry and Trade and Foreign Affairs and also representatives of NGOs.

The Czech Hydrometeorological Institute established within the scope of the Ministry of Environment is an important institution that concentrates its work towards the protection of the climate.

The Commission prepares national communications. Together with the ministries the

The Institute monitors emission data and prepares national statistical documents for the Ministry of the Environment. A National Centre for the UNFCCC has been functioning here since 1995.

## II. Inventory and projections

**8. Which are the national emissions for the base year and data on the most recent year available? Are the data accurate? Does your country have an inventory system or the data are based on estimation??**

The national GHG emissions for the base year (1990) correspond to a value of 187,5 Mt of CO<sub>2</sub> eq. The latest GHG emissions figure stated in the Third National Communication comes from 1999. This value corresponds to 137,7 Mt of CO<sub>2</sub> eq. The latest GHG emission data for the Czech Republic is available from the National Greenhouse Gas Emission Inventory Report for the year 2000. These emissions were estimated at 143,7 Mt of CO<sub>2</sub> eq.

the Third National Communication differ slightly from emissions in the Second National Communication because the original values were recalculated, in particular for fugitive emissions of methane. New calculations for nitrous oxide still have to be carried out.

The GHG emissions were calculated according to an updated IPCC methodology. The emissions in

The emission inventories for CO<sub>2</sub> are the most accurate of all GHG emissions. On the other hand the exactitude of the emission inventories for methane and nitrous oxide is not satisfactory due to lack of information.

The precision of the determination of methane emissions is estimated at 30%. The error for nitrous oxide can rise up to 100%. The accuracy for fluorinated substances varies from year to year. The precision for the year 1999 was estimated at 20%. The exactitude of the overall emission inventory

can be estimated at 15%. This figure is in acceptable agreement with the foreign inventory reports. The Czech Republic disposes of an inventory system, which is run by the Czech Hydrometeorological Institute.

**9. What emissions projections does your country have for different scenarios for 2005, 2010?**

The GHG emissions trends are drawn up for two different scenarios. A first estimate was made for a reference scenario and a second for a high scenario. For each of these two scenarios, three projections were prepared: a projection without measures, one

with measures and one with additional measures. The projections were prepared for the following years: 2000, 2005, 2010, 2015, and 2020. Data on emission projection of 2005 and 2010 for different scenarios are available in the table below.

**Tab.1: Reference scenario (RS) and high scenario (HS) without measures, with measures and with additional measures (Mt CO<sub>2</sub> eq.)**

<u>Type of scenario</u>	<u>2005</u>	<u>2010</u>
RS without measures	135,3	138,4
RS with measures	126,4	128,3
RS with additional measures	120,0	121,9
HS without measures	151,1	152,6
HS with measures	141,5	141,7
HS with additional measures	135,0	135,2

Source: SRCI CS s.r.o., CHMI

**10. How accurate or misleading is the country's current report?**

***Does it adequately explain emissions and all policies and measures that affect GHG emissions (not controlled by Montreal Protocol)? Does the plan include existing policies that increased emissions such as subsidies for fossil fuel use?***

The Third National Communication includes measures and policies implemented in the sectors of energy, transport, industry, forestry and agriculture. These measures and policies have been implemented or are in the process of

implementation. The National Communication mentions only measures that contribute to the abatement of GHG emissions but does not refer to those that increased emissions such as fossil fuel subsidies etc.

**11. What are the GHG emission trends?**

***In which sector do GHG emissions grow the most?***

GHG emissions have decreased sharply in the Czech Republic over the last decade. The total reduction is estimated at around 26%.

Nevertheless, GHG emissions per capita markedly exceed average levels in EU countries. A major contributor to GHG emissions is the energy

production sector, but the main reductions are taking place here as well. GHG emissions are growing the most in the transport sector, mainly due to increased road transportation. The figure of emissions in the transport sector rose from 8,0% to approximately 12,6% between 1990 and 1999.

**12. Does your country have or is working on a national GHG registry?**

As a party of the United Nations Convention on Climate Change the Czech Republic should (like other countries) establish a national GHG register even if it is not preparing for emission trading. So

far no such register exists in the country. Presently there is only a REZZO database in place, which is a system of national emission record and evaluation.

The IEEP, based at the University of Economics Prague, is currently undertaking an analysis of this emission database and also of other statistical data sources. The project is

examining how suitable the current REZZO database is for the future national registry. The results of the analysis will be available in April 2003.

***13. If there is an inventory system in place in your country, how adequate the system is? Are there any holes in the system that can be used when the GHG emissions rise above the targeted levels?***

There is an inventory system for GHG emissions in the Czech Republic. The system works on the basis of standard IPCC methodology. The results of the

inventory system are annually submitted to the UN FCCC Secretariat in standard formats.

***14. Is the vulnerability assessment in the Third National Communication appropriate? Are climate change impacts assessed realistically? What are the adaptation measures that are proposed or taken?***

The vulnerability assessment is based on the IPCC Technical Guidelines for Assessing Climate Change Impacts and Adaptations and on the UNEP Handbook of Methods for Climate Change Impact Assessment and Adaptation Strategies. The analyses focused on main potentially affected sectors such as water, forest management and agriculture.

The Third national Communication specifies the most important adaptation measure. A set of measures has been proposed for implementation to the Ministry of Agriculture and makes part of the state sectoral policy.

### III. Measures to limit GHG emissions

***15. Does the plan begin a fundamental shift in energy priorities away from fossil fuels and nuclear energy - including the phase-out of subsidies for those energy sources?***

According to the Czech Energy Policy approved in 2000, the government does not plan a shift from fossil fuels and nuclear energy to renewable energy sources.

On the other hand, the Strategy for Protection of the Climate System on the Earth in the Czech Republic indicates that the key element for energy savings is the phase-out of distorted energy prices.

Renewable energy sources will be supported in the future but will not represent an important source of energy in the next 15 or 20 years. The Czech government prefers to give more emphasis on further development of the nuclear and coal industries.

Persisting cross subsidies for electricity and gas prices deform the existing energy market. It is also mentioned in the Strategy that the removal of harmful subsidies will decrease the level of GHG emissions.

***16. Does the plan indicate a future shift in energy priorities towards increased energy conservation, efficiency, and renewable energy? What are the prospects for such measures?***

According to the climate change strategy, energy efficiency measures can contribute the most to reduction in GHG emissions.

The Act on Energy Management, which has been in place since 2000, defines the National Program of Efficient Energy Use and Utilization of Renewable

and Secondary Energy Sources. The Program introduces obligatory measures for increasing energy savings. Anticipated energy efficiency measures include energy labeling, thermal insulation in buildings, energy audits, support for CHP plants etc. All these measures are in harmony with EU legislation.



***17. Is there a target for the use of renewables?***

In its National Program for the Efficient Use of Energy and Renewable Energy Sources, the Czech Republic set a goal of 3% as renewable energy sources' share of TPES (excluding large hydropower plants with capacity exceeding 10 MW) and 5,1% share (including large hydropower plants) till 2005.

This target corresponds to the target mentioned in the Czech Energy Policy and the State Environmental Policy. The Energy Policy foresees a share of renewables between 3 and 6% by 2010 and 4 to 8% by 2020.

The State Program of Support for Savings of Energy and Use of Renewable Energy Sources proposes every year set of measures in the energy sector on the basis of the Act on energy management. But these measures are not always realized, therefore the share of renewable energy sources remains very low (2,2%).

The program is also ignored by the state budget, every year less financial sources are being allocated.

***18. What measures are proposed in the transport sector and are they efficient relative to its contribution to CO<sub>2</sub> emissions and emissions growth?***

The measures proposed in the transport sector include the application of international technical standards for means of transport in the area of environment and safety, support for the gradual shift of passenger and freight transport to rail, combined and water transport.

The measures also include support for the creation of infrastructure for non-motor transport, for research and development and for increased use of alternative motor fuels. The transport sector

contributes around 12% to aggregated CO<sub>2</sub> emissions. According to the Third National Communication, the implemented measures will reduce emissions by about 22% in 2005 considering the high scenario.

More financial support should be given to transport sector measures than under previous national communications. The financial support is distributed through recently established State Fund of Transport Infrastructure.

***19. Can additional cost-effective measures not contained in the plan be taken to limit CO<sub>2</sub> emissions? What studies indicate this?***

One of the most innovative and cost-effective measures that is not mentioned in the plan is the cap and trade system of emissions trading which is being developed in the Czech Republic in order to

establish national emission trading. This measure is explained in the REC study called "Environmental Taxes: Current Priorities in the Czech Republic."

***20. How is the lobby for nuclear power operating vis-a vis the climate action plan?***

The nuclear industry lobby is taking advantage of the climate change issue and using it as a strong argument for the further development of nuclear power. The Czech Energy Policy states that the

nuclear industry can significantly contribute to compliance of the UN Climate Change Convention.

***21. Are measures to reduce methane from agriculture and landfills directed towards increased use of biomass and biogas in the energy sector?***

Only a few agricultural measures address the increased use of biomass. In 2001 gas was taken from 12 out of 250 landfills and from six of these biogas was used to produce energy. The technology

of using waste biogas was implemented between 1998 and 2001 by a number of municipal and industrial wastewater treatment plants in the Czech Republic.

**22. Are there any other measures  
for limiting emissions of GHGs other than CO<sub>2</sub>?**

The Strategy for Protection of the Climate System of the Earth in the Czech Republic is directed to limit all GHG emissions including CO<sub>2</sub> emissions. Other measures that contribute to the reduction of methane and N<sub>2</sub>O emissions as well as CO<sub>2</sub> are those implemented in the transport sector and

through the introduction of the EC Directive (96/69/EC) concerning Integrated Pollution Prevention and Control (IPPC). One last measure that affects methane reduction is the utilization of landfill gas and biogas from wastewater treatment plants.

**23. How large a share of measures to achieve the national target stabilization is implemented through: reduction in CO<sub>2</sub> emissions? Reduction in emissions of other greenhouse gases? Efforts to reduce emissions through domestic actions? Increase sequestration from sinks? International actions (Joint Implementation, Emission Trading)? Legislation existing at the national level.**

Out of total 18 measures, 17 are being implemented exclusively to eliminate CO<sub>2</sub> emissions. Only five measures reduce other greenhouse gases. CO<sub>2</sub> emissions represented a share of 85,8% of the total GHG emissions in 1999.

very limited impact on the reduction of GHG emissions. Between 1996 and 1999 five AIJ projects were implemented. In 1998 two of the five projects were carried. They reduced a total of 228 kt of CO<sub>2</sub> eq.

This high percentage is mainly due to the combustion of fossil fuels. Most of the measures are thus oriented towards the reduction of CO<sub>2</sub> emissions. Measures related to forest sinks have a

In the Czech Republic higher priority is given to domestic actions rather than to international initiatives such as emission trading, joint implementation and CDM.

**24. Are measures to increase and sustain forests (sinks) designed to promote the increased use of biomass residuals in energy sector? Do they also help to promote biodiversity?**

Measures for increasing the amount of forestation are aimed more at the rational use of agricultural land. They do not aim at increasing the use of biomass residuals in the energy sector. The measure that increases production of alternative motor fuel -

biodiesel - is used in the transport sector and not the energy sector. Implemented measures in the forest sector are intended to promote biodiversity by increasing the share of broad-leafed species.

**25. If JI projects are started, can you please provide a brief negative and positive critique of the projects?**

Between 1996 and 1999 five AIJ pilot projects were realized in the Czech Republic. The AIJ projects have been very useful as a learning phase for the country. Because of a surplus of emission reduction the Czech Republic is in the position of a host country for JI projects.

Other memoranda are being prepared and will be signed with the Netherlands, Denmark, France and Germany. Few projects have been discussed in the field of biomass use and use of landfill gases. Early experiences led to some problems such as unclear and very voluminous documentation requested from the foreign project partners. It is sometimes hard for foreign partners to understand the Czech environment.

The first phase of JI projects in the Czech Republic was begun in 2002. So far no JI project has been realized. The Ministry of Environment, which is responsible for selection and monitoring of the projects, is in the process of setting rules and methodology. A memorandum of understanding has already been signed with Austria.

There is also a need to improve the rules of JI projects and methodology, and to set clearer definition of responsibilities.

There should be better access to relevant information related to projects. It is also sometimes difficult for foreign companies to find a suitable Czech partner for JI projects. On the other hand, the

size requirements for projects causes a big problem for the Czechs. This can be solved by joining several projects as one.

***26. Are there any developments for national emission trading systems to be established and if yes, what kind of system is being developed?***

The Czech Republic is examining the possibilities for national emission trading and so far a cap and trade system has been considered. Because of a lack of experience, this economic measure has not been implemented yet and is still in the initial process. Czech enterprises and the general public are very reluctant to introduce this measure. There are many questions concerning the implementation

of the national emission trading. For instance, should it be voluntary or compulsory, and will there be enough demand for tradable allowances? Therefore interest in the implementation of the national emission system is very low. But in any case, accession to the European Union will oblige the Czech Republic to introduce emission trading into its legislation.

***27. What are the measures taken to establish economic incentives for reducing GHG emissions? (E.g. CO<sub>2</sub> tax, energy tax, cap and trade systems...)***

The Czech Republic has developed quite a few environmental economic incentives since 1990. Fiscal instruments include environmental charges on air pollution, municipal waste charges, mining charges, a reduced value added tax for environmentally friendly products and so on. Unfortunately the air emissions charges are very low and therefore do not represent a strong economic incentive.

on environmental tax reform. This reform should be therefore seen in a broader perspective with regard to the climate change issue.

The Third National Communication of the Czech Republic does not explicitly mention economic incentives such as an energy or CO<sub>2</sub> tax. In 2002 the Czech government decided to work intensively

At the beginning of 2002 the Czech Republic introduced favorable feed-in tariffs for renewable energy sources. This institutional measure did not stimulate any considerable increase in the use of renewable energy because the investment environment in the country is not very favorable. The feed-in tariffs are not guaranteed for a longer period and investors are therefore reluctant to invest money into renewable sources of energy.

***28. For the accession countries: what are the measures that are being adopted from the EU package of measures?***

The Czech Republic has developed quite a few environmental economic incentives since 1990. Fiscal instruments include environmental charges on air pollution, municipal waste charges, mining charges, a reduced value added tax for environmentally friendly products and so on. Unfortunately the air emissions charges are very low and therefore do not represent a strong economic incentive. The Third National Communication of the Czech Republic does not explicitly mention economic incentives such as an energy or CO<sub>2</sub> tax. In 2002 the Czech government decided to work intensively on environmental tax reform.

This reform should be therefore seen in a broader perspective with regard to the climate change issue. At the beginning of the 2002, the Czech Republic transposed the Act on Waste and Act on Packaging into its legislation. In February 2002 the country introduced into its legislation Directive 96/61/EC on IPPC (Integrated Pollution Prevention and Control) but asked for a transition period in certain areas.

The Czech Republic adopted several measures within the framework of the Act on Energy Management, including support for CHP plants, energy labeling or energy audits, which are in harmony with the EU legislation.

**29. Any particularly innovative policies and measures that could be put in place also in other countries?**

The cap and trade system that is being developed may be suitable also for other economies in

transition that have undergone similar developments in the field of GHG emissions.

**30. Is the mix of measures mostly voluntary or regulatory?**

The mix of measures is principally regulatory, but some measures are implemented on a voluntary

basis as well, such as for example Activities Implemented Jointly.

#### IV. Implementation and monitoring

**31. What is the legal status of the package of measures? What has been implemented and what is pending?**

Most of the measures are limited to a specific sector. Inter-sectoral measures have the strongest impact on GHG emission reduction. The measures related to energy and renewable energy sources represent a broad spectrum of policies. But these measures are not often interconnected, coordinated and sometimes point at different targets.

incentives such as measures increasing energy efficiency within the framework of the Czech Energy Agency. Most of the planned measures have already been implemented, including the Act on Waste and Packaging, which came into force on 1 January 2002.

The measures implemented or in the process of implementation are predominantly based on laws and decrees. Quite a few measures are economic

The measures listed in the Second National Communication continue to be implemented or incorporated into legislation.

**32. What proposed actions have not or may not be implemented as planned?**

A new law on IPPC entered into force on 1 January 2003, but the Czech Republic asked the European

Union for a transition period for newly constructed facilities until 30 October 2004.

**33. What is the cost of the implementation of the national plan according to the government?**

The Third National Communication does not give an estimate of the overall cost of implementation,

but almost every individual measure contains a cost estimate.

**34. How does the plan provide for adequate monitoring of emissions and ongoing assessment?**

The monitoring of emissions is done annually by the Czech Hydrometeorological Institute. An IPCC methodology has been used. The methodology concentrates on monitoring of direct radiation

absorption gases such as CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O. Gases with indirect effect (CO, NO<sub>x</sub>, NMVOC) are monitored together with so called new greenhouse gases HFCs, PFCs, SF<sub>6</sub>.

**35. What signal does the plan send to other countries?**

The Czech Republic will likely reduce its GHG emissions in the first commitment period without much effort. The domestic reduction target of 20%

till 2005 set in the Czech Environmental Policy is a good signal at least for the countries of the Central and Eastern European region.

**36. Are any efforts underway to promote coordination of planned measures on the international level?**

The coordination of measures on the European level is being done in connection with EU accession. The Czech Republic is in the process of

transposing and implementing acquis communautaire. At the same time, the Czech Republic supports further international cooperation.

**37. What provisions on education and public awareness, the National Communication has? What does the role of NGOs in implementing them? What is the transparency of the whole process?**

Resolution No. 1048/2000 of the Czech government approved the State Program of Environmental Education and Public Awareness.

The Third National Communication consists of measures and actions that were or should be carried out in the educational area. These measures include for example integration of environmental aspects into preschool, elementary and university education.

As for public information campaigns, the Ministry of the Environment is organizing a number of publications, films and other activities promoting

the environment. The Ministry publishes two periodicals and runs a web site and electronic environmental library. All questions from the public can be sent to a special e-mail address. The Ministry promotes environmentally friendly products, takes part in and organizes exhibitions, and also the EKOFILM film festival.

The Ministry initiates environmental training for state administration employees. NGOs, especially environmental education centers, are helping to organize those trainings. NGOs are also taking part in environmental decision-making. The Ministry twice a year meets NGOs at a Green Forum.

**38. What measures for monitoring the implementation of the Third National Communication are provided and how are they applied?**

The Third National Communication does not mention the measures for monitoring its implementation.

## V. General opinion and observations

Like most CEE countries, the Czech Republic will have a surplus of GHG emissions during the first commitment period. The favorable emission development is a consequence of the transformation process that took place after 1989.

The Czech Republic is characterized by a high level of GHG emissions per capita. The next commitment period will most likely bring bigger obstacle in GHG emissions abatement. Measures implemented for the reduction of GHG emissions should therefore be more stringent, focused on

climate change, interconnected and balanced. Key measures should lie in energy efficiency and the increased use of renewable energy sources.

Because of energy overproduction in the Czech Republic there is a strong reluctance to increase the use of renewable energy sources and energy efficiency. The environmental tax reform that has already taken place in a number of EU countries could play a crucial role in redefining the position of fossil fuels and nuclear energy in favor of energy efficiency and renewables.

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**Country Report: Estonia**  
**Produced by: Tõnu Lausmaa**  
**Organization: Re-En Center TAASEN**



## I. Introduction

### 1. National circumstances

Estonia is situated in the north-east of Europe, on the East Coast of the Baltic Sea. The total surface area of Estonia is 45,200 km<sup>2</sup> of which 9.2% is made up of more than 1,500 islands and islets. Estonia is one of the smallest countries in Europe - its total population is only 1.4 million of which about 70% live in urban areas and the population density is 32 inhabitants per km<sup>2</sup>. The climate in Estonia is moderate and humid.

Mean air temperature is about 17°C in July and -6°C in February. Due to a very intense cyclonic activity in northern Europe, the mean wind speed is comparatively high (up to 7 m/s in the coastal areas).

Mean annual precipitation ranges from 550 to 750 mm. Mean annual solar radiation is 1,350 W/m<sup>2</sup> and the vegetation period lasts about 180 days.

As Estonia is risen from the sea-bottom, its topography is mostly flat. Geologically, Estonia lies on the southern slope of the Fennoscandian shield, being a part of the vast flat East-European Plain, remaining entirely within the drainage area of the Baltic Sea.

This shield is undergoing steady isostatic land uplift extending annually to 2.8 mm on the north-western coast and to 1.0 mm in the south-west.

Only comparatively small south-eastern part of its territory is slightly subsiding. Isostatic landlift is one of the main reasons why the number of small islands in Estonia is increasing. This land-lift works as a potential reducer of the sea-level rise impact on the Estonian coasts though not fully compensating the latter.

The main industrial sector in Estonia is energy production. The energy, as well as chemical industry, is based on oil shale, which met 58% of the primary energy demand in 1998. Estonia is quite rich in renewable energy resources.

Today about 51% of the country is covered by forest. Forests with conifers as the dominant tree species make up 61% and forests with deciduous trees dominating constitute 39% of the total forested area. Forest industry and forestry have been and still are important contributions to the economy and employment in Estonia.

Estonia belongs among one of the most intensively emitting anthropologic GHG per capita countries. In aggregated CO<sub>2</sub> equivalents the per capita GHG emission was 27 t in 1990 and 8 t in 1999. Energy related activities are the most significant contributors to GHG in Estonia. In 1999 Estonia emitted a total of 16.4 Mt of CO<sub>2</sub> from fossil fuel combustion.

The transport sector is also an important source of carbon dioxide. In 1999, CO<sub>2</sub> emission from transport was 1.2 Mt, accounting for about 7% of Estonia's total CO<sub>2</sub> emissions, although it was 55% less than in 1990.

In the Estonian industry, carbon dioxide is emitted mainly by cement and lime production. In 1999, CO<sub>2</sub> emissions from industrial processes were approximately 0.35 Mt (0.61 Mt in 1990), which accounts for about 2.1% of total CO<sub>2</sub> emissions.

### 2. What is the national target for GHGs emissions reduction the government has agreed to?

According to the Kyoto protocol Estonia, like the European Union, committed to reduce greenhouse

gas emissions by 8% within the period of 2001-2012 against 1990.

### **3. What is the political and legal status of the target (ratification process)?**

In 1994, Estonia has ratified the United Nations Framework Convention on Climate Change and in 1998 signed the Kyoto protocol of the UNFCCC. The Kyoto protocol was ratified in the Parliament

during the Johannesburg meeting on the 3rd of September, 2002.

### **4. Does your country have any additional legislation or regulation regarding emission trading?**

There is no ad hoc legislation concerning emission trading in force in Estonia.

### **5. Other relevant documents (climate change strategy, climate change action plan)**

Estonia does not have special climate change strategy or climate change action plan. Most of the legislation acts, concerning air pollution in Estonia, include also measures for reducing the GHG emission. Within the period of 1994 - 2002, the following legal acts, concerning air protection, were approved in Estonia:

**1.** Act on Pollution Charges (1994). The target of environmental charges is to serve for enterprises as an economic incentive on environmental protection. It means fiscal compensation, enforced by the Estonian Government, for the damages caused to the environment and paid by the polluter.

**2.** Act of Sustainable Development (1995). The Sustainable Development Act sets the most general principles for sustainable development and therefore forms the basis for formulation of national and regional programmes, including action plans to reduce emissions into the air.

**3.** Estonian National Environmental Strategy (1997). The Strategy is the major basic document for the policy-making process in the field of environment. It identifies the principal environmental problems facing Estonia, establishes short-term and long-term objectives and activities aimed at tackling these problems and achieving the objectives, proposes reforms for instruments and institutions of environmental management.

**4.** Environmental Supervision Act (1997, amended in 1999). This Act establishes the rights and obligations of persons who exercise and manage or are subject to the state environmental supervision, together with the procedure for supervisory operations.

**5.** National Environmental Action Plan (1998). The plan is focused on defining the concrete conceptual, legislative, organizational, educational, training and especially investment measures of the adopted strategy to be implemented, including concrete measures for reduction of emission pollutants into the air.

**6.** Long-term National Development Plan for the Fuel and Energy Sector (1998) The Development Plan sets targets for the development of the fuel and energy sector up to the year 2005 and gives principal development trends till 2018. As the environmental impact from the energy sector cannot be reduced to the required level without restructuring the use of energy sources, the major part of energy demand increase is projected to be met by natural gas resulting in doubling its share in primary energy supply in 10 -15 years. Regarding the sustainable use of local resources, the wider use of renewable sources is planned, especially in the form of electricity and heat co-generation based on these fuels. The Development Plan sets a target to increase the share of renewables and peat in the primary energy supply by 2/3 to the year 2010 against 1996.

**7.** Forest Act (1998, amended in 1999). This Act regulates the management of forest as a renewable natural resource for ensuring human environment which satisfies the needs of the population and gives the necessary resources for economic activity without unduly damaging the natural environment. The Act provides the legal bases for the forest management and regulates the directing of forestry.

**8.** Ambient Air Protection Act (1999). This Act regulates activities which involve the emission of pollutants into the ambient air, damage to the ozone layer and deals with factors which cause climate change. The Act determines the main principles of ambient air quality control, caused by emissions from polluters. It contains the orders of establishment of emission standards and air pollution permits.

**9.** Pollution Charge Act (1999). This Act provides the rates of the charge to be paid upon the release of pollutants or waste into the environment and the procedure for the calculation and payment of the charge. The pollution charge should serve as a measure to prevent and reduce possible damage caused by the release of pollutants or waste into the environment. The pollution charge shall be paid upon the release of pollutants and waste into the environment, specified in this Act.

**10.** Environmental Monitoring Act (1999). This Act serves for the organization of environmental monitoring and provides the procedure for processing and storing the data obtained. The Act establishes the relations between persons, carrying out environmental monitoring and owners or possessors of immovable property.

**11.** Pollution Charge Act (1999). The Act provides rates of the charges to be paid for the release of pollutants or waste into the environment and the procedure for the calculation and payment of the charge. For the first time in Estonia the Act introduced (since 01.01.2000) a pollution charge on CO<sub>2</sub> emission. The CO<sub>2</sub> charge has to be paid by all enterprises with total capacities of boilers over 50 MW, excluding those firing renewable energy sources.

**12.** National Energy Conservation Programme (2000). The main objective of the programme is to propose concrete measures to ensure the achieving of the relevant objectives set by the Development Plan. General targets of the programme include among others the reduction of environmental impacts of the fuel and energy sectors. One of the main goals of the programme is to ensure the CO<sub>2</sub> emission level to be kept lower than the limits fixed in the Kyoto Protocol (in 2008 -2012 the emission level has to be 8% lower than in 1990).

**13.** National Programme on Reduction of Pollutant Emissions from Large Combustion Plants for 1999 -2003 (2000). According to the programme emissions of pollutants from large combustion plants should be reduced substantially each year.

**14.** Fuel Excise Tax Act (2000). The act is meant to support wider use of renewable energy resources in Estonia. Tax exemption has been made for electricity generated by hydro and wind turbines - the rate of 0% is levied up to the end of 2006.

**15.** Action Plan for Energy Conservation Target Programme (2001). The target of the plan is to coordinate and carry out the measures planned in the programme during the period 2001 -2005.

There are the following international environmental conventions, linked to the climate change phenomena, in force in Estonia:

- Rio de Janeiro (1992) Convention on Biodiversity (rat. on May 11th, 1994).
- New York (1992) UN Framework Convention on Climate Changes (rat. on May 11th, 1994).
- Helsinki (1992) Convention on Protection of the Marine Environment of the Baltic Sea Area (rat. on April 19th, 1995).
- Vienna (1985) Convention for the Protection of the Ozone Layer and Montreal (1987) Protocol on Substances that Deplete the Ozone Layer (rat. on September 11th, 1996).
- The Energy Charter Treaty together with the Protocol on the More Efficient Energy Use and the Related Environmental Aspects (rat. in February 1998).
- Act on the Ratification of the two Amendments to the Montreal Protocol on Substances that Deplete the Ozone Layer - Amendment adopted at the Second Meeting of the Parties at London on 29 June 1990 and Amendment adopted at the Fourth Meeting of the Parties at Copenhagen on 25 November 1992 (rat. on January 27th, 1999).
- Act on the Accession to the Convention on Long-Range Transboundary Air Pollution (rat. on January 19th, 2000).
- Act on the Accession to the Convention on Environmental Impact Assessment in a Transboundary Context (rat. on November 15th, 2000).
- Convention on Access to Information, Public Participation in Decision making and Access to Justice in Environmental Matters (rat. on June 06th, 2001).
- Kyoto Protocol to the of the United Nations Framework Convention on Climate Change (rat. on September 3rd, 2002).



**6. For accession countries:  
Is your specific national legislation in harmony with EU legislation?**

The Estonian environmental policy is directed towards to the full implementation of the European Union legislation with the long term goal to promote ecologically sustainable development. Estonia signed the European Agreement and applied for first membership of the EU in 1995.

In December 1997, the European Council of Ministers made the decision to invite Estonia to negotiations to join the EU. At the beginning of 1998, the elaboration of the Estonian National Programme for the Adoption of the *acquis communautaire* was completed and approved by the Government.

In March 1998, the accession process was formally launched. An analytical examination of the *acquis communautaire* was started in April 1998 and concluded in autumn 1999. An update process of the screening exercise started in February 2000 in

order to review the *acquis* and entered into force by 1 January 2000.

The approximation of EU legislation in all fields, including environmental issues related to pollution of ambient air, is in progress.

The official negotiations concerning the environmental chapter, started with the EU on 7th of December, 1999. The National Programme for Adoption of the *Acquis* (NPAA) is made annually, fixing the annual action programme for harmonising the legislation and administrative measures.

There is no fixed deadline for ending the harmonisation process as it goes on until the end of the accession period involving the current legislation process of EU as well.

**7. What are the institutions that are established for climate change related activities in the country? Is there a centralized institution or not?**

There is no special institution established dealing with climate change in Estonia. All issues concerning climate change have been handled by

the Environmental Management and Technology Department of the Estonian Ministry of Environment.

**II. Inventory and projections**

**8. Which are the national emissions for the base year and data on the most recent year available? Are the data accurate? Does you country have an inventory system or the data are based on estimation??**

During 1994 - 1996 a GHG inventory was compiled by Estonian Country Study Team for the baseline year 1990 in the framework of U.S. Country Study Program, using the IPCC Guidelines for National GHG Inventories. Later on, the same methodology was applied to compile GHG inventories for 1991 - 1996. After that the inventories have been compiled by the Institute of Ecology of the Tallinn Pedagogical University. The GHG Inventories for Estonia have been compiled

for energy, industry, transport, agriculture, forestry and land-use sectors which encompasses the whole range of activities related to emission of greenhouse gases in Estonia. Unfortunately, the availability and reliability of data from different sectors differ due to the fact that during these years great changes took place in the statistical data collection and procession methods in the Estonian governmental institutions.

**CO<sub>2</sub> emission in Mt**

	<u>1990</u>	<u>1999</u>
Fossil fuels total	37.5	16.4
Industrial processes	0.6	0.3
Land use change and forestry -	6.3	-8.1
Total net emissions	31.8	8.7

→

**9. What emissions projections does your country have for different scenarios for 2005, 2010?**

The emission projection scenarios for Estonia are carried out for the target year 2020. This task is a difficult and a complicated one due to several uncertainties. The first and major problem is the lack of long-term projections for the national economy as a whole. The main positive changes of the projection are the increase in the shares of natural gas and renewable sources as well as the decrease in percentage of oil shale in total primary energy supply. The share of natural gas would grow up to 25% by 2015 and up to 30% by 2020 with respect to the year 2000. The share of renewable energy sources would rise up to 14% by the year

2020 from 11.7% in 2000. The main component of renewable energy supply would still be biomass, the wind and hydro energy making up only 6 -7% of the total of renewables. The reduction of losses by 10% in electricity transmission and distribution networks is estimated. The potential of savings in heat production is 5-10% and in distribution of heat up to 50%. The possibilities of saving in the residential sector 15 -25% of energy with modest investments and even up to 50% in the case of large investments, are estimated.

**10. How accurate or misleading is the country's current report?**

***Does it adequately explain emissions and all policies and measures that affect GHG emissions (not controlled by Montreal Protocol)? Does the plan include existing policies that increased emissions such as subsidies for fossil fuel use?***

It should be noted that there is a lack of scientific base for the separation of natural and man-made share of GHG emissions and removals from wetlands. At the early 1990s the uncertainties were much higher than in the recent years.

The uncertainty of data could differ from 10% to 25%, depending on sectors and years under consideration. In the teeth of the above said, the National Report describes rather adequately the situation in the energy sector and the results should be trusted. The projections of the GHG emissions presented in the communication are calculated on the basis of general trends of the development of national economy, energy demand and supply in Estonia.

The results of the inventory of GHG show that an approximate total of 76% of all GHG emissions consist of CO<sub>2</sub>, with combustion processes being the largest source of CO<sub>2</sub>. For this reason, the main attention is directed to the projection for CO<sub>2</sub>

emissions from combustion processes. The remaining 24% of all GHG emissions consist of methane (21%) and nitrous oxide (3%). Here the uncertainties are greater. Another very complicated task is to compile scenarios for the GHG sink, the more so as there is no scientifically supported calculations for biogeochemical cycles of CO<sub>2</sub> in terrestrial ecosystems for Estonia.

In Estonia the direct subsidies to fuels and energy were phased out at the beginning of the 1990s. Still, there exist some cross-subsidies in the tariff system of electricity: house-hold consumers are subsidised by industrial and commercial consumers.

In some locations similar subsidies are practised in the case of district heating. The political decision to stop cross-subsidies in the energy sector will be gradually carried out in the near future.

**11. What are the GHG emission trends? In which sector do GHG emissions grow the most?**

Primary energy use and energy consumption by end users has decreased since 1990 when the industry and agriculture were very energy intensive. In 1999 the biggest consumers are households and industry. Like in the whole Estonian economy, essential

changes have taken place in the energy sector during the last years. Both the primary energy demand and the final consumption have decreased almost twice.

From 1993 onward the level of energy consumption has gradually become more stable. In 1996, about 72% of the primary energy demand were covered by indigenous energy sources.

In 1999, 92% of electricity was generated on the base of oil shale. In heat production, in which the share of oil shale is lower, the natural gas will be expected to increase significantly.

Its share in the primary energy balance is expected to increase twofold in the next 10-15 years. Also the contribution of peat and biofuels is steadily increasing, especially in heat production. Significant changes have been taken place in the car park in Estonia.

The number of motor vehicles has become twofold during the last ten years. At the same time the road infrastructure in towns has remained almost unchanged. The most essential decrease in the number of motor vehicles took place in public

transport and increase is the biggest in the number of cars.

On top of that, the average age of 13 years for cars in Estonia is high and it means that even more harmful compounds are emitted due to the out of date technology.

In 1999, the share of public transport in the passenger traffic volume was more than two times smaller compared to 1990 and passenger kilometres for bus and rail service have decreased up to 50-80%.

Road transportation accounts for the majority of mobile sources of fuel consumption and for the majority of mobile sources of emission. But in spite of the increase in cars, the total GHG emission from transport have decreased like as it has been the case in all other sectors of industry as well.

***12. Does your country have or is working on a national GHG registry?***

In 2002, Estonia does not have yet a National GHG registry but the work on the registry has started already and according to the Greenhouse Gas

Emission Reduction Programme for 2003-2012 it should be finished by the year 2007.

***13. If there is an inventory system in place in your country, how adequate the system is? Are there any holes in the system that can be used when the GHG emissions rise above the targeted levels?***

Estonia has provided GHG inventories regularly starting from the year 1990. The Institute of Ecology of Tallinn Pedagogical University makes annual GHG inventories to be submitted to the

secretariat of the Convention according to the methodology of IPCC. This should rule out any possibility for cover-up in case the emissions exceed the limits.

***14. Is the vulnerability assessment in the Third National Communication appropriate? Are climate change impacts assessed realistically? What are the adaptation measures that are proposed or taken?***

Because of its geography, wide coastal areas, water resources, forests and wetlands, the environment of Estonia is sensitive to climate change. The vulnerability assessment in the Third National Communication is comprehensive and realistic, based on high level scientific research, analysing the situation in agriculture, forestry, natural water system, waste disposal and coastal climate. The adaptation measures are not included into the Third National Communication.

of climate warming. On moist clay soils, heavy rainfalls in spring caused a very strong decrease in potato yield. As the modelling results showed, temperature rise would decrease the crop yields everywhere in Estonia.

The climate change scenarios with respect to forest resources reflected obvious trends: a decrease in the snow pack duration and earlier snowmelt with increasing climate warming.

The simulations done with a barley breed indicated a considerable decrease in productivity in the case

Increased nutrient availability, in particular that of nitrogen, clearly favours increased forest biomass.

The additional wood biomass growth during the 100 year period was predicted to range from 2.5% to almost 9%. Modelling results demonstrated the possibility of significant changes in the annual course of monthly runoff caused by climate warming. Frequent melting periods would decrease snow and ice accumulation during winter. All climate scenarios predicted a significant increase in river runoff during autumn caused by increased precipitation. Consequently, climate change would reduce the cost of groundwater extraction from upper confined aquifers. Climate warming would also have a positive influence on the ecological state of water-bodies in Estonia. A 1.0 m sea rise would change substantially the coastline contour and the number of small islands. The most significant changes would occur on the western coast, including the Matsalu Bay test area. Coastal

meadows and reed beds, characteristic ecosystems of the western coast of mainland Estonia, would migrate inland, but would not perish. The dumping site of the former uranium enrichment plant in north-eastern Estonia, Sillamae, is the greatest threat to the environment of the coastal plain and the Gulf of Finland. Separated from the sea by a narrow dam, thousands of tons of radioactive substances containing 238 U, 232 Th, and 226 Ra leak into the soil and sea every year. Sea level rise and stronger storms would increase the risk of dam rupture, causing catastrophic pollution of the sea. Estimates of losses on Hiiumaa Island indicate that 100% of reed beds and 80% of coastal meadows, including rare saline plant communities are in direct danger.

### III. Measures to limit GHG emissions

#### ***15. Does the plan begin a fundamental shift in energy priorities away from fossil fuels and nuclear energy - including the phase-out of subsidies for those energy sources?***

The main fuel in the energy sector in Estonia is oil shale. 99% of electricity generation and 25% of heat production are based on oil shale combustion in Estonia. About 68% of the CO<sub>2</sub> emissions in Estonia are released by the combustion of oil shale.

The remaining 32% come from heavy fuel oil, natural gas, coal, light fuel oil and other fuels. From the point of view of greenhouse gas emissions, it is important to emphasize that during combustion of oil shale, CO<sub>2</sub> is formed not only as a burning product of organic carbon, but also as a decomposition product of mineral carbon. Therefore the total quantity of carbon dioxide increases up to 25% in flue gases from oil shale burning. The National Long Term Fuel and Energy

Supply Development Plan which is orientated on reduction of GHG emission, was adopted in the Parliament in 1998. Unfortunately, oil shale will remain dominant in Estonian primary energy supply at least for to decades.

The refurbishing of the boilers would improve the ambient environment quality and raise the production efficiency but from the point of view of GHG emission it would not amount to any significant change compared with the current situation. Though there is no direct subsidizing of the oil shale based electricity production, there are several indirect subsidies that would not be abolished.

#### ***16. Does the plan indicate a future shift in energy priorities towards increased energy conservation, efficiency, and renewable energy? What are the prospects for such measures?***

The plan makes a shift from fossil fuels towards increased energy conservation, efficiency and renewables (refurbishing of the oil shale fired power stations, reconstruction of the distance heating system, refurbishing of the old buildings to decrease the heat losses, use of local fuel (wood

chips and peat), organizing energy saving campaigns) but it is hard to call this shift a fundamental one. Wind energy is left out of this plan almost entirely and the planned use of biomass as a fuel is far from the actual potential.



***17. Is there a target for the use of renewables?***

According to this plan the role of renewable energy in the primary energy demand should increase from the current 8% to 13% and the share of oil shale in

the primary energy supply has to decrease from 60% to 50%.

***18. What measures are proposed in the transport sector and are they efficient relative to its contribution to CO<sub>2</sub> emissions and emissions growth?***

In transport the following measures are proposed:

- Economic: differentiated excise tax on different types of gasoline and governmental tax on policy for the renovation of car stock.
- Legal: rigorous regulations of annual vehicles check-up and mobile technical check-up on roads.
- Governmental: improvement of public roads quality, improvements in public transport system and changes in transport vehicles in favor of electric transport vehicles in towns.

- Scientific: development of control systems for vehicles and fuels.
- Educational: improved education of vehicle drivers and co-operation for commuting driving. Unfortunately, there is nothing in the plan about promoting cycling as an environmentally benign alternative to motor transport.

***19. Can additional cost-effective measures not contained in the plan be taken to limit CO<sub>2</sub> emissions? What studies indicate this?***

There are still several choices of renewable energy use having not found an adequate attention in the official energy planning document that can contribute for limiting the CO<sub>2</sub> emissions. First of all, it means the full use of the biomass based energy potential in Estonia, amounting up to 28 TWh annually.

The conversion of boilers to local waste-wood is still lagging behind of the local potential for providing the needed wood chip fuel. In spite of the fact that there have been carried out some high-level research work on growing energy forest, the practical implementation in Estonia is still to come.

Peat as a local fuel cannot be neglected as the active sustainable peat resource in Estonia is in energy units up to 4 TWh. Biogas production from animal manure is still in its initial stage with only some demonstration plants in operation.

Consumption of straw and reed as local fuel has not yet got off the ground and is still an unknown choice for Estonia. Annual average wind speed at the height of 10 m is more than 6 m/sec for 900 km<sup>2</sup> of the Estonian territory.

On the coastal areas and islands of Estonia the wind turbines can produce annually at least 5 - 7 GWh/km<sup>2</sup> and annual wind energy resources of the archipelagos together with the western and northern coast in Estonia are about 3.5 TWh.

The Estonian total technological solar energy potential is not high (the annual potential about 0.4 TWh), but it is practically unused. The justification of all the above given renewable energy choices are given in the report Sustainable Energy Alternatives for Estonia (1998), done by the Re-En Center TAASEN in the framework of the REC project Sustainable Energy Alternatives for the Baltic States.

***20. How is the lobby for nuclear power operating vis-a vis the climate action plan?***

If to manipulate with the input data and the restrictions imposed, while analyzing energy scenarios with some modeling computer programme, it is possible to come up with the results that the only solution to satisfy the imposed

requirements is to phase into the energy system some nuclear energy. This very tactic is used by pro nuclear people to speak for nuclear energy choice in Estonia. But officially no long term plans on energy involve explicitly the nuclear alternative.

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**21. Are measures to reduce methane from agriculture and landfills directed towards increased use of biomass and biogas in the energy sector?**

The Greenhouse Gas Emission Reduction Programme for 2003-2012 provides no direct planned link between methane reduction in

agriculture and increased biomass use in the energy sector in Estonia.

**22. Are there any other measures for limiting emissions of GHGs other than CO<sub>2</sub>?**

The following measures are taken for the reduction of CH<sub>4</sub> emission level in agriculture:

- Governmental: breeding of dairy cattle to increase their productivity.
- Educational: training of farmers.
- Voluntary: environmentally sustainable

production and manure management in small farms.

As one can see, the above given measures fall short of increasing the use of biomass and biogas in the energy sector.

**23. How large a share of measures to achieve the national target stabilization is implemented through: reduction in CO<sub>2</sub> emissions? Reduction in emissions of other greenhouse gases? Efforts to reduce emissions through domestic actions? Increase sequestration from sinks? International actions (Joint Implementation, Emission Trading)? Legislation existing at the national level.**

In the energy sector the following measures for the reduction of CO<sub>2</sub> emission levels have been implemented:

- a) economic: differentiated excise tax for different fuels.
- b) Legal: power engineering regulation laws and Natural Resource Tax.
- c) Governmental:
  - Reconstruction of oil shale power plants.
  - Reconstruction of heat distribution networks and installation of heat meters.
  - Reconstruction of buildings (insulation of outer walls and roofs, refurbishing windows) to reduce heat losses.
  - Utilization of domestic fuels (wood, peat).
  - Organization of energy saving campaigns.
- d) Scientific: investigation of new combustion technologies and alternative energy sources (wind, solar, biomass); studies on heat insulation of buildings.
- e) Educational: energy program "Energy 2000" and promotion of heat saving measures in mass media.

- f) Voluntary: replacement of old equipment with new more energy efficient equipment (refrigerators, fans, pumps, and compressors) and reduction of heat losses by improving the insulation of buildings during the cold season.

In forestry the following measures for increasing the sequestration from sinks have been taken:

- a) Economic: fines for unauthorized felling.
- b) Legal: laws on forest and forest land management.
- c) Governmental: preservation of forests, their stability, high productivity, biological diversity and efficient production and utilization of forest-based products.
- d) Scientific: studies on energy forests.
- e) Educational: consulting and training of private forest owners.
- f) Voluntary: tidying-up of forests.

Estonia has joined the joint implementation project Joint implementation for International Emissions Reductions through Electricity Companies in the European Union and Central and Eastern European Countries, merging the efforts of 13 countries for fighting the climate change.

**24. Are measures to increase and sustain forests (sinks) designed to promote the increased use of biomass residuals in energy sector? Do they also help to promote biodiversity?**

The measures to increase and sustain forests are meant to promote biodiversity as one of the targets and use more efficiently all forest based products

which means that the increased use of biomass residuals in energy sector is one of the alternatives for more effective use of the forest based goods.

**25. If JI projects are started, can you please provide a brief negative and positive critique of the projects?**

Up to now, all the AIJ projects in Estonia have been carried out together with the Swedish state energy organization NUTEC (STEM). These projects are directed either towards improving the heat keeping qualities of residential houses in Estonian towns

**The change of fuel (wood for heavy oil)**

Expenses in EUR	2,400,000
Decrease in GHG emission in tons	290,000
Efficiency in EUR/CO <sub>2</sub> in tons	89

**Refurbishing of district heating**

Expenses in EUR	1,320,000
Decrease in GHG emission in tons	50 000
Efficiency in EUR/CO <sub>2</sub> in tons	530

**Improvement of insulation**

Expenses in EUR	826,000
Decrease in GHG emission in tons	5,900
Efficiency in EUR/CO <sub>2</sub> in tons	1,330

The above given projects can be qualified as success stories. The only negative side of this project choice is that all these projects are rather

and refurbishing the existing distance heating systems, or switching the local boiler houses from imported heavy oil to local renewable fuels (wood chips, peat). The total number of these projects is 21 with the following summarized result:

one-sided, leaving many good alternative opportunities for climate change mitigation unused.

**26. Are there any developments for national emission trading systems to be established and if yes, what kind of system is being developed?**

In the Greenhouse Gas Emission Reduction Programme for 2003-2012 is proposed a national emission trading system based only on the Kyoto protocol as there is not yet a special regulatory act

on the emission trading in force in Estonia but in the future the emission trading would be based on the new Ambient Air Protection Act planned to be put into force in 2003.

**27. What are the measures taken to establish economic incentives for reducing GHG emissions? (E.g. CO<sub>2</sub> tax, energy tax, cap and trade systems...)**

The rates of pollution charges is fixed in the Pollution Charge Act. The Act provides higher rates in densely populated areas, recreational areas and areas with heavy industrial load. In June 1999, The Act on the Use of Proceeds from the Exploitation of Environment was amended by the Parliament. It enabled the state, in accordance with the laws, to establish a new foundation for organising the use of proceeds from the exploitation of the environment. In 2000, the Minister of Finance signed a regulation to establish The Centre of Environmental Investments, which started as the legal successor of the Estonian Environmental Fund to support environmental investments in different sectors (air, waste, water, etc.).

The Centre will become an implementation unit of the ISPA environmental projects in Estonia. In recent years, several important for Estonia projects have been financed from different foreign sources, such as EU programmes Phare and ISPA, as well as by aid programmes from neighbouring countries (e.g. Denmark, Finland, Sweden). In order to ensure high quality preparation of foreign projects an Investment Department was established in the Ministry of Environment in the Autumn of 2000. Excise duty is the only specific tax that is applied directly to fuels, mainly to motor fuels. Since December 1997, the excise tax is levied on light fuel as well.

To support a wider use of renewable energy sources the Energy Act was amended in June 1998 with the provision that an energy trader dominating the market is required to purchase electric power from traders connected to its network and who produce such power from water, wind or solar energy,

biomass, waste gases or waste material. An energy trader obligated under this provision shall purchase alternatively produced electric power at a price that constitutes 90% of the basic rate for residential customers.

**28. For the accession countries:  
what are the measures that are being adopted from the EU package of measures?**

In Estonia the target has been set to reach the EU level of excise tax rates on oil fuels in the process of harmonisation of legislation during accession. For Estonia this will mean the increase of tax rates

on motor fuels approximately by one fourth and the introduction of excise tax on heavy fuel oil, which is not taxed with excise duty currently.

**29. Any particularly innovative policies and measures that could be put in place also in other countries?**

Many policies and measures taken into use in Estonia can be applied in other countries as well but from the ideological point of view there is no

pioneering ideas behind these policies and measures that has not been yet known already before having been taken into use in Estonia.

**30. Is the mix of measures mostly voluntary or regulatory?**

The bulk of the measures are regulatory with only a marginal share of voluntary actions added to

satisfy the EU requirements for public participation.

## IV. Implementation and monitoring

**31. What is the legal status of the package of measures?  
What has been implemented and what is pending?**

Since 1990, 17 acts, 24 regulations of the Government of the Republic and 61 regulations of the Ministry of the Environment have been worked out and adopted.

During the same period, numerous conventions, having importance from the point of view of Global Climate Change, have been ratified by the Parliament. There are some rather relevant documents concerning climate change in preparation stadium:

- The preparation of the Estonian Sustainable Development Strategy has been initiated to reach a broad discussion and subsequent agreement on a long-term development policy for the country. The

new strategy is planned to combine social, economic and environmental considerations.

- On the basis of The United Nations Framework Convention on Climate Change and the Kyoto Protocol the elaboration of the Greenhouse Gas Emission Reduction Programme for 2003-2012 has started.

- With regard to the international co-operation in the integration of environmental issues into other policies, Estonia has started to implement the action plan for sustainable development adopted by all Baltic Sea countries in the framework of Agenda 21 for the Baltic Sea Region.

**32. What proposed actions have not or may not be implemented as planned?**

The increase of renewable energy share in the primary energy supply might fall short of the expected rise if the new amendments to the Energy

Act fix the purchase price for renewable energy too low to make wind energy application profitable for the coming years.

**33. What is the cost of the implementation of the national plan according to the government?**

The cost of implementing the national plan on mitigating the negative impact of the energy sector.

**34. How does the plan provide for adequate monitoring of emissions and ongoing assessment?**

The adequate monitoring of the plan is guaranteed by the Environmental Monitoring Act (1999).

**35. What signal does the plan send to other countries?**

One should not copy in detail the developing process of more advanced neighboring countries in tackling climate change and other environmental problems, but rather, taking advantage of the

experience of our predecessors and considering the local peculiarities, to find one's own way, compatible with sustainable development.

**36. Are any efforts underway to promote coordination of planned measures on the international level?**

At the moment Estonia is not participating in promoting co-ordination of planned measures on the international level but Estonia was involved in a Commission of European Communities project Joint Implementation for International Emissions Reductions through Electricity Companies in the

EU and CEE Countries. This project ran for 18 months from March 2000 to August 2002 and was co-funded by the EC's Fifth Framework Programme, under the Energy, Environment and Sustainable Development Subprogramme.

**37. What provisions on education and public awareness, the National Communication has? What does the role of NGOs in implementing them? What is the transparency of the whole process?**

The public is primarily made aware the climate change issues through mass media. Quite a few articles have been published in daily newspapers and ad hoc periodicals together with numerous leaflets, booklets, etc. Also special conferences and workshops have been held for the public to increase their awareness. All the vital information about the climate change has been put up on the homepage of the Ministry of Environment. Because of good Internet access in Estonia, environmental campaigns and educational courses can be made also via the Internet.

Because of good Internet access in Estonia, environmental campaigns and educational courses can be made also via the Internet. There are also several email lists on the environmental subjects. Membership of this kind of list is free of charge and usually available for anyone who is interested. Estonian Academy of Sciences, Estonian universities, research institutes and scientific societies organise regularly workshops and seminars to discuss different aspects of global warming and possibilities to mitigate negative consequences and rising people's awareness also in global warming issues.

Environmental NGOs take very actively part also in climate actions. For instance Estonian NGOs organised a bus trip of climate activists from all three Baltic States to Hague, the Netherlands to a Climate conference. Eight largest environmental NGOs created for environmental NGOs an umbrella organisation Green Alliance. The Green Alliance is working with various environmental projects and lobbying. Environmental NGOs have currently several projects running that are related to climate change and global warming. For example, Estonian Students Society for Environment Protection Sorex has organised an inquiry in Estonian schools. The main aim of this project was to get feedback from pupils about their knowledge on sustainable development and environmental problems. Estonian Youth Society for Nature Protection has a joint project with the environmental club Scarabeus, which is a subproject of the European project The Bet. Tallinn city council is co-operating with various organisations and NGOs to establish environmental classes all over Tallinn. City council is also planning to build an environmental information centre for visitors in Tallinn Zoo to expose any kind of information about our nature and its problems.

**38. What measures for monitoring the implementation of the Third National Communication are provided and how are they applied?**

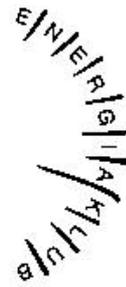
Estonian National Environmental Monitoring Program (incl. Air Quality Monitoring Program) was launched in 1994 and is supervised and coordinated by the Ministry of the Environment. The

main goal of this Programme is to monitor the long-term and large-scale changes in the environment through identifying problems and helping to find solutions.

## V. General opinion and observations

The understanding of climate change has improved much within the time since the Second Independent NGO Evaluation. But still not all the available resources have been taken into use to combat the

climate change. Anyway, Estonia is on the road of joining the EU on equal terms concerning the climate change issue.



**Country Report: Hungary**  
**Produced by: Gábor Takács<sup>1</sup>**  
**Organization: Energy Club**

## I. Introduction

### 1. National circumstances

In Hungary the main factor concerning GHG emissions is the once centrally planned, oversized, heavily polluting, soviet type heavy industry, which have either partly collapsed or gone through significant changes. As a result there was a sharp decrease in GHG emissions in the first half of the 1990's. Global trends apply to Hungary as well: the emission of large point sources is decreasing, while mobile (transport sector) emissions are increasing. From a public awareness point of view environmental degradation and protection and climate change are still low down on the political agenda.

Since the Second National Communication the most significant change in national circumstances is the increase in economic growth to 5.2% in 2000, with a consequential rise in private consumption and change in consumer behavior, and the forthcoming accession of Hungary to the European Union. At this developmental phase the Hungarian economy is characterized by the decoupling of energy use and economic growth, resulting in decreasing GHG emission per unit of output (but still 2-2,5 times higher than that of the EU). The political concession granted to EITs in the Kyoto Protocol (earlier baseline) roughly secures the fulfillment of our obligation to reduce emissions by 6% in the period of 2008-2012.

However, two things should be noted:

- the current climate change regime uses absolute

targets, so energy intensity (even its positive tendency) is not a proper indicator in this respect; and

- inaction in the first commitment period with regard to GHG reducing policies and measures will have huge opportunity cost in the future, considering the increasing GHG emissions and decreasing political feasibility of such a generous concession in the next EU burden sharing negotiations.

The economic, social and environmental effects of the EU accession will not be apparent before the end of the decade. Public perception of the environmental effects are biased towards direct and short term visible consequences e.g. waste and sewage infrastructural investments.

Without questioning the need for such investments, it is expected that other indirect effects will become apparent in the medium term that are both positive and negative.

The fact that their prediction is much more difficult should not lead to their total neglect. All this holds for the GHG emissions (e.g. How will it be affected by the Trans-European Networks?) and the mitigation policies (e.g. how far will the European competition law limit on the forms of railway subsidies?).

### 2. What is the national target for GHGs emissions reduction the government has agreed to?

The national target for GHG emission reduction target corresponds to Hungary's emission reduction commitment under the framework of the Kyoto

Protocol, namely 6%. The base is the average of 1985-87. There is no further emission reduction target under consideration.

**3. What is the political and legal status of the target (ratification process)?**

Hungary ratified the UNFCCC in 1995. The Hungarian Parliament made a decision on joining to the KP in July 16, 2002. As she did not sign the

Protocol during the given period, Hungary can only officially ratify it after it comes into power.

**4. Does your country have any additional legislation or regulation regarding emission trading?**

No, it doesn't have at the moment. The simulation of a domestic emission trading scheme is under development. This is an initiative of the Hungarian Energy Office, the regulator of the Hungarian energy sector, and some business groups. Parallel

to this, regulation is also being elaborated, but this process is rather slow, due to hesitation and lack of knowledge in the related public administration (mainly Ministry of Environment and Water Affairs and Ministry of Economics).

**5. Other relevant documents (climate change strategy, climate change action plan)**

The Government issued a resolution on Hungary's climate change strategy (Governmental resolution 2206/2000 (IX.13)) which is a loosely defined collection a necessary steps. In the 2nd National Environmental Program (NKP<sub>2</sub>) which will come into force as soon as the Parliament has decided on it sometime in 2003, there is a Climate Change Action Plan. The NKP<sub>2</sub> is for the period of 2003-2008, but has not yet come into power. In the NKP<sub>2</sub> the necessary policies and measures and fields of

action are listed. The main problems are the following: there is no sufficient fund secured for the tasks in the central budget, and there is no coordination and capacity building in the public administration that could deal with the issue. According to the majority of NGOs, the NKP<sub>2</sub> is rather a collection of steps and measures to fulfill the EUs requirements, than a strategic paper with a careful overview of the main problems, solutions, sources, etc.

**6. For accession countries:  
Is your specific national legislation in harmony with EU legislation?**

Hungary has adopted approximately 70% of the environmental aquis, but has got significant temporary exemptions as well (incinerators' emission, waste and sewage management, drinking water quality).

Generally speaking due to lack of funds, capacity and public scrutiny, environmental policy is rather motivated by EU requirements than real concern. Having said this, we can say that the EU's legislation can be a strong motivation. The main problems will be the implementation. The specific issues are the following:

- Energy sector regulation: the main issue is that Hungary follows the opening up of the market strictly, which began on 1st January 2003.
- The newest decisions of the Energy Council, December 2002: these are not even under consideration. There is no preparation, analysis of the directives, implementation, etc.
- Market distorting subsidies: these fall under regional development and/or unemployment exceptions. On the other hand the Prime Minister (spring 2002), announced the environmental commitments of the new government, which contains paragraphs on the revision and

reduction/abolition of environmentally harmful subsidies.

- CHP regulation under the New Electricity Law is quite supportive: the obligatory purchasing price of electricity is relatively high. It is much more supportive and specific than the EU's CHP directive.
- Energy efficiency related legislation for building efficiency: commercial building lighting regulation is in favour of energy efficiency. One of the largest energy saving potentials (5-26 %) could be utilized by the secondary side energy efficiency investment in the district heating sector (effecting 1/5 of the population). There are some local initiatives, but the elaboration and implementation of a nationwide plan has been continuously postponed.
- National Agricultural - Environmental Program for the period of 2000- 2006. Generally, it is in accordance with the EU's regulation that demands environmental friendly means of agricultural production. On the other hand the lower level legislation and implementation are very weak.

The Waste Act is in accordance with the EU legislation, but it is just a framework act. The lower level legislation has not been fully elaborated yet. Hungary's National Waste Management Plan is under development. According to NGOs, in the waste incinerators, the great majority of the burned waste could definitely be treated in more environmentally friendly ways (selective collection, composting, etc). Land fill gas has been

collected in most of the big regional waste sites for some years now.

While there is a fee-regulation in place on transit road transport (3 HUF/ton/km), there are so many exceptions based on bilateral agreements, that practically nobody pays it.

There is a governmental resolution in force on the indication of CO<sub>2</sub> emission for new cars, based on EU regulation (December 2002).

**7. What are the institutions that are established for climate change related activities in the country? Is there a centralized institution or not?**

No new institution has been established to deal with climate change and climate change negotiations. There is no new department or resources dedicated to dealing with climate change. There has been no new capacities built in any of the related governmental bodies. There are five governmental bodies that (should) deal with the UNFCCC process to some extent. Excluding MEHI all of them deal with the issue on an ad hoc basis. The institutions are the following: 1) Department of Sustainable Development of Ministry of Environment and Water Affairs (KvVM). The head of department is the official UNFCCC focal point. 2) The Ministry of Foreign Affairs (KUM) is in charge of all international negotiations, but we do not know about any resources dedicated to climate negotiations. 3) The Hungarian Energy Office (MEHI) deals with JI and ET schemes but is not in charge of any decisions. 4) The Hungarian Energy Centre (the energy efficiency agency), is funded by the MEHI, KvVM and the Ministry of Economic Affairs and Transport. It is the administrator of the

governmental and international energy efficiency and renewable funds. It is also the main administrator of some international, energy related funds (e.g. Phare, UNDP, etc). 5) The Institute for Environmental Management (which is a background body of the Ministry) is in charge of the inventory. This institution is under reorganisation, but it is unlikely that there will be additional capacities dedicated to the climate change issue. 6) Ministry of Agriculture and Regional Development (FVM) deals with sinks. There is an inter-ministerial committee dedicated for the issue, but it so far been inactive. The newly founded Energy Saving Inter-governmental Committee has also been rather inactive for the last two years. It is highly unlikely that the public administration will be able to handle even the administrative burden of the KP and UNFCCC. From the National Program on Adoption of EU's Aquis Communautaire (ANP) 1,1 million euro was available for capacity building till the date of accession.

**II. Inventory and projections**

**8. Which are the national emissions for the base year and data on the most recent year available? Are the data accurate? Does you country have an inventory system or the data are based on estimation??**

According to the NC<sub>3</sub> Hungary's gross domestic emission (Gg of CO<sub>2</sub> equivalent) averaged 101,633 from 1985-87 and 84,338 in 2000. There are some methodological differences as the data for 2000 contain HFC, PCF SF<sub>6</sub> emissions as well, while the data for 1990 and for the baseyears don't.

Hungary started to prepare an annual inventory of GHG emission in 1994 for the purpose of its First National Communication. Since then the responsible organization (it has been delegated from a private firm to a ministerial agency in 1998) follows the international methodological guidance

provided by the IPCC. The Institute of Environmental Management (KGI) is in charge of inventory. One person is in charge of preparation. The GHG emission calculation for the inventory is entirely in accordance with the IPCC guidelines. The calculations are based on statistical data. As in most of the cases the energy sector emissions are only calculated on (random) measures. The main IPCC criticism in 1999 was the Qa-Qc (quality assurance- quality control) gap, as there are quite a few specific data available. The guideline was changed in 1998.

In 2003 there will be a review of previous inventories to apply new changes and new data. Due to the gradual sophistication of these guidelines, and especially the introduction of the Revised 1996 Guidelines there are statistical inconsistencies between the inventories prepared before and after. Due to serious resource under-

provision for inventory preparation, the much-needed recalculation of past emission with the new methodology is not executed yet. It would enhance the reliability of the inventory system to a great degree. The inventories from 1998 already contain the 'new GHGs' (HFCs, PFCs, and SF<sub>6</sub>).

**9. What emissions projections does your country have for different scenarios for 2005, 2010?**

According to the predictions of the Ministry of Environment and the National Climate Change Strategy, if the current (2001) policies and measures are kept in place, Hungary will not meet its Kyoto target by some 0,9% exceed.

The Third National Communication contains only two scenarios for the period of 2008-2012. The base scenario for CO<sub>2</sub> assumes reduced fuel use and changed fuel structure in the energy sector, and as for CH<sub>4</sub>, an increased share of renewables and an improvement in waste management in the energy and waste sectors. The only alternative to this is the second scenario assuming, additionally to the base scenario, the increased share of renewables in the energy sector for CO<sub>2</sub>, and a 'little more of everything' for CH<sub>4</sub>. Its conclusion is that the "overall emission exceeds the target level in the base case scenario for the period of 2008-2012". However "the scenario with measure results in a value with is far lower that the target level." (p. 80) This estimation excludes the agricultural sector as a whole, claiming that it depends on the quota agreement with the EU that was not concluded at the time of writing.

Overall, the scenario building exercise of the document can only partially fulfill its task. Its conclusion, i.e. the need for measures sends important political message to the UN and should be echoed in the national public discussion as well. However, the sectorial studies are not aggregated fully to provide a similarly detailed picture with more scenarios: an unjustifiable amount of information is lost during the aggregation.

This section of the document seems to reflect the fragmented research on different sectors without a common framework. Well-founded scenario building would require the concerted action of researchers of different sectors with a methodology that can be applied in subsequent estimations in the future. Optimally, the scenarios should be able to guide decision-makers about the emission reduction trade-offs (what measures or package of measures lead to what level of reductions over what time period?) that is so fundamental (naturally, other considerations should be recognized as well) for political decisions.

**10. How accurate or misleading is the country's current report?**

***Does it adequately explain emissions and all policies and measures that affect GHG emissions (not controlled by Montreal Protocol)? Does the plan include existing policies that increased emissions such as subsidies for fossil fuel use?***

NOTE: there is no official, consistent, approved, Hungarian climate change plan in place. In the following answers we take the list of actions and PAMs of the NC<sub>3</sub> as "plan".

Hungary's NC<sub>3</sub> is accurate in the sense that it contains all the relevant issues. On the other hand it deals with the energy related issues in a much broader context, and with bigger emphasis than the effectiveness of measures would deserve. Since the submission of NC<sub>3</sub>, a lot of changes took place that resulted in the decreasing volume of subsidies

available for clean energy investments. The other change is the decreasing interest of the national energy efficiency agency for the climate change related issues.

The NC<sub>3</sub> contains only the emission reducing policies and measures. It does not deal with harmful energy subsidies, postponed fossil fuel burning powerplant closure, or subsidised electricity production by these powerplants. One extreme example for these harmful policies is the case of Vértes Power Plant (2002).

Its SO<sub>2</sub> emission exceeds the emission limit and the price of electricity produced is high above the market prices. For these reasons it was to be shut down in 2004. In 2002, based on an absolutely untransparent decision making process (approved

by the former and the current government as well), it received a 56 million EURs state subsidy and will get around 1,8 EUR cents for every kWh, totalling an additional 172 million EURs of subsidy during its extended lifetime (10 years).

**11. What are the GHG emission trends?  
In which sector do GHG emissions grow the most?**

Factors to be taken into account for GHG emission trends: baseyears for Hungary 1985-87, changed methodology in 1998!

CO<sub>2</sub> emission slowly decreasing with some fluctuation. Reason: energy efficiency investments into the electricity generation sector; rapid increase of residential natural gas use, replacing coal and wood.

CH<sub>4</sub> emission increased till 1990 and remained stable ever since. Reason: increasing waste

production, waste management methods, stable agricultural production.

NO<sub>2</sub> emission has grown threefold due to the transport sector.

Sinks: CO<sub>2</sub> sequestration decreased in 2000 compared to 1990.

Sectoral GHG emission range decreasing in absolute terms in 2000: energy sector, agriculture, industrial production, solvents, other.

**12. Does your country have or is working on a national GHG registry?**

No, not at the moment. We know of one think tank that is in negotiation with the KvVM.

**13. If there is an inventory system in place in your country, how adequate the system is? Are there any holes in the system that can be used when the GHG emissions rise above the targeted levels?**

We are not aware of enough data and depth of knowledge to estimate it.

**14. Is the vulnerability assessment in the Third National Communication appropriate? Are climate change impacts assessed realistically? What are the adaptation measures that are proposed or taken?**

The Third National communication contains a section on the vulnerability of the country. It indicates significant national scientific research on the phenomena of drought, including its frequency and severity for the last two decades. Evidence suggests that drought is a growing problem in the Carpathian Basin. While research activity seems to level out during the 1990s, international co-operation seems to have intensified since the mid-1990s (including the joining to the UN Desertification Convention in 1999). Policy making on drought is very much in the initial phase: guidelines have been drawn up in a joint international effort that should serve as the basis of a nation strategy, and presumably related to future annual action plans.

Apart from acknowledging the scientific efforts described in the document, we have to note the following:

- other potential and already 'realised' impacts (e.g. floods) are mentioned only without any further indication on frequency and severity;
- policies and measures are not discussed sufficiently, which is only partly the consequence of their sporadic existence (which is rightly mentioned): several measures have been taken, especially in the recent years on adaptation to floods that are worth the discussion, considering their controversial public and scientific assessment in Hungary;
- adaptation costs and avoided damage estimates are completely missing; avoided damage estimates are difficult and suppose the existence of implemented mitigation measures, adaptation costs, however are actually borne (e.g. water management in agriculture) but not mentioned.

### III. Measures to limit GHG emissions

**15. Does the plan begin a fundamental shift in energy priorities away from fossil fuels and nuclear energy - including the phase-out of subsidies for those energy sources?**

No overall or sectorial governmental strategy exist. Nuclear energy: The phase out of Hungary's only nuclear power plant is not in the agenda. In fact it lobbies on its life extension and capacity increase. The situation with phase out of subsidies for the fossil fuel burning powerplants is the same. The four main type of harmful subsidies in Hungary: 1) mine - powerplant integration (powerplants are obliged to buy expensive, low quality domestic coal/lignite), 2) discount for penalty payments, 3) government support for environmental investments, 4) power purchase on subsidized price.

Regarding electricity production related emission, two relatively progressive phenomena have occurred: 1) the spread of CHP (due to market pressure, and gas/produced electricity price regulation that are in favour of CHP), 2) The new electricity law is generally in favour of renewables by setting a relatively high price, and the purchasing obligation.

On the other hand these positive changes are unlikely to change significantly the emission trends of the energy sector.

**16. Does the plan indicate a future shift in energy priorities towards increased energy conservation, efficiency, and renewable energy? What are the prospects for such measures?**

There is no clearly predictable shift or tendency towards appropriate level of energy conservation, energy efficiency or renewables. 34,5 million euro was the officially registered, supported (state

subsidy from central sources) investment into these areas. (Note: excluded unmeasurable private investments.) In 2003 the sources for these clean investments sharply decreased.

**17. Is there a target for the use of renewables?**

The official targets for 2010 is that 5% of total energy demand and 3,5% of electricity demand should be satisfied

**18. What measures are proposed in the transport sector and are they efficient relative to its contribution to CO<sub>2</sub> emissions and emissions growth?**

We are not aware of any transport related emission reduction initiative. In fact, the main, big investment in the transport sector are related to road construction. We can safely say, that the

transport system development measures do not foster significantly the spreading of more environmentally friendly means.

**19. Can additional cost-effective measures not contained in the plan be taken to limit CO<sub>2</sub> emissions? What studies indicate this?**

We do not know about any publicly available official study that takes any other cost-effective measure into account.

**20. How is the lobby for nuclear power operating vis-à-vis the climate action plan?**

In additional to the usual "cost effectiveness" arguments it has picked up CO<sub>2</sub> emission as an argument recently. As 40% of Hungary's electricity demand is satisfied by the only nuclear powerplant,

it seems to be so powerful, that it can ignore the climate changes issue, as far as planning and legislation is concerned.

**21. Are measures to reduce methane from agriculture and landfills directed towards increased use of biomass and biogas in the energy sector?**

See landfill gas use above. We do not know about any other development.



**22. Are there any other measures for limiting emissions of GHGs other than CO<sub>2</sub>?**

We are no aware of such development.

**23. How large a share of measures to achieve the national target stabilization is implemented through: reduction in CO<sub>2</sub> emissions? Reduction in emissions of other greenhouse gases? Efforts to reduce emissions through domestic actions? Increase sequestration from sinks? International actions (Joint Implementation, Emission Trading)? Legislation existing at the national level.**

Transport sector is not taken into account at all. (At least as far measures concerned.) Energy sector is the only, where GHG emission

reduction is an issue. It is mainly motivated by additional fund/extra profit that would be available through the flexible mechanisms.

**24. Are measures to increase and sustain forests (sinks) designed to promote the increased use of biomass residuals in energy sector? Do they also help to promote biodiversity?**

These two issues are not connected in the official thinking at all.

**25. If JI projects are started, can you please provide a brief negative and positive critique of the projects?**

So far only one JI project proposal has been approved. At least four other are just going through the procedure. We can report on only two positive thing: JI - projects are started. The business side seemed to be very opened for discussions.

The negative critique: 1) There is not any formal or informal guide used by the public administration that could give a clear bases for any decision. 2) It is not clear who signs officially the MUOs and approvals. (In the first case it was one of the state secretaries of the Ministry of Environment.) 3) It is highly doubtable - as unclear - what the decisions are based on. The Ministry does not have the capacity to study the baseline studies and environmental impact assessments. 4) The process was very un-transparent - as there is no procedure -

and all the formally released information were released by the foreign partner. The rest of the information we had access to, was released informally. 5) There was no official hearing of either local communities or NGOs on the project at a sufficient time. 6) According to our evaluation the project (partial fuel switch to biomass) should not be a JI, as A) the credits will be used for extra-profit generation B) the technology used will not be an advanced one. 7) The agreement on credit sharing does not respect Hungary's national interests, as for around 30% cover of the investment costs, the foreign party will get 100% of emission reduction credits. 8) However know about at least four project under preparation, the development of JI legislation is still very slow, and it is highly doubtable that it will come into force in time.

**26. Are there any developments for national emission trading systems to be established and if yes, what kind of system is being developed?**

See No.4.

**27. What are the measures taken to establish economic incentives for reducing GHG emissions? (E.g. CO<sub>2</sub> tax, energy tax, cap and trade systems...)**

No horizontal economic measures, such as CO<sub>2</sub> or energy tax have been implemented so far. Preferential credits and credit guarantees, together with subsidies have been used in relation to public and residential energy efficiency/saving projects. Economic measures in the agriculture are only in the planning phase, pursuant to the execution of the agri-environmental schemes of the European

Union. The document is silent about the GHG reductions potentially achieved by - the partly EU funded - infrastructural investments in the waste sector. More importantly, it neglects the perverse subsidies granted by the state that lead to foregone reductions. (see question No. 10)

**28. For the accession countries:*****what are the measures that are being adopted from the EU package of measures?***

Non of them, and they are not even under consideration.

**29. Any particularly innovative policies and measures that could be put in place also in other countries?**

The New Electricity Law is a quite advanced policy tool. In our opinion it does not distinguish between different renewables, but generally speaking it is quite supportive. The power purchasing obligation

for electricity distributors will be in place for at least 2003 - 2010 on fixed price (above 0,1 MW production).

**30. Is the mix of measures mostly voluntary or regulatory?****IV. Implementation and monitoring****31. What is the legal status of the package of measures? What has been implemented and what is pending?**

Regarding the National Climate Change Plan: see question No. 5.

**32. What proposed actions have not or may not be implemented as planned?**

See above!

**33. What is the cost of the implementation of the national plan according to the government?**

There is no publicly available estimation of costs. In the NK2 there is some 953,075 million HUF (3,900 million euro) indicated as total necessary

funds for (existing and new) climate change related actions.

**34. How does the plan provide for adequate monitoring of emissions and ongoing assessment?**

See question No. 5 and 7.

**35. What signal does the plan send to other countries?**

Based on the above answers: this question is irrelevant. Exemption: New Electricity Plan. See question No. 29.

**36. Are any efforts underway to promote coordination of planned measures on the international level?**

No.

**37. What provisions on education and public awareness, the National Communication has? What does the role of NGOs in implementing them? What is the transparency of the whole process?****38. What measures for monitoring the implementation of the Third National Communication are provided and how are they applied?**

The answer corresponds to question No. 7.

**V. General opinion and observations**

\* \* \*



**Country Report:** Poland  
**Produced by:** Robert Jeszke, MSc. En.  
**Organization:** Polish Ecological Club  
CAN CEE Poland



## I. Introduction

### 1. National circumstances

The Republic of Poland lies in Central Europe. Landscape in Poland is predominated by vast lowlands: 54% of the national territory is situated lower than 150 metres above sea level, almost 37% on the altitude of 150-300 metres. Highland and mountain areas (above 300 metres above sea level) occupy almost 8% of the national territory, including 0.1% covered by high mountains. In Poland, agricultural areas cover about 61% of total national territory, and forests occupy 28.4%.

From 1999, when a new fundamental three-tier administrative division of the country was

introduced (gminas, powiats and voivodships), the territory of Poland is divided into 16 voivodships (regions), about 350 smaller counties (powiats) and 2500 municipalities (gminas).

The total area of the country according to the administrative division numbers is 312,685 square kilometres. The population is about 38,7 million. The mean population density is 124 persons per square kilometre. In 2002, 23,8 million people lived in urban areas, that is over 61.7% of the population of Poland.

### 2. What is the national target for GHGs emissions reduction the government has agreed to?

Poland is enclosed in Annex I, and like other countries mentioned in this group, we have been obliged to take various operations to stabilise GHG's emission by the year 2000 at the level of the year 1988 which is a baseline for Poland.

The level of CO<sub>2</sub> emissions in 1988 was 478 mln ton of CO<sub>2</sub> per annum and that was approximately 25 percent higher (almost 100 million tons) than in

the year 1990.

Signing and ratifying the Kyoto Protocol, Poland has been obliged to reduce the emission of the GHG's in a period of 2008-2012, for about 6% in comparison with baseline year. It means that by the year 2012, we have to achieve the total CO<sub>2</sub> emission of 448 mln tonne.

### 3. What is the political and legal status of the target (ratification process)?

In 1994 Poland became a party to the United Nations Framework Convention on Climate Change (UNFCCC), hereinafter referred to as the Convention or Climate Convention, thus joining the group of countries, which committed themselves to protect global climate.

Continuing these activities, on 15 July 1998, Poland signed the Kyoto Protocol to the

Convention, and on 13 December 2002, after months of governmental debates and NGO lobbying, we ratified this document.

The ratification of the Kyoto Protocol by Poland is the turning-point in creating international legislation for climate protection because we are responsible for 3% of the total world-wide emission of the GHG's.

→

**4. Does your country have any additional legislation or regulation regarding emission trading?**

No. Till now there is no legislation or regulation regarding emission trading, but the government is very interested in this issue these days. We can forecast that in near future there will be some movement to introduce such a legislation. According to the Polish Minister of the Environment, Poland could earn 1 billion Euro utilising the emission trade mechanism.<sup>1</sup>

Intentions of creating some similar mechanisms to emission trading, can be found in Act from year 2001, Environmental Protection Law. This act presents creation of the air pollutants monitoring system in Poland. If the allowed emission limit will be exceeded in the region, an investor won't get permission to run another source of emissions. The company will get such a permission, only in case that it will oblige itself to reduce own emissions from other sources.

There were some successful pilot projects regarding the emission trading in Poland:

**5. Other relevant documents  
(climate change strategy, climate change action plan)**

In year 1991, so, before the Earth Summit, Polish Sejm has accepted document entitled National Environmental Policy, which indicated necessity of undertaking operation to protect the climate. Decisions that were taken there as long-range operation envisioned reduction of emission of GHG's.

Besides, this document discussed range of problems related with climate protection i.e. necessity of decreasing energy-consumption and material-consumption in economy, supporting and developing of the clean technologies in energetics. Unfortunately, these priorities were not placed in sectoral strategies of development. Both, in Energy Policy for Poland until 2010, as well as in Transportation Policy accepted in 1995, there was no attention paid to the necessity of taking some action for climate protection. Greatest note of climate protection issues was taken in the end of nineties.

Poland had signed Kyoto Protocol in year 1998, and it had been obliged to reduce the emission of greenhouse gases by about 6% in 2008-2012, with

Chorzowski and Opolski.<sup>2</sup> In 1991 the Pilot Project in Chorzow was initiated and it relied on enabling local authorities to treat jointly two the most ecologically harmful plants: Kosciuszko plant and power station-Chorzów. Initiative showed, that joint emission can be cut down from group of plant faster and cheaper. Really, it did not come to emission trading in Chorzow, because regulations did not allow it. However, project was treated as pilot project, as it came there to joint treating of two subjects, and due to lack of proper legal base, it required complicated administrative actions to transfer the emission from one subject to another. The Ministry of Environment undertook some researches for better preparation of base for emission trading system. One of the most important researches was Project called Opolski. Interdisciplinary and international board of experts had processed system of emission trading within the single voivodship. One of the effects of this work was a project of the decree that allows such a trade, but till now there is no proper legislation.

reference to baseline year (for Poland it is 1988). Despite this fact, till now Poland has introduced no legal or financial instruments, which would result in pulling down the GHG's emission. The only exception are fees for CO<sub>2</sub> and methane emissions, in place since 1993. However, the very low rates of these fees (about 0.045 USD/t for both CO<sub>2</sub> and CH<sub>4</sub>) are not sufficient incentives to encourage to undertake investment projects to reduce emissions of these gases.

In December 1998, The Act on Supporting Thermo-modernization Projects was adopted. Its aim is to create a system of incentives and co-financing for individual and institutional investors undertaking measures to reduce losses in local heating networks, to partly or completely replace conventional energy sources by renewable energies and above all to reduce energy consumption in housing (by enhanced heat insulation). It is estimated that the full use of the opportunities in this field would make it possible to reduce coal consumption by about 7-14 million tons, significantly improving the Polish balance of greenhouse gas emissions.

This Act is of particular significance given the fact that the energy consumption in the municipal and household sector is higher by a factor of 2 or 3 than in West European countries with similar climate.<sup>3</sup>

In September 2000, the government has accepted document "Strategy for the renewable energetics development". This is the first official document, in which the important meaning of renewable energetics was noticed, and in which the government declared the evolution of renewable energy sources in Poland. The main strategic purpose of this paper is boost of share of energy from renewable sources in fuel and energetic balance of country for 7.5% in 2010 year and for 14% in 2020 year. Despite range of reservation about largeness of this boost, as well as lack of detailed indication regarding realisation of this purpose, this is the first official document, concerning the renewable energetic. This target has only political meaning, that is forcing further operations, in boosting the use of renewable energy in Poland. There is such operation e.g. decree of the Minister of Economy from 2001 year that obliges energy enterprises to buy energy that comes from renewable sources. According to this document the share of amount of electric power fabricated from unconventional and renewable sources in total annual sale of a single energy company had to be not less than 2.4% per year, in year 2001. This share has to grow gradually in next years, so the total amount rises to 7.5% in year 2010.

Other relevant document concerning such an important branch of economy, as energetic is the Assumptions for Energy Policy for Poland until 2020. Contrary to Energy Policy for Poland until 2010 from 1995 year, this document pays more attention to importance of environmental protection and climate protection. It includes a declaration of keeping obligation made by Poland from undersigned Kyoto Protocol. Moreover, according to the Assumptions for Energy Policy for Poland until 2020 from the year 1999 process of diversification of energies source supply within carriers has already started. According to this document share of natural gas definitely has to grow in the structure of energy use. Certain boost is also designed in balance of renewable energy sources.

In the latest years transportation is the particularly important sector of polish economy. Its share in emission of greenhouse gases has grown rapidly in

the nineties. Unfortunately, The Transportation Policy accepted by Government in 1995, did not take care of climate interests, in opposite being more interested in cars growing demand. Only process the Assumptions for Transportation Policy for Poland in 2000-2015 for the realisation of the national sustainable development, underlines weight of ecological condition and sees necessity of modernisation of road scheme of the country. General target of transport policy for the period of 2000-2015 is to achieve sustainable transport system in respect to its technical, spatial, economic, social and environmental aspects in conditions of intensively growing free market economy and improvement of life quality. The accomplishment of this goal is possible by:

- gradual changes of present transport operational system;
- adaptation of new technical, organisational and legal solutions taking into consideration internal and external conditions;
- implementation of international agreements on transport and fulfilment of international requirements concerning market of transport services.

This is the first attempt of directing active policy, different from previous one, which tries to keep up with dynamically growing demand. However, in spite of these positive elements new policy still intends to strengthen car position at the cost of railway and collective transport.

Unfortunately, in this paper there is no information about largeness of emissions at present moment, as well as on forecasts year 2015. And it is forecasted that there will be further growth of the emission from this sector, due to growth of the individual transportation.

The forestry policy has been formulated in both the State Forestry Policy and the National Programme of Increasing Forest Cover, which assumes enhancement of forest cover in Poland up to 30% by 2020 and up to 33% by 2050. This means that 700 thousand hectares have to be afforested by 2020 and further 1.5 million hectares within next 30 years. In the period between 1995-2000, a total of 110 thousand hectares was afforested. The increase of the national forest cover arising from the implementation of the State Forestry Policy has resulted in more intense absorption of atmospheric carbon by the biomass of the forest ecosystems.

At present, The Second National Environmental Policy adopted in 2001 by the Polish Parliament is in force. It is setting out new priorities, also with respect to climate protection issues. This document contains several direct references to the issues of global climate change and the need to take action to reduce greenhouse gas emissions. Among other things, it envisages:

- the implementation of the requirements of the Kyoto Protocol, the halving of energy intensity of the national product and the wide introduction of the best available techniques in the scope of energy efficiency and renewable energy sources (these goals are medium-term priorities to be implemented by 2010);
- the development of the national strategy on greenhouse gas reduction and enhanced energy efficiency (as an element of the implementation program for the Second National Environmental Policy - NEP);
- the larger number of pollutants covered by actions aimed at reducing their emissions, to include, among others, such greenhouse gases as methane, HCFs, PFCs and SF<sub>6</sub>.

In December 2002 year, the Cabinet of Ministers issued new document: The National Environmental Policy on years 2003-2006, taking into consideration years 2007-2010. The whole chapter placed in this document regards the issues of climate change. It is underlined, that directions of operations undertaken must concentrate on determination of climate protection policy to the end of the first obligation period (until year 2012), and its integrating with EU and OECD policy, as well as on preparation of Poland for accustoming instruments which will enable to fulfil the Kyoto Protocol. It is mentioned among detailed short-term targets for year 2006:<sup>4</sup>

- elaboration and acceptance of the national climate protection policy with time horizon for 2020 and its integrating with economic sectors policies that have biggest influence on emission and absorption of the greenhouse gases, along with forecast of the GHG's emission change;
- formation of the proper organisational, institutional, and financial conditions for fulfilment of the polish obligation in range of reporting, monitoring and verification of achieved emission levels;
- formation of the proper conditions for participation of polish enterprises in emissions trading and accustoming of this mechanism;

- improving the information system and education of the society in range of climate protection.

To mid-term targets ( 2007-2012) belong:

- fulfilment of obligation accepted by Poland to reduce the GHG's emissions to about 6% relatively to baseline year;
- integrating of the polish climate protection policy with the EU policy for taking of common obligation in second period (after year 2012);
- assurance of realisation of climate protection policy at the level of economic sectors and enterprises through creation of proper system of mechanism and encouragement.

To achieve these targets the document is mentioning some detailed tasks which must be executed during years 2003-2006. These are i.e.:

- preparation and accustoming of the national strategy of emission reduction and increase of absorption of the GHG's and its periodic updating (year 2003);
- including the climate protection policy in already existing sectoral policies of transport, energetics, industry, agriculture and forestry (year 2006);
- determination of emission limits for sectors, areas and enterprises (year 2005);
- creation of mechanism of voluntary agreement with enterprises on achievement of accepted level of emission reduction (year 2005);
- creation of legal base and operating system (monitoring, verification and especially certification of cut down units of emission) enabling polish participation in emission trading and Joint Implementation systems, as well as harmonising it with the EU system (year 2005);
- creation of the national inventory system and estimations of changes of the greenhouse gases emission and its absorption by forests and soils at the level of enterprises, voivodships and the whole country (year 2003);
- creation of institutional base for preparation of periodic government reports on fulfilling of accepted obligations (year 2003);
- development of annual inventory reports and preparation of forecast of emission in years 2008-2012 and on year 2005 (systematically).

### **6. For accession countries:**

#### ***Is your specific national legislation in harmony with EU legislation?***

Adjusting Polish law to EU law is an obligation related with the membership. It means, that approach countries must adapt desired EU regulations, principles and procedures to bring the legal acts introduced in *acquis communautaire* into effect. In year 1999 negotiations with Poland were opened and they included many union domains, and of course " environment area".

The only direct legal act concerning the climate protection is the decree that orders to use proper methods of inventories and monitoring of the greenhouse gasses emission.<sup>5</sup> It is not forecasted

there will be a great difficulty in adaptation of this paper. European Community seriously treats matter of climate protection, that finds expression in V, as well as in VI Environment Action Program 'Environment 2010: Our future, Our choice'. However, recommendations included there do not have a binding character, it depends on us, how the climate protection will be created in Poland.

It is important to look skilfully for awaited financial funds during the integration process for effective conduct of the climate policy in Poland.

#### ***7. What are the institutions that are established for climate change related activities in the country? Is there a centralized institution or not?***

The climate institutional scheme is not very clear. At the beginning of 2002, the most important institutions in Poland regarding the issues of climate protection and Polish participation in the Framework Convention on Climate Change were:

1. Minister of Environment (responsible for formation and realisation of the national climate policy, preparing the inventories of the GHG's emissions and reports);

2. The Polish UNFCCC Executive Bureau (provides information services concerning the issues of climate change, Climate Convention and Kyoto Protocol. The Bureau was appointed by Minister of Environment and it has been located in the Department of International Co-operation at the National Fund for Environmental Protection and Water Management. It is composed of the Joint Implementation Secretary, the Climate Convention Secretary and the Greenhouse Gases Section. The responsibility scope of the Bureau includes, inter alia:

- to undertake and co-ordinate activities related to the Climate Convention and Kyoto Protocol and their implementation;
- to prepare forecasts of the GHG's emissions and strategies of their limitation;
- to prepare the inventories of the GHG's emissions and reports);

3. National Center of Emission Inventories (it was set up in the year 2000, and it is located near the Institute of Environmental Protection. The Center is mainly responsible for the national and international statistics: preparing inventories of the air pollutants emissions and reports, databases formation, running the national GHG's registry for the international emission trading system. It is also responsible for the national and international co-operation).

Unfortunately, the main climate protection institution - the Polish UNFCCC Executive Bureau, has been closed. There is no information about its activities and future plans to rebuild this structure.

## **II. Inventory and projections**

#### ***8. Which are the national emissions for the base year and data on the most recent year available? Are the data accurate? Does your country have an inventory system or the data are based on estimation??***

Poland as a part of Convention is obliged to reports operations undertaken in field of protection of global climate. Inventories are prepared according to the IPCC methodology, with changes proposed in 1991. However, it must be said that Poland has

no inventory system of air pollutants and greenhouse gases emission. The balances of emission are prepared only at the national level, not at regional (voivodships) and data are estimating on the basis of number of information.

Data concerning inventory of greenhouse gases emissions and removals are published in governmental reports to the Conference of the Parties to the United Nations Framework Convention on Climate Change (National Communications), after being approved by the Ministry of Environment.

Then they are disseminated by Ministry of Environment and Institute of Environmental Protection. Poland has already prepared 3 National Communications (I report-1994, II report-1998, III report-2001). These data are transferred to the Secretariat of Climate Convention in Bonn, individual departments and to the Central Statistical Office, which publishes them in the environmental protection statistical year-books.

For example, the latest report from 2001 was elaborated in the Polish UNFCCC Executive Bureau, National Fund for Environmental Protection and Water Management, in co-operation with Ministry of Environment, and:

- Ministry of Economy,
- Governmental Centre for Strategic Studies,
- Ministry of Transportation and Marine Management,
- Office for Housing and Urban Development,
- Ministry of Agriculture and Rural Development,

- Ministry of National Education,
- Ministry of Finance,
- Central Statistical Office,
- University of Mining and Metallurgy,
- Institute of Meteorology and Water Management,
- Institute of Environmental Protection.

The results of the inventories included in statistical year-books are presented to the public with about two years delay. With the exception of the first inventory of the greenhouse gases emission for the year 1988, there was no further information published separately.

The results of the first inventory were published in both languages, polish and english, and the edition was about 500 in each language. Next inventories were published only in several copies, for internal use within the Ministry of Environment.

The most recent data about the emission of the GHG's in Poland, concerns the year 2000 and are based on estimation. This data can be found in the Environmental Protection Statistical Yearbook for the year 2002. In this yearbook, for the first time the data which presented size of the greenhouse gas emissions expressed in carbon dioxide equivalent have been introduced.

### *9. What emissions projections does your country have for different scenarios for 2005, 2010?*

Beside inventories of greenhouse gasses and strategy of limiting their emission to unusually important elements of climate protection belongs preparation of the GHG's emission changes forecast. Till now, only expert scenarios of trends of greenhouse gases emissions emerged at national and sectoral level (in 1996 year and update corrected in 1999 year). These particular updated scenarios were developed by co-ordinated groups of experts working independently and by means of various modelling instruments.

In the Second National Report, the macroeconomic reference and reduction scenarios of greenhouse gas emission developed between 1994-1996 within the framework of the National Study on Climate Changes were presented. There were three macroeconomic scenarios of the reduction of greenhouse gas emission based on the Macroeconomic Reference Scenarios, which are hypothetical scenarios of the country development in a macro scale. Those scenarios represent some reference for the macroeconomic costs and the

reduction of greenhouse gas emission for reduction development scenarios defining long-term strategies of greenhouse gas emission reduction:<sup>6</sup>

- the base-line scenario - based on the political assumptions declared by the state authority in the period when the scenarios were developed (1993-1995);
- the chance scenario - based on the assumption that structural changes may be achieved faster and deeper with respect to the economy and social life than in case of the base-line scenario;
- the stagnation scenario - based on the assumption that structural changes in the economy would be not accepted by the society which would result in some costs involved; the scenario characterises with slower rate of changes than those assumed in the base-line scenario.

In 1999, the macroeconomic scenarios of emission reduction and sinks enhancement of greenhouse gases by 2020 were up-dated.

New macroeconomic reference scenarios include: the verified base-line scenario and the passive scenario (of passive economic development).

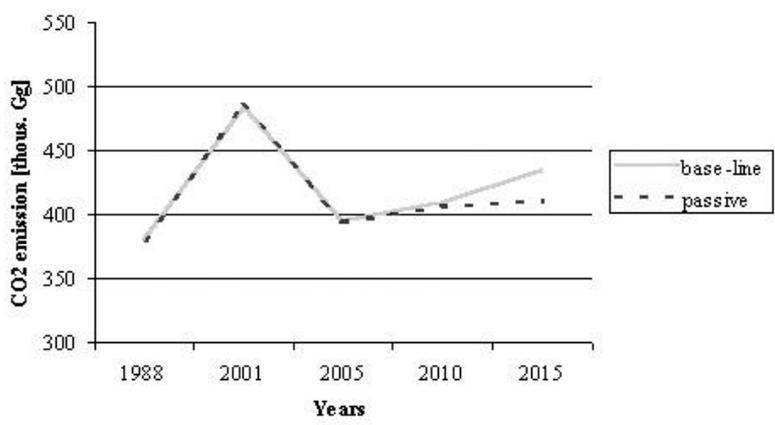
In the Figure 1, there have been presented potential changes of the future CO<sub>2</sub> emission. Comparing polish commitments with the numbers of Convention (478 mln ton CO<sub>2</sub>) and Kyoto Protocol (448 mln ton CO<sub>2</sub>), it is rather seen that due to these scenarios Poland should not have any serious

problems with achieving these targets.

As it appears from the analysis of the current economical and social situation of the country between 1999-2000, the condition of the economy deteriorated and the indexes achieved are lower than those assumed in the passive scenario.

It might mean that the greenhouse gas emission will be lower than expected.

**Fig 1. The auxiliary chart of the potential changes of CO<sub>2</sub> emission in Poland according to the two scenarios: the base-line scenario and the passive scenario in years 2005, 2010**  
 [Source: Third National Communication... Gaj et al 1999] \*



\* - this chart is only showing the approximate numbers.

**10. How accurate or misleading is the country's current report? Does it adequately explain emissions and all policies and measures that affect GHG emissions (not controlled by Montreal Protocol)? Does the plan include existing policies that increased emissions such as subsidies for fossil fuel use?**

The III Polish National Communication was sent to the Convention Secretary in November 2001. Previous reports were in years 1994 and 1998. Comparing with earliest reports it can be noticed that data are more correct. The latest report includes data about the emission inventory with only 2 years delay (data from 1999). Previous ones had 4 years delay and were incomplete. 3NC is detailed and exhaustive, it includes all key sectors and has been prepared according to international guidelines.

situation concerning operations undertaken in Poland.

The main disadvantage of this report is its availability. The total edition in polish version is only 400 copies, and according to the survey made by the Institute of Sustainable Development in Warsaw, it cannot be found in libraries, even in the biggest National Library. Besides, if during the preparation of the previous NC, there were limited social consultations with different organisations, there is lack of information about such operation and its effect during the III NC.<sup>7</sup>

Despite the lack of some data concerning so called industrial greenhouse gasses, it fully presents the

**11. What are the GHG emission trends? In which sector do GHG emissions grow the most?**

Poland was in the base year 1988, the sixth largest emitter of carbon dioxide (CO<sub>2</sub>) - which causes global warming - after the USA, the EU, Russia,

Japan, and Canada. At present we are responsible for 1,4 % of the world's total GHG's emission.

Emission of carbon dioxide in amount of 315 million tonne in 2000 locates Poland in the lead of 25 EU and candidates states. First of all, high emission of greenhouse gas is tied with structure of energy production: over 65% of demand for primary energy is covered by incinerating hard and brown coal. Except professional and industrial energetics, also important sources of emissions of the greenhouse gases are: transport sector, municipal sector and industrial processes.

It is carbon dioxide, which contributes mostly to greenhouse gas emission, accounting for 84% of the total greenhouse gas emission, on average.

**Table 1. Changes in emission of carbon dioxide, methane and nitrous oxide (CH<sub>4</sub> and N<sub>2</sub>O expressed as CO<sub>2</sub> equivalent) in 1988-2000 [Gg]**

	<u>1988</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>
CO <sub>2</sub>	477 584	381 482	367 689	372 311	363 980	372 293	348 926	373 202	362 300	338 095	329 739	314 812
CH <sub>4</sub>	65 961	58 821	54 369	51 072	51 072	51 807	51 597	47 292	47 838	49 035	47 250	45 843
N <sub>2</sub> O	21 700	19 530	16 120	15 500	15 500	15 500	16 740	16 740	16 740	16 120	23 250	23 870

*Source: Data from the Environmental Protection Statistical Yearbook 2002, Central Statistical Office, Warsaw, 2002.*

Emission of carbon dioxide has fallen down very distinctly between eightieth and ninetieth. Initially, decrease was associated with economic recession. However, the growth of the GDP that takes note from 1992, accompanies further decrease or stabilisation of CO<sub>2</sub> emission, both on GDP unit as

Methane accounts for over 12% of aggregate emission of greenhouse gases and it takes an important place in balance of emission of GHG's emission. Methane, in 1999 has surpassed 2,2 million ton. The main sources of this gas in 1999 were: fugitive emission from fuels (0,8 million tonne), emission from waste landfills (0,9 million tonne) and emission from so called, intestine fermentation of the raising animals (0,5 million tonne). The nitrous oxide was responsible for 4% of the emission upto 6%. That was accompanied by apparent rise in nitrous oxide emission, a level of which exceeded the base year emission by 7%.

well as on per capita. It is tied with processes of restructuring of economies, energy efficiency growth and sharpening of the ecological policy, mainly with reference to dust emission and sulphur and nitrogen oxides.

**Table 2. Emission of carbon dioxide, methane and nitrous oxide in Transportation sector [Gg]**

	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>
CO <sub>2</sub>	27,641	28,577	27,888	29,691	32,280	35,800	36,786	31,441	32,003	37,173
CH <sub>4</sub>	8,38	8,77	8,35	8,92	9,35	10,01	9,37	7,03	6,75	5,97
N <sub>2</sub> O	1,46	1,51	1,46	1,43	1,59	1,84	2,04	1,70	1,79	2,42

Recently, transportation has been particularly important economy sector. Its input in the emission of the greenhouse gases in Poland has significantly increased in nineties. The rapid growth of motorization and the role of road transport resulted in an increase of petrol consumption. According to all scenarios being examined, it is forecasted that there will be further growth of the emission from

this sector, due to growth of the individual transportation, especially, having the integration with the European Union in prospect. The total emission from the transport sector is going to grow quite fast at the beginning and then at a slower rate between the year 2000-2020.

## *12. Does your country have or is working on a national GHG registry?*

No, however there is National Center of Emission Inventories to which among others tasks belongs to conduct of national GHG's emission registry for international emission trading market within the range of UNFCCC and Kyoto Protocol.

According to information from the National Center

of Emission Inventories, the system of GHG's registry for emission trading requirements has not yet been processed in Poland. It happens mainly due to lack of appropriate regulations regarding conduction of such a registry.

It belongs to assume that, when such system will be established, role of the National Center of Emission Inventories will be rather content-related. Presently, European Union financed by European

Commissions, works on computer system for emission trading, and probably, this system will be accessible for other countries on attractive conditions (low financial cost).

***13. If there is an inventory system in place in your country, how adequate the system is? Are there any holes in the system that can be used when the GHG emissions rise above the targeted levels?***

However, Poland conducts regular GHG's emission inventory without any reservation about polish data quality from UNFCCC Secretary, it is necessary to explain, that there is neither inventory system of air pollutants nor greenhouse gases in Poland. It is due to lack of legal base, what results in problems with e.i.: winning individual data about emissions and assurance of financial support in long lasting perspective. National GHG's emissions inventory along with limited methodical work are conducted on base of annual agreement with Ministry of Environment.

The problem with the inventories is that they are prepared on the basis of parts data from various different institutions, which sometimes changes each year. The consequences of this is that there is no single coherent, and durable scientific team, which improves and develops the inventory methodology. Other problem is the two-years delay in preparation and presentation of the inventories results that is connected with weakness of the polish environmental protection statistical system.

The National Center of Emission Inventories, but earlier the Institute of Environmental Protection, from many years has been participating in works on creation the national inventory system of air pollutants and GHG's emission. Until now, two works have been executed in co-operation with the Agency of Energy Market (ARE S.A.):

- Project of standardising the range of information on requirements of air protection, conducted for departmental and public statistics purposes, Warsaw 1999;
- Elaboration and analysis of information winning variants for national air emissions inventories, Warsaw 2001.

These both works presents analysis of current information requirement and proposals of operational structures for the inventory system. Presently, after ratification of the Kioto Protocol by

Poland, it is required to prepare the assumption for building the structure of the national GHG's emission inventory system.

The only system in Poland which collects information concerning emission of air pollutants, including CO<sub>2</sub> and methane, is so called fee system (mentioned before). The information about largeness of fees for use of environment are sent to marshals offices from thousands of economic subjects (in majority on paper forms). New examples of forms regarding the collection of data about range of use of environment have been introduced in middle of 2002. Due to that the fee system has been improved and standardised. New, wider range of information should enable verifications of collected information. However, it is necessary to have in mind, that in this system greenhouse gases are rather treated with marginal manner.

Other attempt of introduction of system regarding the collection of the information about the air pollutants and GHG's emission, was undertaken by the Institute of Environmental Protection. It is the Air quality assessment that has been already carried at the regional level. The national air quality assessment will be further move in this operation, and it will make possible to recognise the biggest sources of emissions. On the basis of this information the governors will have to introduce programs of air protection (the GHG's are added to these programs). Requirement of introduction of such a program results from EU Council Directive 96/62/EC from 27 September 1996 on ambient air quality assessment and management.

However, it is necessary to point, that both the fees system, as well as the air quality assessment are not inventories systems. Besides, there is also no verification system of data transferred to the Ministry of Environment.

Lack of the GHG's emission inventory system in Poland, presents a great subsequent threat for obligations undertaken by our country from signing and ratifying the Climate Convention, as well as the Kyoto Protocol. Starting from this year, all countries mentioned in Annex I, must carry reviews (e.g. in-depth review), and according to the fact that Poland has no inventory system, there is a threat that the Polish data can be questioned. In this case the numbers of Polish GHG's emissions of gases would be estimated according to very rigorous

IPCC methods, and then it could result in considerable inflating of present data. The paradox of such a situation could be the statement, that Poland not only doesn't decrease its emission below baseline year but even surpasses it. Continuing, it is possible to presume that our country instead of taking benefits from flexible mechanisms e.g. emission trading, and sale of achieved reduction units, would have to buy them itself on international emission trading market.

***14. Is the vulnerability assessment in the Third National Communication appropriate? Are climate change impacts assessed realistically? What are the adaptation measures that are proposed or taken?***

The III National Communication makes a short vulnerability assessment and shows potential consequences of climate change with reference to three sectors: agriculture, coastal zone and water resources. It seems that identification of the problem areas is a proper one, however there is not much about scientific researches showing the in-depth analysis of these problems.

The report proposes following adaptation measures:

**1. Agriculture** - the adaptation of Polish agriculture to predicted climate change will manifest as a multi-year, sluggish process which could provide for the national food self-dependence.

However, realisation of this challenge will require production efficiency to be improved, losses to be reduced, and considerable organisational changes to be implemented in agriculture, as well as a growth in capital outlays supported by external financing of agriculture, especially in relation to establishment of water management infrastructure (reservoirs, and water intake sources).

**2. Coastal zone** - It is the Ministry of Transport and Marine Management and its subordinate institutions which are responsible for researches on the vulnerability assessment of the seashore and on the adaptation of the Polish coastal-zone to potential consequences of climate change. It includes i.e.: preparation of the Strategy for the protection of the Polish sea-shore against the change in sea level, which among others covers:

- Elaboration of long-term seashore protection and beach preservation programmes;

- Preparation of seashore protection strategy;
- Elaboration of guidelines for the adoption of the magnitude of hydrological and meteorological phenomena for the design of the seashore protective projects;
- Participation to Integrated Management of Riparian Zones in the group of the Baltic States.

**3. Water management** - Potential efforts, which could be undertaken with the aim to counteract the unfavourable impact from climate change on water management, are following:

- New legal and economic efforts to be done by both the public and various economy sectors with the aim to protect water resources;
- Temporary restriction of water use by industries and for irrigation purposes during drought periods;
- Effective performance of existing water management infrastructure;
- Development of water management systems, e.g. construction of new water reservoirs, water transfer between catchment areas, etc.

Adaptation actions are not undertaken in wider scale in Poland, however it is suggested in the report that in some cases there should be prepared adequate programs. Moreover, there is a need to develop further methods and techniques allowing to describe the causal nexus between the multi-scale atmospheric processes and the local climate, especially in coastal zone case.

### III. Measures to limit GHG emissions

**15. Does the plan begin a fundamental shift in energy priorities away from fossil fuels and nuclear energy - including the phase-out of subsidies for those energy sources?**

Thanks to reduction of the GHG's from the beginning of the nineties, the Government and Polish policy are not interested in making a fundamental shift in energy priorities away from fossil fuels (Poland has no nuclear energy). According to The Assumptions for Poland's National Energy Policy, the most important long-term prediction of the demand for energy and an action program for the implementation of the national energy policy, the share of natural gas as well as renewable energy sources should grow in

the energy consumption structure. There is also planned increase of gas supplies from Denmark and Norway in order to balance the directions of supply. However, all these facts do not change current situation and the long-term prediction for the development of the electric power generation sector assumes that the consumption of hard coal and lignite will be maintained or even grow, over the next 20 years.<sup>8</sup> There is also no plan to phase the subsidies for the fossil fuels out.

**16. Does the plan indicate a future shift in energy priorities towards increased energy conservation, efficiency, and renewable energy? What are the prospects for such measures?**

The real progress to increase of the energy conservation, energy efficiency and renewable energy is rather not sufficient. It is true that Poland has introduced in year 2001 the Strategy of the

renewable energetic development, but till now there is not existing any executive program to this strategy. Moreover, the strategy targets are being realised in limited extent.

**17. Is there a target for the use of renewables?**

As it was mentioned before the work on renewables started from year 1999 when Polish Sejm accepted resolution regarding development of renewable source of energy in Poland, and in September 2000 year government accepted document 'Strategy of the renewable energetic development'. The main strategic purpose of this paper is boost of share of energy from renewable sources in fuel and energetic balance of country for 7.5% in 2010 year and for 14% in 2020 year.

Despite range of reservation about largeness of this boost, as well as lack of detailed indication regarding realisation of this purpose, this is the first official document, concerning the renewable energetic. This target has only political meaning, that is forcing further operations, in expanding the use of renewable energy in Poland.

There is such operation e.g. decree of the Minister of Economy from 2001 year that obliges energy enterprises to buy energy that comes from renewable sources. According to this document the share of amount of electric power fabricated from unconventional and renewable sources in total

annual sale of a single energy company had to be not less than 2.4% per year, in year 2001. This share has to grow gradually in next years, so the total amount rises to 7.5% in year 2010.

The latest government movements show that there is very strong lobby for biofuels in Poland. The newest Act on liquid biofuels was planned to be implemented in April 2003, but the President rejected it and referred to be corrected. According to this bill there was an obligation to add spirit and rape oil to fuels. The share of these components was planned to be 4.5% in year 2003, and would increase to 5.0% in the year 2006. Unfortunately, the bill was badly constructed, there were even legislation mistakes, and could bring much more damages than benefits.

The strong pro-biofuels group in the Polish Parliament, which prepared this bill was mostly concerned about the economical aspects of Polish farmers and fuels producers. There is no doubt that such a legislation should be implemented, but in this case even the Polish Ecological Club was against this bill.

**18. What measures are proposed in the transport sector and are they efficient relative to its contribution to CO<sub>2</sub> emissions and emissions growth?**

The transport sector in Poland is considered as a potentially main source of environmental pollution in the next years. The increase in the number of vehicles amounts to above 700 thousand per annum.

However the increasing trend seems to slow down, but it is recognised mainly because of the current economy situation in the country. It seems that Poland has no plan how to decrease emission from the transport sector.

For example, according to the predictions of the size and structure of cargo transport in year 2020 the share of the road transport will double increase, and in the same time the railway transport will decrease for about 10%. General targets of the Draft Transportation Policy for Poland in 2000-2015, take into consideration inter alia:

- promotion of passenger collective transport, and bicycle and pedestrian transport;
- establishment of mechanisms in favour of the performance of passenger and cargo transport, including promotion of transportation means using reduced pollutant emission and energy consumption;

- introduction of economical and fiscal instruments focused on sustainable development of transport (road charges, differentiated fuel prices and other fees proportionally to the level of pollutant emission and fuel consumption, etc.);
- elimination of the transportation means which do not conform with the environmental standards;
- establishment of the conditions for alternative fuels to be introduced;
- establishment of mechanisms supporting the use of 'cleaner' transport (railway, shipping);
- promotion of combined transport.

In the same time the Government heavily supports the international motor industry in locating its new factories in Poland. Also spatial policy support motorization - i.e. there are a lot of new big shopping centres located in suburbia areas, and clients of this centres are dependent on the private cars. However, in spite of some positive elements new policy still intends to strengthen car position at the cost of railway and collective transport. Unfortunately, in this paper there is no information about largeness of emissions at present moment, as well as on forecasts year 2015.

**19. Can additional cost-effective measures not contained in the plan be taken to limit CO<sub>2</sub> emissions? What studies indicate this?**

In general, there are no additional cost-effective measures to limit the CO<sub>2</sub> emission which are not

contained in the report. If there are some, they are applied in a scale of single projects.

**20. How is the lobby for nuclear power operating vis-à-vis the climate action plan?**

Poland has got no nuclear power plants and there are no plans to start working in this area till year 2020.

In nineties there were some plans to work on nuclear energy plants, but strong resistance of the society stopped this.

**21. Are measures to reduce methane from agriculture and landfills directed towards increased use of biomass and biogas in the energy sector?**

No. If there are such movements, they can only be considered in a scale of single projects. The Third National Communication doesn't mention about these kind of projects in agricultural sector, and the only information regards reduction of nitrous oxide in Poland says that it can be achieved by means of the following measures:

- improved efficiency of nitrogen fertilisers use;

- improved techniques of feeding animals;
- improved systems of breeding livestock.

Concerning the reduction of methane from landfills, so far, the systems with controlled biogas burning in torches, or in power units, have been installed at only 17 waste landfills and the potential of this field is used in small extend.

**22. Are there any other measures  
for limiting emissions of GHGs other than CO<sub>2</sub>?**

In 2001, under the auspices of the Ministry of Environment a strategy of nitrous oxide emission reduction in the Polish economy was worked out. The basis of the nitrous oxide emission reduction strategy is a projection of N<sub>2</sub>O emission in a certain time horizon. This projection is subject to a specific policy of the country. In this case the obligatory document to which the strategy have been adapted

is the Assumptions of the Energy Policy for Poland until 2020. On the basis of the sectoral papers, there have been made calculations of N<sub>2</sub>O emission projections for each macroeconomic scenario<sup>9</sup> by 2000-2020. Because the share of N<sub>2</sub>O emission from fuel combustion is relatively small, the strategy estimates emission of N<sub>2</sub>O only for the chemical industry and agriculture.

**23. How large a share of measures to achieve the national target stabilization is implemented through: reduction in CO<sub>2</sub> emissions? Reduction in emissions of other greenhouse gases? Efforts to reduce emissions through domestic actions? Increase sequestration from sinks? International actions (Joint Implementation, Emission Trading)? Legislation existing at the national level.**

The stabilisation of the greenhouse gasses emission in Poland occurred mostly thanks to reduction of the CO<sub>2</sub>, which was primarily the result of economic recession during the nineteen-eighties and nineties.

The changes in greenhouse gas emissions were also accompanied by a decline in energy use in the national economy, as well as by the change in fuel consumption structure in favour of hydrocarbon fuels containing lower carbon content, growth in the efficiency of energy use, and stricter environmental policies. Right now it is difficult to say what is the governmental plan for further movements, due to lack of the official climate protection policy in Poland. However, it is believed that the further reduction of the GHG's can be achieved through the CO<sub>2</sub> reduction, and it is still offering a great potential for that purpose.

The reduction in emissions in Poland is occurring mainly by the domestic actions.

Poland is interested in implementing flexible mechanism, but in case of JI rather as host country. As it was said earlier according to the Polish Minister of the Environment, Poland could earn 1 billion Euro utilising the emission trade mechanism.

It is believed that along with the increase of the national forest cover arising from the implementation of the State Forestry Policy and the National Programme of Increasing Forest Cover, the carbon sequestration from sinks will also increase.

For the national legislation existing in Poland, look at question no. 5.

**24. Are measures to increase and sustain forests (sinks) designed to promote the increased use of biomass residuals in energy sector? Do they also help to promote biodiversity?**

No. Measures designed to increase of the national forest cover are not taking into consideration use of biomass.

There is also a controversial new Act on afforestation of the agricultural lands that came into force on 1st January 2002.<sup>10</sup> This act is strictly connected with the National Programme of Increasing Forest Cover. However, it is helping the realisation of the CO<sub>2</sub> reduction purpose, it is also a great potential threat to biodiversity in Poland, due to its little precision and freedom of legal regulations interpretation. It sets up payment of equivalents for farmers from afforestation of weak

lands, lands seasonally flooded, or degraded. According to act estimates, there are 3 millions of hectares low qualities farmlands qualifying to afforestation in Poland. Act is incompatible with others legal acts, i.e. with Decree of the Minister of Environment regarding determination of kinds of natural habitats subjecting protection<sup>11</sup>, as well as with spatial management regulations. According to Decree on determination of kinds of natural habitats subjecting protection, many unforested lands, particularly, in the seasonally flooded area or valley-wall, can present natural habitats and be protected.

Act on afforestation of the agricultural lands stimulates degradation of these habitats by their afforestation. It does not include any solutions

providing their protection, and that is incompatible with accustoming Polish law with European Union and so called Habitat Directive.

**25. If JI projects are started, can you please provide a brief negative and positive critique of the projects?**

Poland has actively joined the I Annex countries in realisation of the Joint Implementation mechanism. Polish government signed some intention letters with governments of: Finland, Holland, Canada and Norway. Till now it has started 8 projects: 5 projects of JI, and 3 AIJ. The management of AIJ/JI projects in Poland is a responsibility of the JI Secretariat established within the structure of the Climate Convention Executive Office, a part of the National Fund for Environmental Protection and Water Management, which is the biggest financial institution for environmental protection projects in Poland. The advantage of this situation is that it can help merging AIJ/JI funds, with NFEPWM funds.

The most important concerns of the AIJ/JI projects implemented in Poland are as follows:<sup>12</sup>

- Lack of concept of taking advantage of Joint Implementation mechanism in realisation of the ecological policy in Poland. JI is potentially a tool for getting considerable financial funds, which can help in realisation of climate and air protection

programmes in Poland;

- Lack of this concept causes, that projects for the realisation are chosen accidentally. The list of the potential JI projects is presented not by Polish side, and Poland accepts only projects introduced by foreign partners. It leads to the situation where chosen projects concentrate on the least-cost reduction options;

- Only minimal diversity in project type may be observed. The overwhelming proportion of projects, both those underway and those proposed for implementation, are simple coal to gas/oil conversion projects (out of a total of thirty-seven projects, thirty involve the component of energy carrier replacement);

- The issue of additionality of the achieved reductions is not being tackled. A number of proposed projects could be implemented on a commercial basis and these are likely to happen anyway;

- There is a lack of the public participation component in the projects.

**26. Are there any developments for national emission trading systems to be established and if yes, what kind of system is being developed?**

No. Right now, there is no legislation or regulation regarding emission trading, or any system being developed. Ministry of the Environment has

commissioned a group of experts to conduct an expertise on this subject, but to date, there is no information about it.

**27. What are the measures taken to establish economic incentives for reducing GHG emissions? (E.g. CO<sub>2</sub> tax, energy tax, cap and trade systems...)**

As it was mentioned before, Poland has introduced no legal or financial instruments, the basic purpose of which would be pulling down the GHG's emission. There is no Government Strategy for the reduction of greenhouse gas emissions on a national level. There is still no decision who should prepare such a program. The only exception are fees for CO<sub>2</sub> and methane emissions, in place since 1993. However, the very low rates of these fees (about 0.045 USD/t for both CO<sub>2</sub> and CH<sub>4</sub>) are not

sufficient incentives to encourage them to undertake investment projects to reduce emissions of these gases.

At this point of time, there are only plans to introduce new measures, such as: CO<sub>2</sub> emission limits for the biggest emitters in the country and proper legal instruments for cap and trade system, CO<sub>2</sub> fees in rates not higher than emissions reduction rates in international market.<sup>13</sup>

**28. For the accession countries: what are the measures that are being adopted from the EU package of measures?**

According to the experts opinion the climate policy in Poland is not being agreed with reference to EU policy. However when in the September 2000 year

government has accepted document 'Strategy of the renewable energetic development', it was compared with the similar movements in EU.

**29. Any particularly innovative policies and measures that could be put in place also in other countries?**

It is hard to point something particularly worth of recommendation. Maybe, mentioned in question no. 5 adopted In December 1998 The Act on

Supporting Thermo-modernization Projects or recently undertaken action to adopt the act on biofuels.

**30. Is the mix of measures mostly voluntary or regulatory?**

Mechanisms for the limitation of greenhouse gases that exist presently in Poland, are mostly voluntary. In a matter of climate protection policy, the progress has taken place due to transformation of the energy carries prices structure and the polish economy. The only regulatory measure, mentioned before, are fees for the emissions of greenhouse gases. Such fees are imposed on industrial and

municipal enterprises for their emissions of carbon monoxide and nitrogen oxides, and since 1993, also for the basic greenhouse gases. The amount of fee rates for atmospheric emission of gaseous substances and particulate matter, including also CO<sub>2</sub>, are updated on annual basis by way of subsequent Orders made by the Council of Ministers.

#### IV. Implementation and monitoring

**31. What is the legal status of the package of measures? What has been implemented and what is pending?**

**32. What proposed actions have not or may not be implemented as planned?**

**33. What is the cost of the implementation of the national plan according to the government?**

According to the fact that Poland has not introduced any national plan or strategy regarding the climate change, measures listed in the III National Communication do not form a package. The report lists sectoral measures that in sort of way apply to the climate protection. There are several effects due to lack of the official plans to reduce the GHG's emission. Mostly, actions and projects are implemented by different institutions,

and do not have the climate protection as a main goal. There are also no cost estimations of the national plan implementation. At the moment the main, urgent matter that is pending is preparation and implementation of the national strategy of the GHG's reduction in Poland. Presently there is a working version which is being consulted within the resorts.

**34. How does the plan provide for adequate monitoring of emissions and ongoing assessment?**

The atmospheric concentrations of carbon dioxide and other greenhouse gases (CH<sub>4</sub> and SF<sub>6</sub>) are measured in two observing stations on Mount Kasprowy Wierch (in Tatra Mountains) and in the locality of Diabla Gora (in the Borecka Forest). Poland participates in the international programmes: Global Climate Observing System (GCOS), World Climate Programme, International Geosphere-Biosphere Programme, and Inter-governmental Panel on Climate Change.

institutes subordinate to Ministry of Environment. The major unit in this regard is the Institute of Meteorology and Water Management (IMGW), which is responsible for organisational structure and operational performance of the observing system in terms of permanent monitoring of atmosphere and the hydrosphere. The IMGW also represents Poland as the member to the World Meteorological Organisation.

Studies on climate change impacts and adaptation to this change are carried out in various scientific centres, including first of all the Polish Academy of Sciences, universities, agricultural academies, technical colleges, and research and development

Studies in the field of climate change scenarios for Poland, those relate to increasing greenhouse gas concentration in the atmosphere, are carried out in the Institute of Geophysics of the Polish Academy of Sciences.

These scenarios are developed on the basis of the results of simulation performed with use of atmosphere and ocean General Circulation Models accessible by the Data Distribution Centre that was

established by the Intergovernmental Panel on Climate Change. However, all mentioned actions are not included in national plan, because such a plan is not existing in Poland.

**35. What signal does the plan send to other countries?**

It is hard to say what signals for other countries Poland sends. In year 2002, quick legislation work in Polish Parliament, resulted in signing by the President the ratification papers of the Kyoto Protocol, just before the Earth Summit in Johannesburg. It shows that Poland is interested in

implementation of the Kyoto's commitment and implementation of its mechanisms. It's also a signal that we want to co-operate with other countries. However, at the national level government doesn't do anything for example to prepare Poland for participation in emission trading.

**36. Are any efforts underway to promote coordination of planned measures on the international level?**

No information about it.

**37. What provisions on education and public awareness, the National Communication has? What does the role of NGOs in implementing them? What is the transparency of the whole process?**

Signing the Convention on Climate Change, Poland committed itself to fulfil the obligations aimed at development and implementation of educational and public awareness programmes on climate change and its effects and at public access to information on climate change and its effects (Article 6 of the Convention).

The responsibility for educational policy in the field of environmental protection takes Ministry of National Education and Ministry of Environment. In 1995, these Ministries signed Memorandum of Understanding on the co-operation in the field of ecological education, that resulted in preparation of the National Strategy for Ecological Education.

This document constitutes the basis for the implementation of tasks relating to ecological education within formal education system (from kindergartens to universities), in major agencies, central administrative institutions, and in the institutions, which act in favour of environmental protection in the voivodships and self-governments.

The institution which provides information services concerning the issues of climate change, Climate Convention and Kyoto Protocol is the Polish UNFCCC Executive Bureau. The Bureau was appointed by Minister of Environment and it has been located in the Department of International Co-operation at the National Fund for Environmental Protection and Water Management. Other

important governmental source of ecological information is the Bureau of Education and Public Relations at the Ministry of Environment.

It must be said that 3 NC itself has almost no provision on education and public awareness, because of its availability. As it was mentioned before the total edition in Polish version is only 400 copies, and, it can not be found in libraries, even in the biggest National Library.

Polish Ecological Club-Mazovian Branch, which organised in summer 2002, a workshop for representatives of environmental governmental organisations interested in strengthening co-operation in the field of climate protection, managed to provide the participants with about 30 copies of the III NC.

Due to fall of the GHG's emission in Poland, the interest in climate change issues is rather low among the Polish NGO's, as well as on governmental level. There are also not enough financial sources for the NGO's for this purpose. The advantage of the report is that it includes information about the Polish NGO's activities on the field of climate protection. However, there is lack of information about social consultations with different organisations and its effect during the III NC preparation.

**38. What measures for monitoring the implementation of the Third National Communication are provided and how are they applied?**

Since there is no official GHG's reduction strategy in Poland, there is also no measures for monitoring

its implementation. There is no information about plans of such measures in the report.

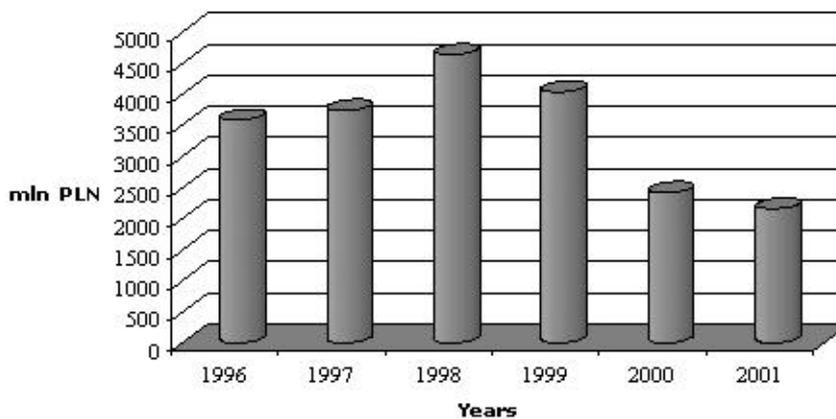
## V. General opinion and observations

From year 1990, gradual decrease of greenhouse gasses emission is observed in Poland. We ensued from main obligation of the UNFCCC that was stabilisation of the CO<sub>2</sub> emission in year 2000, at the level from year 1988. However, other expected operations introduced by convention are led in Poland with big delay. There is still lack of the national strategy of GHG's reduction, which should include range of operation i.e.: administrative, economic and financial, driving to real decrease of emission. Presently, after ratification of the Kyoto Protocol by Poland, it is required to prepare the assumption for building the structure of the national GHG's emission inventory system to meet

our obligations and not having problems with emission numbers being questioned.

It is required more of legal and financial instrument, which main purpose would be climate protection, and particularly, decrease of CO<sub>2</sub> emission. Until now, the only financial instruments are charges for emission of carbon dioxide of and methane, but from the low rates point of view they do not present proper stimulus. The decrease of investment expenditure meant for climate protection can also be observed in Poland in recent years [Fig 2].

**Fig 2. Investment expenditure for atmospheric air and climate protection between 1996 - 2001 [mln PLN]**



Source: based on data from *E. P. Statistical Yearbook 2002, CSO, Warsaw, 2002*

In prospect of integration with European Union there is a chance regarding new instruments i.e. Emission Trading, or Joint Implementation. If Poland maintain further reduction of greenhouse gasses emission, then it will be chance to sale this surplus and having the financial benefits from it. However, polish effective participation in international emission trading system within the Kyoto Protocol, will be possible only, when we adjust our national system. Entering into an agreement on emission trading market it requires qualified experts from law and economy fields. If our energy sector will get experience on internal market faster than other countries, it can achieve success on international market. Leading to further

reduction of GHG's emission can also attract investors to Poland, who won't be able to build factories in countries that would have problems with fulfilling international obligations.

Growth of interest in renewable energy sources, as well as proper regulations, also make a chance for further limitations of emissions and fulfilling the Kyoto Protocol commitments. Joining the EU by Poland will enable full participation in such programs as ALTENER, or SAVE, which are directed to renewable energy sources development. According to the Foundation for Energy Efficiency, wider use of renewable energy sources i.e.: sun, waters, wind or plants, can allow creation from 40 to 80 thousands of new work-places in Poland.

However, neglect of transport sector, which is serious threat, wakes up fears. It expands continuously and it will further after Polish accession to European Community. The latest Institute for Sustainable Development research shows, that it is essential in Poland to improve the system of exchanging the information about environmental protection, provide the society

access to information, introduce procedures of social participation, and improve communication with society in aspects of integration with European Union. It may be assumed, that growth of interest in problems of climate protection will go along with integration process as Community puts them as one of priorities of environmental protection.

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<sup>8</sup>Good Practices..., op.cit.

<sup>9</sup>The macroeconomic scenarios proposed in The Assumptions of the Energy Policy for Poland until 2020 (2000):

- the reference scenario takes place under conditions of political stability and international environment development without any upheavals or rapid changes; the GDP amounting to 4.0%;
- the survival scenario, to be implemented under conditions of slight global development hampered by political upheavals; economical policy of the country without a firm foundation for future development with an increase of the GDP of 2.3% and the scenario is of warning character;
- the progress scenario to be implemented under favourable conditions of the international environment and active domestic policy, with the GDP amounting to 5.5%.

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**Country Report: Russia**

**Produced by: Ilya Popov**

**Organization: Center for Nuclear Ecology and Energy  
Policy of the International Socio-Ecological Union**



## I. Introduction

### 1. National circumstances

The United Framework Convention on Climate Change (UNFCCC) was adopted on May 9, 1992. It entered into force almost two years later, in March 1994. This document recognized climate change as a global problem which requires joint efforts from all countries. The main goal of the UNFCCC is to stabilize concentration of greenhouse gases on a relatively safe level. Developed countries and countries with economies in transition made a commitment to stabilize their greenhouse gas emissions in 2000 on a 1990 "base" level.

In 1997, the third Conference of the Parties (COP-3) to the UNFCCC adopted the Kyoto Protocol. Its main goal was to extend commitments of the parties and make them more stringent. The Kyoto Protocol required developed countries to reduce their emissions by 6-8 percent or stabilize them (depending on a region) by 2008-2012 in comparison with 1990 baseline emissions.

Russia ratified the United Nation Framework Convention on Climate Change in 1994 and signed the Kyoto Protocol in 1999. Russia was able to fulfil its commitment to stabilize emissions on a 1990 level by 1990 but mainly because of the economic decline.

Russia has very "soft commitments" under the Protocol - it should stabilize emissions on a 1990 level. It is important to say that in Russia greenhouse gas emissions have already dropped substantially during the last decade - by 30 - 40 percent (Evans et al., 2001). It is very unlikely that emissions in Russia will return to the 1990 level in 2008-2012.

Taking into account that climate change is a global problem and that it is cheaper reducing emissions in some regions than in other, the Protocol

established several mechanisms that allow countries to reduce emissions jointly. These mechanisms are Joint Implementation (JI), a combined target for two or more countries (bubbling), the Clean Development Mechanism (CDM) and international emission trading.

Under the Convention and the Kyoto Protocol Russia has several commitments which are clearly defined in Russian official documents including the Third National Communication:

- Develop and implement climate change mitigation and adaptation policies to stabilize anthropogenic emissions at the baseline level of 1990 by the budget period 2008-2012 and regularly provide the UNFCCC Secretariat with information about these policies;
- No later than a year before the first budget period create the national monitoring system for greenhouse gas sources and sinks. Create inventories of greenhouse gases for all sectors of economy following IPCC rules and recommendations. Regularly provide the UNFCCC Secretariat with information about GHG emissions;
- Participate in international research programs on climate change.

Obviously, Russia will not have any problems to stabilize its emissions on the 1990 level. Therefore, the main emphasis should be made on creating institutions that are capable in conducting inventories, register Joint Implementation (JI) projects and implement climate change policies.

The Russian energy sector is responsible for about 70 percent of the nation's greenhouse gas emissions. Two most important gases - carbon dioxide and methane - contribute 98 and 70 percent to the energy sector's emissions.

The largest share of methane comes from leakages from the natural gas sector. Since 1990, emissions in Russia have dropped by more than 30 percent. It happened mainly because of a worsening of the economic situation and as a result a decline in fossil fuel consumption and production. For example, in 1996 industrial consumption reduced by more than 50 percent in comparison with 1990 and GDP dropped by at least 40 percent for the same period (CENEF 1997).

Because of such a decline of the Russian economy in the same period oil production and consumption dropped by 43% and coal production and consumption dropped by 31% which led to a substantial drop in GHG emissions from the oil and coal sectors (IEA/OECD 1995). The carbon intensity of the Russian economy has declined slightly due to a relative decrease in the share of coal in Russian energy supply. Russian oil production fell by 6 million barrels of oil per day, equal to two-thirds of Saudi Arabia's current output. Russia still remains the world's third largest producer of oil, after Saudi Arabia and the United States, despite a drop equal to more than the current production of Iran, which is in fourth place. But natural gas consumption and production did not decline so much. Natural gas consumption has dropped by 13% and natural gas production has dropped by 8% (CENEF 1997). Oil and coal suffered more than gas because coal became uneconomic in Russia and the oil sector was broken into many independent oil companies that had financial problems because of the worsening economic situation. The Russian government also promoted natural gas as a more environmentally friendly fuel and in its first energy strategy adopted in 1995 announced a so-called "gas pause". Since 1995 natural gas contributed over 50% to total primary energy production and 48.1% to total energy consumption in Russia. It is also important to emphasize that since 1980 the share of natural gas in the total energy consumption has risen more than 1.5 times.

Because emissions have dropped so drastically and will unlikely surpass a 1990 level in 2008-2012 many countries fear that Russia can just sell previous reductions ("hot air") without actually implementing any measures to control emissions. This is caused a lot of debates between the European Union and Russia. It is important to say

that it will not be in Russia's interest to sell off all credits at once because if countries agree on commitments beyond 2012 Russia may end up without enough emissions to sell. Also, because of the United States withdrawal a price of a carbon ton will drop substantially. It is in Russia's interest to set aside some credits now and trade them later or reinvest money from emission trading to emission reduction projects such as energy efficiency or alternative energy. Russian agencies and companies understand this concept well. For example, Ministry for Energy proposed reinvesting proceedings from emission trading to energy efficiency projects (Ministry for Fuel and Energy 1999) and has been negotiating of a revolving fund to accumulate proceedings. The Russian power company "Unified Electric Power Systems of Russia" (RAO EES) established an energy carbon fund to finance energy saving projects.

And of course, one should not forget that Russia is still the fourth largest emitter in the world. In 1990, its share in global emissions was 10 percent. Even after 30 per cent decline of emissions, Russia's share of emissions in Annex I<sup>1</sup> emissions is 17 per cent (Gritsevich and Kolesov, 2002). Therefore, efforts to mitigate climate change in Russia have great impact on our common atmosphere.

Participation in the Kyoto Protocol is still important for Russia because it can help the country to bring investments to its economy through JI projects and improve its environment. The Russian energy sector is still very energy intensive. A lot of equipment needs replacement or repair. For example, the Ministry of Energy estimates that the energy sector will need 40-70 billion euros of foreign investments till 2020 (IES 2001). Flexible mechanisms can cover some of this sum and if these money go to development of alternative sources of energy and energy efficiency Russia can develop its economy without future growth of emissions.

The Third National Communication uses three main Russian official documents to describe emission mitigation policies - the Energy Strategy of the Russian Federation till 2020; the Federal Target Program "Energy Efficient Economy"; the Federal Target Program "Energy Saving in Russia for 1998-2005".

While first two programs make energy saving a priority for Russia, at the same time their also suggest increasing the share of coal in electricity production and constructing new nuclear plants. Both programs just mention huge energy efficiency potentials Russia has in different sectors but are short in describing concrete measures to utilise

these potentials. The programs also almost do not describe environmental policies in the energy sector including climate change mitigation. The last program is too general. Only 3 percent of expenditures for implementing the program will be covered from the federal budget. Obviously, it is a very small sum (Bashmakov, 2000).

**2. What is the national target for GHGs emissions reduction the government has agreed to?**

Russia should stabilize its emissions on a 1990 level between 2008-2012.

**3. What is the political and legal status of the target (ratification process)?**

Russia has not ratified the Kyoto Protocol yet although Russian authorities have promised to do this several times already. Putin promised to ratify the Protocol twice. First time before COP-7 in Marrakech in 2001 and than last spring at an EU-Russia meeting in Moscow. Than at the World Summit on Sustainable Development in Johannesburg the Russian prime minister Mikhail Kasyanov in his speech said that "Russia has signed the Kyoto Protocol and is currently preparing for its ratification which we hope would happen in the near future".

not ratify, the treaty can not enter into force. After refusal of the United States and Australia to ratify the Protocol and ratification of the agreement by Canada in December 2002, Russia remains the only important developed country which has not ratified. Such a position gives Russia large bargaining power.

In terms of a procedure, ratification in Russia needs two steps. First, the government prepares documents for ratification and sends them to the State Duma. After Duma receives documents, it prepares a law on ratification and adopt it through three hearings. Therefore, it is important that the government takes a lead and finally initiates ratification.

The Protocol enters into force only when 55 percent of countries which emissions represent 55 percent of the total world emissions ratify the agreement. In practice it means that if Russia does

**4. Does your country have any additional legislation or regulation regarding emission trading?**

No. There is a proposal in the Russian Parliament to create a law concerning property rights for

Assigned Amount Units (AAUs) (Kosarikov, 2002).

**5. Other relevant documents (climate change strategy, climate change action plan)**

In 1996, the Russian government adopted a Federal Target Program "Prevention of Dangerous Climate Changes and Their Negative Consequences". All Russian National Communications and some of inventory work were prepared under this Program by different ministries. The program has a budget of approximately \$40-50 million dollars.

containing a description of all climate change policies. The program has six subprograms:

1. Climate Change Information System
2. Data Collection System on Sources and Sinks
3. GHG/Aerosol Observation System
4. Adaptation Measures
5. Mitigation
6. Strategic Funding.

The federal budget was supposed to provide 72 percent of funding. The rest came from non-budgetary sources. For example, in 1994-1997 the U.S. Country Studies Program provided assistance to Russia for preparing a six-volume report

It is difficult to say how many of these programs are being implemented in Russia. The level of funding is also unclear. For more information an interested reader can refer to (PNNL 1999).



**6. For accession countries:**

***Is your specific national legislation in harmony with EU legislation?***

***7. What are the institutions that are established for climate change related activities in the country? Is there a centralized institution or not?***

To coordinate all activities related to the development of climate change mitigation policies, the Russian Government in 1994 established the Interagency Commission of the Russian Federation on Climate Change Problems (Commission). In 1999 the Government signed a decree and approved a new composition of the Commission. The Commission has 32 members from different ministries, research institutes, and two representatives from Russian biggest natural monopolies - Gazprom and the Unified Electric Power Systems of Russia (RAO EES) that dominates the Russian energy sector. The Commission is led by the Russian Federal Service for Hydrometeorology and Environmental Monitoring (Hydromet).

In 1999, the four federal agencies that play the largest role in the Commission and in implementing climate change policies are the Ministry of Economy, the Ministry of Energy, Russian State Committee for Environmental Protection (Goscomecologia) and Hydromet. All four agencies sent their representatives to international climate change negotiations but the head of a Russian delegation is Hydromet. Unfortunately, in May 2000 Goscomecologia was disbanded by a presidential decree and some of its functions were transferred to the Ministry of Natural Resources. It weakened the Commission and coordination of climate change policies in Russia because Goscomecologia was actively involved in conducting inventories and had knowledgeable

experts on international climate change negotiations. Goscomecologia had branches in all regions and was responsible for collecting information about air pollution from industrial facilities. Greenhouse gas emissions could be easily incorporated into this system. The Ministry of Natural Resources does not seem to be very interested in climate change.

Interagency status of the Commission limits its role to designing climate change mitigation programs and coordinating work among the participating agencies. Because it is not a Governmental Commission (a higher-level body that are headed by an official at the Deputy Minister level), its decisions are not legally binding meaning that the Commission can not mandate ministries to implement any climate change policies (PNNL 1999). The composition and status of the Commission may be changed only by a governmental decree but so far such a degree has not been issued. The Commission reports to the Russian Government that makes final decisions about climate change policies. To be a law, all decisions should come through the Russian Parliament and after that signed by the Russian President.

The Commission still exists on paper and all official papers which Russia prepares for the UNFCCC Secretariat has its name on them. In reality, a last meeting of the Commission was several years ago.

**II. Inventory and projections**

***8. Which are the national emissions for the base year and data on the most recent year available? Are the data accurate? Does you country have an inventory system or the data are based on estimation??***

Table 1 presents Russian emission estimates. Table 2 presents Russian emission estimates by sources. Only information about CO<sub>2</sub> emissions is more or less accurate.

Providing accurate information about its climate change policies and especially about GHG emissions will be crucial for Russia's ability to participate in flexible mechanisms. While Russia

have submitted three national communications to the UNFCCC Secretariat, all information was prepared by a small group of experts from the Institute for Global Climate and Ecology (IGCE) with cooperation from different agencies. In 1995 and 1998 these experts made general assessments of emissions and include them as chapters in the national communications.

This work was performed under the Federal Target Program "Prevention of Dangerous Climate Changes and Their Consequences". The background information was prepared in the framework of the Country Study. The Federal Target Program did not get adequate funds and therefore agencies estimated emissions on a very aggregated level. No standard forms from the IPCC Guidelines were filled out except two summary and overview tables (Ministry for Fuel and Energy 1999). In addition, none of national com-

munications provides detailed assessments of emissions on a regional, sectoral, or enterprise level. The Third National Communication could be substantially improved. Unfortunately, it provides much less information about methane emissions than previous ones. It is still available only in Russian language. Only the First National Communication was reviewed by an independent team of experts from International Energy Agency in 1997.

**Table 1. Anthropogenic Greenhouse Gas Emissions (MtCO<sub>2</sub>-eqv.)**

	<u>1990</u>	<u>1999</u>	<u>% of decrease</u>
CO <sub>2</sub>	2,360	1,510	36.1
Share (%)	77.5	79.6	
CH <sub>4</sub>	550	290	47.1
Share (%)	18.0	16.4	
N <sub>2</sub> O	98	35	64.2
Share (%)	3.2	1.8	
PFC, HFC, SF <sub>6</sub>	40	42	+ 6.2
Share (%)	1.3	3.2	
<b><u>Total</u></b>	<b><u>3,050</u></b>	<b><u>1,880</u></b>	<b><u>38.5</u></b>

**Table 2. Anthropogenic Greenhouse Gas Emissions by sources in 1999 (MtCO<sub>2</sub>-eqv.)**

<u>Source</u>	<u>CO<sub>2</sub></u>	<u>CH<sub>4</sub></u>	<u>N<sub>2</sub>O</u>	<u>HFC, PFC, SF<sub>6</sub></u>
Fossil fuel	1,470	199	3.1	-
Burning	1,452	2.2	3.1	-
Losses	18	197	-	-
Industrial processes	39	0.5	0.3	42
Solvents	-	-	0.6	-
Agriculture	-	51	27	-
LULUCF	-	2.9	0.3	-
Wastes	-	38	3.4	-
<b><u>Total</u></b>	<b><u>1,510</u></b>	<b><u>290</u></b>	<b><u>35</u></b>	<b><u>42</u></b>

**9. What emissions projections does your country have for different scenarios for 2005, 2010?**

Russia has projections only for carbon dioxide emissions (Table 3 and 4). The Third National Communication uses scenarios presented in the Russian energy strategy. It is difficult to say how accurate scenarios are and therefore projections of carbon dioxide emissions are but data from the government scenarios is compatible to projections made in 1998 by the International Institute for

Applied Systems Analysis (IIASA) (IIASA 1998). IIASA projected even higher growth of emissions and for some of its economically extensive scenarios in 2012 emissions in Russia will reach 1990 level. Probably, Russia will be able to have lower or even negative growth of emissions if it implements energy efficiency measures more aggressively.

**Table 3. Description of scenarios**

<u>Parameters</u>	<u>Scenario I (Optimistic)</u>	<u>Scenario II (Pessimistic)</u>	<u>Scenario III (Probable)</u>
GDP	+5.2%/year	+3.3%/year	+4.5%/year
Energy Intensity of GDP	-3.7%/year	-2.5%/year	-2.0%/year
Energy Consumption	+1.5%/year	+0.8%/year	+2.5%/year
CO <sub>2</sub> Emissions	+1.5%/year	+0.8%/year	+2.5%/year



**Table 4. Projections of CO<sub>2</sub> emissions from the energy sector**

In 1990 emissions were 2,370 MtCO<sub>2</sub> = 100%

	<i>Scenario I</i>	<i>Scenario II</i>	<i>Scenario III</i>
2008	78.0%	73.8%	84.5%
2012	82.8%	76.2%	93.4%
2015	86.7%	78.0%	100.7%
2020	93.4%	81.2%	114.1%

**10. How accurate or misleading is the country's current report?  
Does it adequately explain emissions and all policies and measures that affect GHG emissions (not controlled by Montreal Protocol)? Does the plan include existing policies that increased emissions such as subsidies for fossil fuel use?**

While the Third National Communication provides description of policies to limit emissions in almost all sectors, these policies are not well described.

For the energy sector, the Third National Communication recognises that it will be the most important sector to reduce emissions and refers to measures proposed in the Energy Strategy and in the Federal Target Program "Energy Efficiency Economy".

These documents say that Russia has huge energy efficiency potential and through structural changes such as electrification of the agricultural sector, reforming the residential sector through introducing energy saving technologies it is possible to utilize this potential. The reality, though, is quite different.

The Energy Strategy, for example, has not yet been approved by the government. The residential sector

reform has been stalled because instead of increasing energy efficiency and really restructuring the sector the government tried to increase collection of money from population.

Currently, people pay only between 50 to 90 per cent of their bills for hot water, heat, maintenance of buildings, etc.

They do not want to pay more because they can not control whether these money are spent on improving quality of service.

Also, the government documents on energy are quite contradictory. Along with increasing energy efficiency they promote nuclear energy. These documents are very short about new technologies such as renewable energy or fuel cells.

It is also important to say that regardless how good programs are they do not get adequate funding.

**11. What are the GHG emission trends?  
In which sector do GHG emissions grow the most?**

Russia still lacks sectoral inventories and therefore it is difficult to say what are emission projections for different sectors.

As it was mentioned earlier, projections for CO<sub>2</sub> emissions show that although they will grow, their will still be lower than the 1990 level.

Concerning sectors, emissions might grow in the energy and transport sectors. While official Russian

documents claim that energy efficiency measures will be implemented and they will offset emission growth, these documents do not provide enough in-depth description of such measures.

Also, the Energy Strategy suggests increasing a coal share in the electricity production which can lead to increasing emissions

**12. Does your country have or is working on a national GHG registry?**

No.

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***13. If there is an inventory system in place in your country, how adequate the system is? Are there any holes in the system that can be used when the GHG emissions rise above the targeted levels?***

The inventory system is partially in place. For example, statistics about fuel and energy consumption exists for all industrial facilities and is being collected by the Russian State Committee on Statistics. It is relatively easy to estimate CO<sub>2</sub> emissions using such statistics.

Russia also has good data about CO<sub>2</sub> emissions from the electricity sector because RAO EES conducted an inventory of carbon dioxide emissions from all large and medium size plants.

There are also attempts to create regional inventories. The Russian office of World Wild Fund, the Center for Energy Efficiency with the support from the U.S. Environmental Protection Agency and Pacific National Northwest Laboratory have conducted inventories in seven Russian regions (PNNL 2001). These inventories are of good quality and cover all six gases.

The same team of experts also adapted the Revised 1996 IPCC Guidelines to Russian conditions by excluding information not related to Russia and adding specific for Russia data on emission factors and existing emission estimations.

RAO EES has prepared an inventory of large Russian electricity generators that formed the basis for revising the IPCC guidelines for Russia. As a result, the Russian guidelines consist of one volume, which should be easier to use for inventory specialists.

There were also attempts to estimate emissions in the natural gas sector but not very successful (Popov, 2001).

On a national level Russia still lacks good quality inventories and it will take time and money to create one. For information how it is possible to create an inventory an interested reader may refer to (Popov, 1999).

***14. Is the vulnerability assessment in the Third National Communication appropriate? Are climate change impacts assessed realistically? What are the adaptation measures that are proposed or taken?***

The vulnerability assessment is rather comprehensive and covers five areas: agriculture, forestry, water resources, permafrost, and health. At the same time, the Third National Communication makes mitigation a priority. The main emphasis is given to agriculture and forestry.

For the agricultural sector, the Third National Communication states that because regional climate change scenarios give very uncertain predictions about changing of climatic parameters.

At the same time, one might expect that because of climate change vegetation zones will be shifted. In some areas this will be beneficial for agriculture but some areas will suffer from draughts and desertification. For example, in Siberia during last 10-15 years productivity of crops decreased because of draughts. In general, doubling of CO<sub>2</sub> concentration increases productivity of crops by 34 per cent.

Overall, climate change will be positive for developing the agricultural sector but it will be necessarily to introduce the following adaptation measures:

1. Introducing grain crops of high productivity.
2. Introducing in the Southern regions crops with a shorter growing period.
3. Creating protective forest belts to prevent wind erosion.
4. Expanding irrigation systems in regions vulnerable to draughts.

In the forest sector, climate change will not have negative impacts during next 30-40 years. In Siberia expected warming will increase productivity of forests and increase of sequestration.



The adaptation measures include:

1. Prevention of forest fires.
2. Decrease the number of insects which destroy forests.

3. Prevention of fungoid diseases.

The Third National Communication does not provide any assessment of whether these adaptation measures will be affective and how much will it cost to introduce them.

**III. Measures to limit GHG emissions**

***15. Does the plan begin a fundamental shift in energy priorities away from fossil fuels and nuclear energy - including the phase-out of subsidies for those energy sources?***

On paper all documents promote energy efficiency. In reality, Russia still heavily depends on using and exporting fossil fuels. For example, Russia is one of the largest natural gas exporters in the world. Indirectly, it will influence emission reduction policies. For example, the Russian natural gas

monopoly JSC "Gazprom" suggested to transfer some power plants from natural gas to coal because it has more and more difficulties to produce enough gas for export (Popov, 2001). Russia actively promotes nuclear energy and has an ambitious program to construct new nuclear reactors.

***16. Does the plan indicate a future shift in energy priorities towards increased energy conservation, efficiency, and renewable energy? What are the prospects for such measures?***

On a paper, yes. The Third National Communication recognizes energy efficiency as the main tool to reduce emissions. It provides estimates for energy efficiency potential for all sectors.

It says that Russia should conduct reforms in the energy sector, develop renewable energy technologies, use local energy resources such as hydro, peat, substantially increase use of wind, geothermal, solar and biomass energy in the regions. At the same time, the Communication also proposes developing nuclear energy.

It refers to the Federal Target Programs "Energy Efficient Economy" and "Energy Saving in Russia for 1998-2005". These programs also recognise energy efficiency a priority for Russia.

The first program just states that each sector of the Russian economy has a large energy efficiency potential but rather short in describing concrete measures to utilize them. It also has a special section on developing nuclear energy. The Program "Energy Saving in Russia" provides more details

about concrete measures to increase energy efficiency. For example, it proposes introducing energy efficient lighting in the residential sector, increasing associated gas production in the oil sector, continuous steel casting in the steel sector etc. All these measures will lead to substantial decrease of greenhouse gas emissions.

It is difficult to say how many measures will be implemented because none of the programs clearly explains where to get financing for these measures. State support will be necessary for reforms in the residential sector, for example.

Industrial consumers already implement energy efficiency measures because they increase they competition on the international level. For example, the Magnitogorsk Steel Combine decreased expenses on energy for production a ton of raw steel by 20 per cent by introducing energy efficiency (Bashmakov, 2000).

***17. Is there a target for the use of renewables?***

No. Currently, the share of renewable energy in energy production is only 0.1 per cent. The Third National Communication predicts that it will be

increased and will comprise 1 per cent. Unfortunately, it does not describe any concrete measures how to increase this share.

**18. What measures are proposed in the transport sector and are they efficient relative to its contribution to CO<sub>2</sub> emissions and emissions growth?**

The Third National Communication refers to the Federal Program "Energy Saving in the Transport Sector for 1998-2005". The Program proposes the following measures:

1. Introducing new more energy efficient transport modes.
2. Replacing conventional fuels by alternative ones.

Such measures will allow saving 9.5 per cent of energy by 2005. It is clear that these measures are not well developed and it is difficult to say what are prospects to implement them.

Also, the Third National Communication does not provide any estimates for emissions from the transport sector.

**19. Can additional cost-effective measures not contained in the plan be taken to limit CO<sub>2</sub> emissions? What studies indicate this?**

Some measures which lead to decrease of natural gas losses and therefore decrease of emissions exist in the natural gas sector (Popov, 2001):

- Replacing energy inefficient compressors with compressors of greater energy efficiency. Most existing Russian compressors have an efficiency of

25 percent, while new compressors are 36 percent efficient. This measure allows a saving of 8-9 billion m<sup>3</sup> of natural gas annually.

- Optimizing the transportation grid control. This measure can save 750 million m<sup>3</sup> of natural gas annually.

**20. How is the lobby for nuclear power operating vis-à-vis the climate action plan?**

Russia has a very strong nuclear lobby and considers developing new nuclear plants and upgrading old ones as a priority for the energy strategy. Russia is planning to finish construction of five reactors and build five new nuclear reactors. According to the Federal Target Program, Russia will need 15 billion dollars for developing these ambitious plans. While climate change is not the

main argument for nuclear proponents it is actively used. For example, the Chairman of the Ecological Committee of the Russian Parliament recently mentioned that he would like to see nuclear energy in flexible mechanisms. It is a strange statement because nuclear energy was officially excluded from any flexible mechanisms.

**21. Are measures to reduce methane from agriculture and landfills directed towards increased use of biomass and biogas in the energy sector?**

No, such measures are proposed in the Third National Communication. There was a JI project between the Netherlands and Russia to utilize methane from a landfill near Moscow. The project

supposed to reduce methane emissions by approximately 250 metric tons of CO<sub>2</sub> equivalent. It is difficult to say how successful the project was.

**22. Are there any other measures for limiting emissions of GHGs other than CO<sub>2</sub>?**

The Third National Communication describes some measures to reduce methane emissions from coal mining by increasing the share of open mining. Increasing the share of open mining by 1 per cent decreasing methane emissions by 2 per cent. In the agricultural sector improving the system of manure collection and storing is proposed as a measure to reduce methane emissions. There was also an

attempt to estimate methane emissions from the natural gas sector and then try to reduce natural gas losses. The Global Environmental Facility (GEF) grant to estimate emissions from segments owned by Gazprom was linked to a bigger World Bank grant to estimate losses from the distribution segment. Because of bad coordination between different entities both projects fell apart.



**23. How large a share of measures to achieve the national target stabilization is implemented through: reduction in CO<sub>2</sub> emissions? Reduction in emissions of other greenhouse gases? Efforts to reduce emissions through domestic actions? Increase sequestration from sinks? International actions (Joint Implementation, Emission Trading)? Legislation existing at the national level.**

Overall, the Third National Communication deals mainly with CO<sub>2</sub> emissions because it is easier to estimate them and they are the largest in Russia in comparison with other emissions.

The largest part of emission reductions is through increasing energy efficiency domestically. It will be possible to reduce emissions by approximately 800 MtCO<sub>2</sub> during 8 years. The Third National Communication does not mention JI projects or

emission trading but of course these flexible mechanisms are being discussed by agencies.

By increasing sequestration from sinks it will be possible to reduce emissions by 100-200 MtCO<sub>2</sub> annually. Such measures include decreasing rate of forest fires, replacing overgrown forests by younger ones, and re-growing forests in some areas.

**24. Are measures to increase and sustain forests (sinks) designed to promote the increased use of biomass residuals in energy sector? Do they also help to promote biodiversity?**

The Third National Communication does not consider increased use of biomass. On a regional

level there are many such projects, mainly in the North-Western Russia.

**25. If JI projects are started, can you please provide a brief negative and positive critique of the projects?**

Russia offers a lot of cheap opportunities to reduce emissions. It promised a lot of opportunities for participating in flexible mechanisms.

Unfortunately, this promise has not realized. Russia has registered 8 projects but only 4 projects got funding and were implemented. It is a very small number. For example, Latvia has 18 projects.

Most of the projects were launched between 1994 and 1997. Unfortunately, it is difficult to say whether they implementation was successful because information is scarce. Only one project is still being implemented. Ruhrgas and Gazprom are implementing a project to optimize a gas transportation system in the Nizhny Novgorod region through introduction of a computer modelling system.

The main reason why Russia has so few projects is lack of institutions capable in registering projects. For example, the Russian-Dutch Memorandum of Understanding concerning JI projects is not signed

yet, although the Netherlands are willing to participate in JI projects much more than any other country and has implemented several projects in Russia. At their presentation at the COP-7 in Marrakech the Dutch delegation called Russia a problematic country because it lacks institutions responsible for climate change policies.

While the Russian government is so inactive in promoting flexible mechanisms, private entities still develop projects and hope to register them as JI projects. The Carbon Fund established by RAO EES identifies energy efficiency projects. Swedish companies prepared more than 10 projects in Leningrad and Arkhangelsk regions (WWF 2002).

An interested reader can find more information about JI projects in Russia in (Evans et al., 2001).

**26. Are there any developments for national emission trading systems to be established and if yes, what kind of system is being developed?**

**27. What are the measures taken to establish economic incentives for reducing GHG emissions? (E.g. CO<sub>2</sub> tax, energy tax, cap and trade systems...)**

The Third National Communication does not describe such measures.

**28. For the accession countries:  
what are the measures that are being adopted from the EU package of measures?**

**29. Any particularly innovative policies and measures that could be put in place also in other countries?**

**30. Is the mix of measures mostly voluntary or regulatory?**

All federal programs and all laws in Russia are approved by the Parliament and by the President. Therefore, measures to increase energy efficiency will be regulatory. Greenhouse gas emissions are not covered by any existing laws. With entering into force the Kyoto Protocol measures to reduce

emissions will be regulatory and Russia will need to update existing regulation and include greenhouse gas emissions. Financing of existing programs and enforcing laws is still a problem in Russia. Many good measures do not get adequate funds.

#### IV. Implementation and monitoring

**31. What is the legal status of the package of measures? What has been implemented and what is pending?**

It is difficult to say how much has already been implemented.

**32. What proposed actions have not or may not be implemented as planned?**

Experience with reforming the energy sector shows that implementation is difficult in Russia. Despite attempts to increase energy efficiency the results were not that great. Energy intensity in Russia actually grew by 15 per cent since 1990 because of less decline of energy consumption in comparison to GDP decrease and structural changes in the

Russian economy (increase of production in energy intensive industries such as steel production, oil refining and decrease of production in less energy intensive industries such as agriculture and textile industry) (Ministry of Energy, 2001). It is difficult to say how successful implementation will be.

**33. What is the cost of the implementation of the national plan according to the government?**

There are no estimates for the cost of implementation. Russia will need money to implement such a plan and will need foreign

assistance. Accurate estimating of emissions will require a good monitoring system which is not in place yet.

**34. How does the plan provide for adequate monitoring of emissions and ongoing assessment?**

It does not provide any details about adequate monitoring of emissions or assessing success in implementing emission reduction policies.

Obviously, current inventories should be substantially improved.

**35. What signal does the plan send to other countries?**

Russia is a very important country for climate change mitigation and offering opportunities for joint actions. Poor information about emissions or mitigation policies will prevent other countries

from implementing projects in Russia. Unfortunately, the Third National Communication does not provide enough information.



**36. Are any efforts underway to promote coordination of planned measures on the international level?**

There are many attempts to increase cooperation between Russia and other countries. For example, creating inventories was financed by other countries or international agencies. Other countries are interested in implementing JI projects in Russia. Unfortunately, inactivity of Russian authorities prevents Russia from using international cooperation. For example, Russia has already

missed three rounds of the Dutch program ERUPT on developing JI projects (WWF 2002). Many countries become more wary in investing to Russia because Russia has not ratified the Kyoto Protocol. For example, the EU is ready to provide money to Russia for improving or creating intuitions working on climate change but the EU first would like Russia to ratify the Protocol.

**37. What provisions on education and public awareness, the National Communication has? What does the role of NGOs in implementing them? What is the transparency of the whole process?**

The Third National Communication is very brief about informing public. It says that newspapers provide information about climate change and many leading specialists help newspapers to do this. The Communication does not mention the role of NGOs. Hydromet is not very transparent in terms of working with environmental groups. At the same time, it invited NGOs to hold a forum

during the Third World Climate Change Conference which will take place in Moscow in September 2003. In terms of influence NGOs have on the whole process, it is rather limited. NGOs send their representatives at all climate change conferences but they can not influence decisions of the government.

**38. What measures for monitoring the implementation of the Third National Communication are provided and how are they applied?**

The Third National Communication does not provide any measures for monitoring the implementation.

**V. General opinion and observations**

Russia could greatly enhance its ability to cooperate on climate change. Unfortunately, lack of recognising the importance of climate change problems by the government prevents Russia from being an active participant in the climate change negotiations. Russia will greatly benefit from prticipiting in flexible mechanisms but

unfortunately lack of coordination between agencies and poor preparing information about emissions, measures to reduce emissions prevents foreign investors to work in Russia. In the future, Russia should improve information it presents in National Communications.

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**Country Report: Slovakia**  
**Produced by: Emil Bedi**  
**Organization: Foundation for Alternative Energy**



## I. Introduction

### *1. National circumstances*

Slovakia is one of the Central European Countries which underwent the process of transition from a central planned economy to a market economy. This transformation has caused a deep depression of industrial production including huge reduction of GHG and substantial decrease in the Slovak GDP. Since 1994 is the GDP constanly growing with slight increase of GHG emissions.

The Slovak Republic is the member of the OECD, accepted to become a member of NATO and the

European Union in 1994. The decission making authority in the area of climate change is the Ministry of the Environment. Legislation related to this issue is set by the Act Nr. 595/1990.

There are few other ministries involved in the prepartion of legislation and implementation of economic instruments like ministry of Economy, Transportation, Agriculture and Finance. Consumption of fossil fuels is the main source of GHG emissions.

### *2. What is the national target for GHGs emissions reduction the government has agreed to?*

In early 90s the Slovak Republic accepted (November 1994) obligations resulting from the UNFCCC including the commitment to take measures aimed at returning emissions of greenhouse gases to the base year (1990) level by the year 2000. In its 2nd National Communication

the Slovak Republic claimed to undertake all activities to achieve the "Toronto target" (20% CO<sub>2</sub> emission reduction in 2005 compared to 1988). This aim was dropped and substituted by the "EU target " - reduction of GHG emissions by 8% in comparison with their level in the year 1990.

### *3. What is the political and legal status of the target (ratification process)?*

The Slovak parliament ratified the Kyoto Protocol on March 20th, 2002. Slovakia has expressed its political will to join the European Union and follows their way. At the moment Slovakia is in a

good position. If it continues at current pollution levels, it will not have to take any major measures to reach its target.

### *4. Does your country have any additional legislation or regulation regarding emission trading?*

In 1999 the Slovak government adopted a new Air Act which allows for emission trading systems. Recently the government implemented a sulfur dioxide emission trading system and believes that a similar system can be established for CO<sub>2</sub> emissions.

The government has asked US EPA to design such a system. In 1999 the Slovak government adopted a new Air Act which allows for emission trading systems. Recently the government implemented a

sulfur dioxide emission trading system and believes that a similar system can be established for CO<sub>2</sub> emissions. The government has asked US EPA to design such a system. There is a regulation on emission trading in force which is aimed at sulphur dioxide emission reduction (cap and trade system). Actual trading will begin in 2005. This regulation allows also to trade with other gases as well including GHG. The system for CO<sub>2</sub> trading is being prepared with the help of US EPA.

**5. Other relevant documents**  
*(climate change strategy, climate change action plan)*

Slovak government prepared strategy on reaching Kyoto target in October 2001 and National Program of GHG emission reduction.

**6. For accession countries:**  
*Is your specific national legislation in harmony with EU legislation?*

National legislation is harmonised with the EU legislation.

**7. What are the institutions that are established for climate change related activities in the country? Is there a centralized institution or not?**

The research program on climate change is done by the Slovak Hydro - Meteorological Institute. Otherwise there is no special institution dealing with climate change activities. The policy work is

divided between several ministries were the Ministry of environment responsible for final outcome.

## II. Inventory and projections

**8. Which are the national emissions for the base year and data on the most recent year available? Are the data accurate? Does your country have an inventory system or the data are based on estimation??**

Total aggregate emissions in base year (1990) were 70.106 Gg. CO<sub>2</sub> ekv. and 49.743 in 1999. Data are based on inventory system.

**9. What emissions projections does your country have for different scenarios for 2005, 2010?**

<u>Emissions</u>	<u>Year 2005</u>
without measures	48.929 Gg
with measures	47.480 Gg

<u>Emissions</u>	<u>Year 2010</u>
without measures	53.692 Gg
with measures	51.375 Gg

**10. How accurate or misleading is the country's current report? Does it adequately explain emissions and all policies and measures that affect GHG emissions (not controlled by Montreal Protocol)? Does the plan include existing policies that increased emissions such as subsidies for fossil fuel use?**

Country report is prepared according to official methodology including emission reporting system. The plan presents several measures. Increasing energy efficiency, the share of renewables, cutting subsidies for fossil fuels etc. Principal weakness of this kind of statement is that implementation is very

difficult and concrete steps which could really make a difference are not mentioned like e.g. increased feed in tariffs for renewables, incorporation of external costs into price of energy etc.

**11. What are the GHG emission trends? In which sector do GHG emissions grow the most?**

GHG emissions are rising slowly. The transportation and agriculture seems to be the fastest growing sectors. Growth of the emissions

here can be offset by energy efficiency improvements. Energy intensity in Slovakia is still 75% higher than in EU average.

**12. Does your country have or is working on a national GHG registry?**

GHG registry is run by the Slovak Hydro-Meteorological Institute.

**13. If there is an inventory system in place in your country, how adequate the system is? Are there any holes in the system that can be used when the GHG emissions rise above the targeted levels?**

Especially in the area of energy consumption which is the main source of GHG emissions the system seems to work well and accuracy is above 95 %. Higher uncertainty is in storage of carbon in forest

ecosystems - up to 30%, methane and nitrogen monoxide emission estimates. It does not look like that the emissions will rise above the target in Slovakia.

**14. Is the vulnerability assessment in the Third National Communication appropriate? Are climate change impacts assessed realistically? What are the adaptation measures that are proposed or taken?**

Assessment of climate change impacts on Slovakia is quite comprehensive with the target at hydrological cycle and its impacts on agriculture. Climate change impacts are assessed according to the projections based on more than 100 years long

hydro-meteorological records and they seem to be realistic. Most important measure is the proposal for large afforestation of the land which is not suitable for agricultural purposes.

### III. Measures to limit GHG emissions

**15. Does the plan begin a fundamental shift in energy priorities away from fossil fuels and nuclear energy - including the phase-out of subsidies for those energy sources?**

Despite all the efforts the Ministry of environment has only minor impact on energy policy in Slovakia. Nevertheless nuclear energy is no more the priority of Slovak government. Fossil fuels are

still in more favorable condition than renewable. Cutting subsidies is included in the governmental energy plan but more radical actions are needed.

**16. Does the plan indicate a future shift in energy priorities towards increased energy conservation, efficiency, and renewable energy? What are the prospects for such measures?**

Verbally is it there as it was written in many governmental reports and plans since 1990. Nevertheless, recent policy measures does not support renewables in such a way that they can be developed on broader scale. Moreover, recent shift

of solar collectors into higher VAT taxation (from 10 to 23%) and a lack of financial mechanisms to support energy savings and renewables shows that there is a huge gap between words and deeds.

**17. Is there a target for the use of renewables?**

No.

**18. What measures are proposed in the transport sector and are they efficient relative to its contribution to CO<sub>2</sub> emissions and emissions growth?**

There is an Act on Consumption Tax on Hydrocarbon fuels and Oil in force which gives preferential treatment to gaseous fuels and LPG and the act on Road Tax. Together with other

regulations they try to influence the emissions but the lack of supportive measures for public transportation simply does not make any difference to business as usual.

**19. Can additional cost-effective measures not contained in the plan be taken to limit CO<sub>2</sub> emissions? What studies indicate this?**

Actually there are several studies oriented on energy savings which have the shortest pay-back times and can lead to considerable CO<sub>2</sub> emission

reductions. Nevertheless the lack of incentives makes it difficult to realize.

**20. How is the lobby for nuclear power operating vis-à-vis the climate action plan?**

Nuclear lobby is not involved in climate change discussion too much. Its influence under present government is weak and the whole nuclear future seems unclear. There is a decision of Slovak

government not to complete 3rd and 4th unit of nuclear power plant Mochovce and to phase out Jaslovske Bohunice V-1 in 2006 and 2008.

**21. Are measures to reduce methane from agriculture and landfills directed towards increased use of biomass and biogas in the energy sector?**

Verbally there are measures mentioned in the Third National Communication oriented this way. But they are not backed by any concrete steps yet and

left the biomass energy sector open to "market forces" what means almost no development at all.

**22. Are there any other measures for limiting emissions of GHGs other than CO<sub>2</sub>?**

Indirectly the reduction of the CH<sub>4</sub> and N<sub>2</sub>O emissions are addressed by several acts on management of Agricultural Soil, water and land

protection and etc. In general, the legislation is following the EU pattern.

**23. How large a share of measures to achieve the national target stabilization is implemented through: reduction in CO<sub>2</sub> emissions? Reduction in emissions of other greenhouse gases? Efforts to reduce emissions through domestic actions? Increase sequestration from sinks? International actions (Joint Implementation, Emission Trading)? Legislation existing at the national level.**

CO<sub>2</sub> emissions reductions are by far the most easily targeted by proposed measures and play a crucial role in 3rd. National Communication. CO<sub>2</sub> sinks through carbon sequestration are addressed by the proposal for large afforestation. Nevertheless, due to the administrative and financial problems this

will hardly makes any difference in near future. Emission reduction of other GHG like CH<sub>4</sub> seems to be very difficult to realise. CO<sub>2</sub> emission trading is being seriously prepared and despite the fact that this will target only large sources it can be the most visible step in future emission reduction.

**24. Are measures to increase and sustain forests (sinks) designed to promote the increased use of biomass residuals in energy sector? Do they also help to promote biodiversity?**

Despite the fact that biomass could play the major role in cutting GHG emission the residues are not properly addressed by the plan. The promotion of

biodiversity with respect to forest management is not mentioned as well.

**25. If JI projects are started, can you please provide a brief negative and positive critique of the projects?**

JI projects are not considered as the leading mechanism for future GHG emission reduction in Slovakia. The problems with monitoring (administration) of JI projects paved the way for

emission trading which should be in line with EU proposal. Nevertheless, Ministry of Environment is preparing institutional framework for JI including setting criteria for JI.



**26. Are there any developments for national emission trading systems to be established and if yes, what kind of system is being developed?**

National emission trading system is being prepared seriously on governmental level. It will be oriented on domestic emission trading which will involve more than 200 large facilities through cap and trade

system. The important role will be played by district governments in allocating the caps for the industrial facilities.

**27. What are the measures taken to establish economic incentives for reducing GHG emissions? (E.g. CO<sub>2</sub> tax, energy tax, cap and trade systems...)**

The taxes are addressed through the Act on Consumption of Fuels and Oils but this legislation will hardly make any difference. It is a pity that carbon and energy tax is not considered yet especially in the situation when Slovakia imports more than 90 percent of its primary energy

consumption. Setting higher taxation on imported fossil fuels and redirecting these revenues to the support of domestic renewable energy sources could bring more benefits than the reduction of GHG emissions.

**28. For the accession countries: what are the measures that are being adopted from the EU package of measures?**

Emission trading system.

**29. Any particularly innovative policies and measures that could be put in place also in other countries?**

Probably the efforts leading to adoption of CO<sub>2</sub> emission trading legislation here. Recently, the

emission trading with SO<sub>2</sub> is covered by the domestic legislation.

**30. Is the mix of measures mostly voluntary or regulatory?**

Most of the measures proposed by the 3rd National Communication which could have major influence on emissions like utilisation of biomass or

Combined heat and power production will be voluntary and under the recent condition they do have only the minor chance to be realised.

#### IV. Implementation and monitoring

**31. What is the legal status of the package of measures? What has been implemented and what is pending?**

Obligatory are the measures oriented on waste management, soil stock protection and regulation of timber production. The program for support of energy savings and renewables which could have

major impact is declining due to the lack of financial support. Act on energy efficiency is pending.

**32. What proposed actions have not or may not be implemented as planned?**

There are no such a measures which should not be implemented.

**33. What is the cost of the implementation of the national plan according to the government?**

There is no assessment of the total cost of measures except of partial investment costs of combined cycle and biomass, geothermal and solar facilities.

**34. How does the plan provide for adequate monitoring of emissions and ongoing assessment?**

This issue is not addressed separately but it is considered to be done in future in compliance with international standard rules.

**35. What signal does the plan send to other countries?**

There is no special signal to be mentioned.

**36. Are any efforts underway to promote coordination of planned measures on the international level?**

Emission trading system is being prepared with the aim to harmonise with the EU system.

**37. What provisions on education and public awareness, the National Communication has? What does the role of NGOs in implementing them? What is the transparency of the whole process?**

Education and public awareness on climate change is addressed through few periodicals issued by the Ministry of Environment. Nevertheless, climate change policy issues does not attract too much public attention. The only exception are the natural

catastrophes. Recently there are only one or two NGOs dealing partially with climate change issue. For doing the proper monitoring of governmental steps these NGOs lack the capacity.

**38. What measures for monitoring the implementation of the Third National Communication are provided and how are they applied?**

Legislative measures should comply with EU legislation but no special measures for monitoring

the implementation of the Third National Communication are being developed.

## V. General opinion and observations

The 3rd National Communication is prepared according to the UN guidance and gives the answers to all relevant questions. Nevertheless, its importance with respect to GHG emission reduction is questionable. Despite the fact that the Ministry of Environment does not lack the good will the main obstacle is created by bussiness as usual forced by other governmental bodies which actually shape the main policy trends. The issues like privatisation of energy monopolies (power utility, gas sector) and liberalisation of power market and the lack of support for energy savings and renewables will probably lead to the opposite

trends and favour wasting of energy and sustain leading role of fossil fuels for a very long time. It seems clear that without the leading role and pressure making by EU aiming at e.g. setting targets for renewables or introducing carbon and energy tax there will be no progress in GHG emission reductions in the Slovak Republic. Recent emissions and expected trends when even without implementation of measueres the Kyoto target will easily be meet seems to be the main factor influencing the lack of any considerable action towards emission reduction.

**TERRA Mileniul III  
and  
"Climate Action Network Central and Eastern Europe" - CAN CEE**

Piata Walter Maracineanu, nr. 1-3,  
et. 2, cam. 171, sector 1, Bucharest, Romania  
Tel./Fax: + 40 21 312 68 70  
E-mail: terra@fx.ro (contact person Lavinia Andrei)  
lidijaanna@yahoo.com (contact person (Lidija Zivcic)  
<http://terraIII.ngo.ro>; [www.cancee.org](http://www.cancee.org)

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