

**REPUBLIC OF BULGARIA**  
**MINISTRY OF ENVIRONMENT AND WATER**

**Report on Demonstrable Progress**  
**of Republic of Bulgaria**  
**to Achieve Commitments under the Kyoto Protocol**

**Sofia, 2006**



## LIST OF ABBREVIATIONS

a.s.l.	above sea level
BAS	Bulgarian Academy of Science
BNAP	Bulgarian National Allocation Plan
CEI	Central European Initiative
EC	European Commission
EE	Energy Efficiency
EMEA	Enterprise for Management of Environmental Activities
ERU	Emission Reduction Units
EU	European Union
EU ETS	European Union Emissions Trading Scheme
ExEA	Executive Environmental Agency
FCCC	Framework Convention on Climate Change
GC	Green Certificates
GCM	Global Circulation Models
GEF	Global Environmental Facility
GHG	Greenhouse gases
HPP	Hydropower Plant
IMCCC	Inter-Ministerial Committee on Climate Change
IPCC	Intergovernmental Panel on Climate Change
IPPC	Integrated Pollution Prevention and Control
IWGNAP	Interministerial Working Group for Development of the National Allocation Plan
JI	Joint Implementation
KP	Kyoto Protocol
LULUCF	Land Use, Land Use Change and Forestry
MEE	Ministry of Economy and Energy;
MF	Ministry of Finance
MOEW	Ministry of Environment and Water
MRDPW	Ministry of Regional Development and Public Works
NAPCC	National Action Plan on Climate Change
NGO	Nongovernmental Organization
NPP	Nuclear Power Plant
NSI	National Statistical Institute
PDD	Project Design Documents
QC/QA	Quality Control and Quality Assurance System
R&D	Research and Development
RES	Renewable Energy Sources
REWI	Regional Environment and Waters Inspectorate
SAPARD, ISPA and PHARE	European Union Funds and Programs

SC	Steering Committee
SC JI	Steering Committee for JI projects
SEP	“Strategies and Environmental programmes” (department to MOEW)
SEWRC	State Energy and Water Regulatory Commission
SG	State Gazette
T&D	Transmission and Distribution
TPP	Thermal Power Plant
UN FCCC	United Nations Framework Convention on Climate Change
UNDP	United Nations Development Program
VA	Voluntary Agreement

# CONTENTS

LIST OF ABBREVIATIONS .....	1
CONTENTS .....	3
Introduction .....	5
1 Description of domestic measures .....	7
1.1. Introduction .....	7
1.2. Legislation and Institutional Setting.....	8
1.3. Sectorial Policies and measures .....	14
1.3.1. Energy sector.....	14
1.3.2. Industry .....	15
1.3.3. Policies and Measures for Residential and Commercial/Institutional Buildings .....	16
1.3.4. Transport .....	17
1.3.5. Agriculture .....	17
1.3.6. Forestry .....	19
1.3.7. Waste Management.....	19
1.4. European Union Emission Trading Scheme.....	19
2 Trends and projection of GHG emissions .....	21
2.1. Trends of GHG emissions .....	21
2.2. GHG emission projections .....	26
2.2.1. “Without measures” scenario .....	26
2.2.2. “With measures” scenario .....	26
2.2.3. “With additional measures” scenario .....	27
3 Assessment of the Contribution of the Local Measures and the utilization of the Flexible Mechanisms .....	29
3.1. Total effects of policies and measures.....	29
3.2. Assessment of the fulfilment of the Bulgaria commitments under the Kyoto Protocol.....	31
3.2.1. Joint Implementation mechanism.....	31
3.2.2. Second national action plan on climate change, 2005-2008 .....	32
3.2.3. Scheme for greenhouse gas emission allowance trading following Directive 2003/87/EC....	33
4 Activities and Programmes to Achieve the Commitments under the Article 10 and Article 11 of the Kyoto Protocol .....	35
4.1. Activities under Article 10 a of the Protocol – improving the quality of the inventories. ....	35
4.2. Adaptation Measures to Reduce Climate Change Impacts .....	36
4.2.1. Agriculture .....	36
4.2.2. Forestry .....	37
4.3. Activities under Article 10 – national programs to reduce GHG emissions .....	37
4.4. Joint Implementation projects and collaboration agreements .....	38
4.4.1. “Joint implementation” .....	38
4.4.2. Joint Implementation bilateral agreements.....	38
4.4.3. Cooperation with International organizations and financial institutions.....	39
4.5. Technology transfer support.....	40
4.5.1. State budget.....	40
4.5.2. The enterprise for management of environmental activities (EMEA) .....	40
4.5.3. National trust ecofund .....	40
4.5.4. European Union pre-accession funds for candidate member countries .....	41
4.6. Environmental Education and Public Awareness. Environmental Research .....	42



## **Introduction**

The report on demonstrable progress describes the progress of Bulgaria in achieving its commitments under the Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC), as prescribed in Article 3, paragraph 2 of the Kyoto Protocol.

A special emphasis must be laid on the fact that this report has been elaborated for the first time in Bulgaria but nevertheless other reports, which contain different by kind and volume information on the country policy on Climate Change have been developed and published on different occasions.

This report has structured under the guidelines agreed upon in the Marrakech Accords (Decision 22/CP.7) and the basic starting points are underlying in the following chapters:

### **Description of domestic measures**

The process of climate change and its impact on Bulgaria is given at the beginning of the chapter. The legislative framework is presented with the Conventions and Protocols signed by Bulgaria, and also with the domestic legislation and institutional setting. The chapter concludes with the sectoral policies and measures of the country for greenhouse gas (GHG) emissions reduction.

### **Trends and projection of GHG emissions**

The second chapter of the report provides comprehensive tabular and graphic information. On its basis is made an analysis of the overall GHG emissions, the shares of the overall emissions by sectors and GHG emission trends by sources and gases. Attached and described are the three basic scenarios, on the basis of which the levels of GHG emission projections for Bulgaria are made, namely:

- “without measures” scenario;
- “with measures” scenario;
- “with additional measures” scenario.

### **Assessment of the contribution of the local measures and the utilization of the flexible mechanisms**

The chapter reviews the overall sector effects of the applied policies and measures on the three projection scenarios. The assessment of the fulfilment of Bulgaria’s commitments under the Kyoto Protocol is carried out within the Joint Implementation context, the Second National Action Plan on Climate Change and the scheme for greenhouse gas emission allowance trading following Directive 2003/87/EC. The environment, conditions and action procedures for each one of the mentioned above are reviewed and described.

### **Activities and programmes to achieve the commitments under the Article 10 and Article 11 of the Kyoto Protocol**

The mechanisms and the legislation use during the development of the inventory in Bulgaria are given at the beginning of the chapter. An important factor of the progress is the national system for anthropogenic GHG emission assessment as in article 5 of the KP. The objectives and tasks in the following strategic areas are reviewed: administration, data collection system, capacity and implementation, and GHG emission monitoring.

Another aspect of the Bulgarian advance following the KP is the improved during every year efficiency of the adaptation measures on reducing climate change impact. The objectives and various forms of adaptation are described.

Next the report handles topics of the bilateral cooperation agreements. The projects, proposed by foreign investors to the Bulgarian government are identified and so are the approved projects and the main national and international sources.

The chapter concludes with an analysis of the achieved progress for Bulgaria in the environmental education and public awareness on climate change topics. Attached are present and strategic projects, which Bulgaria develops in the area of the examined problems.

This report was written in parallel to the Fourth National Communication on Climate Change and contains information from it, which in some areas is presented more extensive here.



# 1 Description of domestic measures

## 1.1. Introduction

Climate change and climate challenges are major problems of XXI century – a serious range of areas where the people still needs to improve the knowledge and understanding in order to undertake timely and correct measures for tackling with climate change effects in most effective way.

Climate change is a process where the greenhouse effect of the earth's atmosphere has been increased due to increased emissions of greenhouse gases CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O and fluoride compounds by human activities for example the burning of fossil fuels and the changes in land-use over the years. Although climate is a variable system, the scientific community agrees on the fact that we already witness the climate changes due to the anthropogenic activities emitting GHGs.

Effects are visible in the average temperature of the earth that has risen by 0.3-0.6 C° since the time it has been monitored (1860). Other signals are the increased melting of the ice during summers leading to a 10-15 % decrease and to a rise of the sea level with 10-20 cm in the 20st century.

Although these effects might seem insignificant at first sight, the effects on our every day life will be very large. Climate change might lead to a further sea level rise endangering coastal areas all over the world with erosion and floods. Changes in the atmospheric processes will be observed such as change of the winds direction and speed and changes of temperature and precipitation patterns all over the world, causing floods and droughts. Furthermore, local ecosystems might change because of changed circumstances and global water cycles might be disturbed. These impacts will eventually cover all sectors of the economy, natural resources and social life

An assessment of the expected changes in climate in Bulgaria was made at the National Institute of Meteorology and Hydrology within BAS. This was done by means of the so called Global Circulation Models (GCM). They are used to present the processes in the atmosphere, the ocean and on the surface in mathematical form (digital format).

The base climatic scenario is compiled using data from 125 meteorological stations all over the country. The expected changes in temperature and precipitation values are combined with the registered ones to obtain the climatic scenarios for Bulgaria.

The results of this research revealed a probable increase of the mean annual temperatures by 2 to 5 °C.

No special researches have been made for the separate branches of economy until now but we can state for sure that the negative consequences of climate change will affect all of them, though to a different extent.

The increased risk of hazardous atmospheric phenomena could lead to serious socio-economic disturbances

Bulgaria signed the United Nations Framework Convention on Climate Change (UNFCCC) in Rio de Janeiro in June 1992.

UNFCCC is the first international document that treats the problem of climate change at global scale. Parliament ratified it in March 1995. The country adopted as a base year for the implementation of the Convention 1988 instead of 1990.

Bulgaria ratified the Kyoto Protocol in 2002. Our country is committed to reducing greenhouse gases emissions by 8% in 2008-2012 compared to the 1988 base year. The upper limit for the period is estimated on 121 716 tons carbodioxide equivalent per year. Experts say Bulgaria is likely to have a 34 million tones yearly reserve. So far Bulgaria put into practice the Joint Implementation projects from the Kyoto flexible mechanisms. Bulgaria is a party to bilateral international agreements with Netherlands, Austria, Denmark, Switzerland, Sweden, Japan, the Prototype Carbon Fund to the World Bank etc. for performing Joint Implementation Projects under the Article 6 of the Kyoto Protocol. New agreements with France and Spain are to be concluded soon.

As one of the first signatories from Annex I Party to the UNFCCC, Bulgaria regularly submit corresponding documents to the Convention's Secretariat, as following:

- First National Communication on Climate Change – submitted in 1996;
- Second National Communication – in 1998;
- Third National Communication – in 2002;
- Fourth National Communication – in 2006.

The annual inventories of GHG for the year 1988 and the period 1990-2003 are prepared in accordance with the IPCC and UNFCCC guidelines and requirements and the respective reports are submitted.

## **1.2. Legislation and Institutional Setting**

Bulgaria is a Parliamentary Republic and the Legislature is the basic power within the country. The Constitution provides for a multi-party, parliamentary system and free elections on the basis of universal suffrage. The Bulgarian National Assembly (parliament) is vested with the legislative power and exercises parliamentary control. It has 240 seats, members are elected by the popular vote for four-years terms.

Chief of state is President Georgi Parvanov and Vice President Angel Marin since 22 January 2002. They are elected on the same ticket by popular vote for five-years time.

The chairman of the Council of Ministers is a head of the government. Prime minister is Sergey Stanishev - since 16 August 2005, nominated by the president and elected by the National Assembly.

Bulgarian government has 15 ministries. The Ministry of Environment and Water is authorized with all activities and responsibilities related to protection of environment and climate change.

Environmental protection and the establishment of modern environmental legislation consistent with the environmental legislation of the European Union is a basic priority in the policy of Bulgaria.

Negotiations between Bulgaria and the Union on the environment chapter have been provisionally closed. Transitional arrangements have been agreed until 2008 for electrical and electronic waste, until 2009 for emissions of volatile organic compounds from the storage and distribution of petrol and for certain shipments of waste, until 2011 for the sulphur content of certain fuels and the recovery and recycling of packaging waste, until 2012 for integrated pollution prevention and control, until 2014 for the landfilling of certain liquid wastes and for large combustion plants and until 2015 for urban waste water..

## **Laws in the activity range of Ministry of Environment and Water**

**1. General organization and administration – Environmental Protection Act** - (Promulgated SG № 91/25.09.2002, amended SG № 3/2006)

**2. Preventive activity – Environmental Protection Act** - (Promulgated SG № 91/25.09.2002, amended SG № 3/2006)

### **3. Operational monitoring and control of the hazardous chemical substances**

**Environmental Protection Act** - (Promulgated SG № 91/25.09.2002, amended SG № 3/2006)

**Law on Protection Against the Harmful Impact of Chemical Substances and Products** – (amended, SG No. 114/2003)

### **4. Water**

**Environmental Protection Act** - (Promulgated SG № 91/25.09.2002, amended SG № 3/2006)

**Water act** – (promulgated, SG № 67/27.07.1999)

### **5. Waste management**

**Law on Waste Management** – (Promulgated SG № 86/30.09.2003)

**Environmental Protection Act** - (Promulgated SG № 91/25.09.2002, amended SG № 3/2006)

**Law on ratification of the Basel Convention for control of the transboundary transportation of hazardous waste and its treatment**

### **6. Air Protection**

**Environmental Protection Act** - - (Promulgated SG № 91/25.09.2002, amended SG № 3/2006)

**Law on Clean Air** (Promulgated SG № 45/28.05.1996, last amendments SG № 95/29.11/2005)

### **7. Soils and bowels of the earth**

**Environmental Protection Act** - (Promulgated SG № 91/25.09.2002, amended SG № 3/2006)

**Law on mineral resources** (Promulgated SG №23/12.03.1999)

### **8. Biodiversity**

**Environmental Protection Act** - (Promulgated SG № 91/25.09.2002, amended SG № 3/2006)

**Law on Biological Diversity** – (Promulgated, SG № 77/ 09.08.2002, amended and supplemented (SG № 88/ 4.11.2005)

**Law on medical Plants** – (Promulgated SG № 29/ 07.04.2000)

### **9. Protected Areas**

**Environmental Protection Act** (Promulgated SG № 91/25.09.2002, amended SG № 3/2006)

**Protected Areas Act** – (Promulgated SG № 133/11.11.1998)

### **Policy Instruments**

This section presents set of political instruments which could be applied in the Climate Change Policy. In functional plan, these instruments have an intersectoral impact and influence the economy and household in general.

### **• Legal instruments and regulation**

The Bulgaria obligations in the climate change policy follow from multilateral and bilateral international agreements, from the EU legislation in the field of climate change as well as from the national legislation. The most important are:

#### **Multilateral international agreements:**

1. United Nations Framework Convention on Climate Change (UNFCCC), enforced in 1995.
2. Kyoto Protocol annexed to UNFCCC, enforced in 2005

#### **European legislation:**

1. Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC
2. Directive 2004/101/EC of the European Parliament and of the Council of 27 October 2004 amending Directive 2003/87/EC establishing a scheme for greenhouse gas emission allowance trading within the Community, in respect of the Kyoto Protocol's project.
3. 2004/156/EC: Commission Decision of 29 January 2004 establishing guidelines for the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council
4. Commission Regulation (EC) No 2216/2004 of 21 December 2004 for a standardised and secured system of registries pursuant to Directive 2003/87/EC of the European Parliament and of the Council and Decision No 280/2004/EC of the European Parliament and of the Council
5. Decision No 280/2004/EC of the European Parliament and of the Council of 11 February 2004 concerning a mechanism for monitoring Community greenhouse gas emissions and for implementing the Kyoto Protocol

#### **Bilateral international agreements**

Seven Intergovernmental Memoranda of Understanding in the field of Joint Implementation Projects under the Kyoto Protocol, respectively with Netherlands (2000), Austria (2002), Switzerland (2003), Denmark (2003), World Bank's Prototype Carbon Fund (2002), Sweden and Japan (2006).

#### **National legislation:**

1. Ratification act of the United Nations Framework Convention on Climate Change (UNFCCC), published in State Gazette, No 28/28.03.1995.
2. Ratification act of the Kyoto Protocol to the United Nations Framework Convention on Climate Change, published in State Gazette, No 72/25.07.2002
3. Act amending the Environmental Protection Act concerning the transposition of Directive 2003/87/EC of the European Parliament and of the Council establishing a scheme for greenhouse gas emission allowance trading within the Community (published in State Gazette, No.77/27.09.2005)

4. Decision № 1012/21.12.2004 of the Council of Ministers adopting the National Action Plan on Climate changes
5. Five Ratification acts of Bilateral Cooperation Agreements in the field of Joint Implementation Projects under the Kyoto Protocol, respectively with Netherlands, Austria, Switzerland, Denmark, World Bank's Prototype Carbon Fund, Sweden.

**The other important laws that are directly or indirectly related to climate change are:**

- **The Environmental Protection Act** (State Gazette, 25.09.2002) and **Clean Air Act** (State Gazette, 28.05.1996) and related secondary legislation, including a permit system for meeting minimum standards in accordance with EU regulation on Large Combustion Plants, the introduction of the EU ETS and technical inspection (e.g. for cars) etc;
- **The Energy Law** (State Gazette 107/9.12.2003) in its part on renewable energy and combined heat and power generation introduces the requirements of the two related EU directives and the use of instruments such as green certificates; defines indicative target for energy production from RES and mandates the state regulations to the licensed activities in the power sector and purchase obligations for district heating companies to buy utilized waste thermal energy (State Gazette 107, 18.12.2003);
- **The Energy Efficiency Law** and related secondary legislation (State Gazette, 5.03.2004), including obligation to adopt municipal energy efficiency programs, requirements for energy efficiency labelling, the use of minimum standards resulting from the EU directive on energy efficient appliances, regulations for energy efficiency labelling of various types of products (appliances, cars), obligatory audits and amendments of the Energy Performance Standards for existing buildings;
- **The Law on Waste Management** (State Gazette, 30.09.2004) and the related secondary legislation including the obligation for collecting, management and usage (or combustion) of the omitted gases from the new waste deposits;
- **The Law on Statistics** (State Gazette, 25.06.1999) including national and international monitoring and reporting obligations of GHG emissions.

**Institutional setting**

The Governmental environmental protection policy is integrated within the sectorial policies – transportation, energy, construction, agriculture, tourism, industry, education etc. and is implemented by the competent executive authorities. It is responsible for the applying the adopted legislation on national scale and conceiving new legislation in the future. In the environmental protection activities MOEW cooperates with all other ministries.

- Ministry of Environment and Water

The MOEW has the following subsidiary bodies: The Executive Environmental Agency, fifteen Regional Inspectorates for Environment and Water, three National Parks and four Basin Directorates.

The implementation of the environmental legislation is within the powers of the Minister of Environment and Water and the subordinated to him structures and organizations in the country. The Ministry is also responsible for regulations, rules and orders in the areas of: ambient air protection, background monitoring, water, land and soil, radiological monitoring, noise, non-

ionizing radiation, state of the forests, waste, protected areas and biodiversity, and integrated pollution prevention and control. This legislation acts are obligatory for the respective agencies and administrations in Bulgaria.

The ministry consists of general and specialized administration. The general administration provides technical support for the minister, the activities of the specialized administration, and the activities related to administrative services to the public and legal entities.

**General Administration includes:**

- “Legal servicing” Directorate
- “Financial and property management, human resources and public relations” Directorate

**Specialized Administration is organized in following directorates:**

- “Water” Directorate
- “Subsurface and Underground Resources” Directorate
- Directorate “Coordination of the regional inspectorates”
- “National Nature Protection Service” Directorate
- “Air protection” Directorate
- “Preventive Activities” Directorate
- “Strategy, EU Integration and International Cooperation” Directorate
- Waste Management Directorate
- “EU Environment Funds” Directorate
- “Cohesion Policy for Environment” Directorate

The Ministry has established the necessary organization to pursue the climate change policy. Several units participate the activities for monitoring and control of the climate change activities: Directorate “Strategy, EU Integration and International Cooperation”, where the national climate change focal point as well as the Department “Climate Change Policy” and sector “Joint Implementation Projects”. The Directorate is responsible for the organization of the development and coordination the implementation of legislative documents, national and sectoral programmes and/or action plans for the compliance with the commitments of the country under the UNFCCC and linked to it European legislative requirements, and also organizes the development and coordination of the annual GHG inventories; the “Clean Air Protection” Directorate works together with Strategy, EU Integration and International Cooperation and is involved in the technical aspects of the climate change policy.

**Executive Environmental Agency (ExEA) and the Enterprise for Management of Environmental Activities (EMEA).**

The last two units have a status of separate organizations, subordinated to MOEW. EEA has the task to coordinate the preparation of the national GHG inventories through a unit of the “Air monitoring” department. EMEA provides funding of projects for the preparation of National communications and National GHG emission inventories and also for projects for GHG emission reduction.

● **Inter-Ministerial Committee on Climate Change (IMCCC)**

The IMCCC was set up under the Governmental decision to coordinate the implementation of the First Action Plan on Climate Change in July 2000. The Committee facilitates the communications among institutions to ensure the control and coordination of their activities in relation to the climate

change process in the country. The Committee consists of representatives from a majority of the ministries, the Energy Efficiency Agency and an observer from Sofia Municipality, and is chaired by Deputy Minister of MOEW.

- **The Steering Committee (SC) for Joint Implementation Projects**

Steering Committee is an evaluation body for and Joint Implementation projects under the Kyoto Protocol. It consists of representatives from MOEW, the Ministry of Economy, the Ministry of Finance, the Ministry of Regional Development and Public Works, the Ministry of Agriculture and Forestry, the Executive Energy Efficiency Agency and the Bulgarian Investments Agency. The Committee is chaired by the Minister of MOEW. The SC evaluates proposed JI projects according to the existing national criteria for JI projects on the basis of the Project Design Documents (a PDD). If necessary, additional expert opinions and statements from the relevant ministries and organizations are requested. The SC gives well-grounded advises to the Minister of the Environment and Water for issuing / not issuing a Letter of Approval for each particular proposal.

- **The Interministerial Working Group for Development of the National Allocation Plan (IWGNAP)**

The introduction of the EU Emissions Trading Scheme requires the country to possess National Plan for allocation of emission allowances. The Plan development is coordinated by an interministerial working group set by the ordinance of the Minister of MOEW No. RD-186/06.04.2005. Representatives of the MOEW, the MEE, the MRDPW, the MF, the NSI and representatives of NGOs: Bulgarian Chamber of Commerce and branch organizations of the industrial branches that are covered by the Scheme – Bulgarian Association of the Cement Industry, Bulgarian Branch Chamber of the Energetic, Branch Chamber of the Pulp and Paper Industry, Branch Chamber of the Glass Industry, Branch Chamber of the Iron and Steel Industry, Branch Chamber of the Chemical Industry, Bulgarian Union of the Ceramics. The Plan development is supported by the Bulgarian and Dutch consultants under a project funded by the PSO program of the Government of The Netherlands.

- **Executive Environmental Agency and other institutions**

The Executive Environmental Agency within MOEW performs monitoring of the implementation of climate change-related measures. The agency deals with water and air quality control and receives data from the monitoring stations nationwide. It also carries out the procedures on issuing the permits under the IPPC Directive. The Agency is responsible for the preparation of the GHG inventories, projections and registers. It carries out the procedures on issuing the GHG emission permits – considers the operators' application forms and drafts the permits. The National Administrator of the National Registry for issuing, possession, transfer and cancellation of the GHG emission allowances.

Energy Efficiency Agency within MEER – organizes the implementation of measures in accordance with the national long- and short-term energy efficiency programs; approves projects for energy efficiency and controls their implementation; participates in the preparation of legal regulations in the field of energy efficiency: proposes development and improvement of energy efficiency standards in order to achieve approximation to the EU norms and to encourage energy efficiency at the demand side; cooperates with central and regional governmental institutions, employers' associations, branch organizations, consumer associations and NGOs on implementation of energy efficiency policies and measures; maintains the national information system on energy efficiency, develops guidelines for establishments and maintenance of EE

information systems for central and regional governmental institutions; develops programs for implementation and control of EE measures and programs for EE awareness rising; develops programs for implementation of EE on local (municipal) level; cooperates in implementing EE training.

### **1.3. Sectorial Policies and measures**

#### ***1.3.1. Energy sector***

The Energy strategy for Bulgaria is elaborated for the accelerated reformation and development of the Energy sector. The Bulgarian Energy Strategy was adopted by the Council of Ministers on May, 11th, 2002 and the National Assembly adopted it with Decision №39/2002. The strategy represents the national energy policy and the main reforms envisaged for this sector. Measures for reduction of emissions in the sector include:

- **Improvement of the operation of nuclear power plant Kozloduy (NPP-K) – E1**

Kozloduy units 1-4 will gradually be put out of operation (units 1 and 2 in 2002, and units 3 and 4 in 2006) and lead to vastly increase of GHG emissions. It supposed introduction of measures to preserve the share of nuclear energy in the overall production of electricity through further improve the operation of units 5 en 6.

- **Accelerated development of hydro energy – E2**

The existing hydropower plants (HPPs) have been rehabilitated. New automation and control systems were introduced utilized. New capacities of 400 MW could be built for an annual operation of 2 000 to 3 000 hours.

- **Upgrading of cogeneration plants and district heating boilers – E4**

The introduction of new natural-gas combined cycle at some of the existing thermal power plants and district heating plants forms part of the Implementation Programme for the Directive 2001/80/EC on Large Combustion Plants for the period after 2007.

- **Electricity transmission and distribution losses – E5**

A reduction of the electricity losses will lead to fewer GHG emissions as a result of lower electricity production in coal-fired plants.

- **Heat transmission and distribution losses – E6**

Losses of heat can be reduced through rehabilitation, modernization and improving the exploitation of the transmission and distribution networks.

- **Biomass for electricity and heat production – E7**

The assessment of the theoretical potential resulted in the following contents: firewood – 7.7 PJ per year; waste paper - 0.3 PJ per year; agricultural solid waste - 77.1 PJ per year; waste from live-stock breeding -11.3 PJ per year; municipal solid waste - 12.5 PJ per year and industrial waste wood - 0.4 PJ per year.

The potential for reduction of carbon dioxide emissions in the list of measures in the energy sector is very big. The Second National Plan on Climate change envisages an annual potential for CO<sub>2</sub> emission reduction of 3.3 mil. tons per year from the overall modernization of the heating



companies in the country, 2 mil. tons – from heating loss reduction, 6.8 mil. tons from natural gas supply to household.

In **Table 1.1** is given the annual reduction of GHG emission with particular policies and measures in Energy sector.

### **1.3.2. Industry**

Measures for reduction of GHG emissions in this sector are as follows:

- Reduction of thermal losses in industry – I1
- Natural gas supply to the industry by development of gas infrastructure – I2
- Introduction of monitoring systems for energy consumption – I3
- Upgrading of steam and heat generation and compressed-air plants – I4
- Reduction of fuel consumption in production of building materials – I6

In **Table 1.2** is given the annual reduction of GHG emission with particular policies and measures in Industry sector.

**Table 1.1 Policies and measures in energy sector to a reduction of GHG emission**

<b>Measure</b>	<b>Sub-sector</b>	<b>Activity</b>	<b>Instruments</b>	<b>Annual GHG reduction in 2010 (Mton)</b>	<b>Year of implementation</b>
E1	Nuclear	Improvement existing power plant	Finance	0.9	2007
E2	Hydro	New capacity	Legal Finance	0.4 (after 2012)	Depending on implementation GC and additional finance
E3	Small and micro hydro	New capacity	Legal Finance	0.2	Depending on implementation GC and additional finance
E4	Cogeneration and district heating	Upgrading	Legal Finance	0.9	Depending on implementation GC, Large Combustion Plant Directive and additional finance
E5	T&D networks	Reduce losses	Legal	1.1	2005
E6	Heat transmission networks	Reduce losses	Legal Finance	0.9	Gradually (depending on regulation SEWRC and additional funding)
E7	Biomass	Combustion	Legal Finance	0.05	Depending on implementation GC and additional finance

Source: The Second NAPCC

**Table 1.2 Overview of the policies and measures in Industry Sector**

Measure	Sub-sector	Activity	Instruments	Annual GHG reduction in 2010 (Mton)	Year of implementation
I1	All sub-sectors	Reduction of thermal losses in industry	Legal Finance VA	0.12	Depending on source of financing
I2	All sub-sectors	Increased use of natural gas industry	Finance	0.05	Dependent on funding for network construction
I3	Non-ferrous metallurgy Light industry Machine building, electrical and electronic industry	Monitoring systems of energy use in industry	VA	0.11	Gradual implementation from 2006
I4	Light industry Food industry Machine building electrical and electronic industry	Updating of the steam generation and compressed air plants	Legal Finance VA	0.02	Gradually from 2007
I5	Construction	Introduction of highly-efficient construction machines using diesel fuel	Legal	0.07	Gradual penetration from 2006
I6	Building materials industry	Replacement of part of the fuel by motor-car tyres and other combustible waste	Legal VA	0.34	Gradually from 2005

Source: The Second NAPCC

### ***1.3.3. Policies and Measures for Residential and Commercial/Institutional Buildings***

The measures for GHG emission reduction in this sector are related mainly to change of fuels and the introduction of renewable energy sources. These are as follows: following concrete policies and measures in the

- **Gas supply to households - H1**
- **Solar collectors – H2**
- **Hybrid and other hot water installations – H3**

The annual GHG emission reduction following concrete policies and measures in the Residential and Servicing sector is given in **Table 1.3**.

**Table 1.3 Policies and measures for the residential sector and commercial and institutional buildings**

Measure	Sub-sector	Activity	Instruments	Annual GHG reduction in 2010 (Mton)	Year of implementation
H1	Households	Gas supply to households	Finance Awareness/Information	2.3	Gradually, but strongly depending on available financing
H2	Municipal and Public	Installation of solar collectors	Finance	0.02	2006, depending on availability of finance
H3	Municipal and Public	Hybrid and other RES hot water installations	Finance	0.04	Dependent on availability of financing

Source: The Second NAPCC

#### ***1.3.4. Transport***

The measures for GHG emission reduction in this area are related to all types of transport with the exception of air and water transport. These two sub-sectors are in crisis and efforts are placed for their restoration and reorganization.

- **Transports dispatching system – T1**
- **Transport railway power dispatching system – T2**
- **Modernization of Railways – T3**
- **Improving the public transportation, reducing transportation flows in cities and renewing the transport park – T4**
- **Introduction of biofuels – T5**

The annual GHG emission reduction following concrete policies and measures in the Transport sector is given in **Table 1.4**.

#### ***1.3.5. Agriculture***

In official government documents, as the Second national action plan for climate change, the following measures, supported financially and by the proper resources:

- **Manure management – A1**
- **Fertilization and irrigation – A2**

In **Table 1.5** is given the annual reduction of GHG emissions with particular policies and measures in Agriculture sector.

**Table 1.4 Policies and measures in Transport sector**

Measure	Sub-sector	Activity	Instruments	Annual GHG reduction in 2010 (Mton)	Year of implementation
T1	Road/railway	Introduce cargo dispatch system	Fiscal Awareness and campaign	0.03	Depending on private sector initiative
T2	Railway	Introduce railway power dispatch system	Finance Legal Awareness and campaign	0.09	2005
T3	Railway	Modernization	Legal	0.04	Depending on ongoing improvements in the railway sector
T4	City transport	Improving public transportation and reducing transportation in cities	Legal Fiscal Finance Awareness and campaign Strong control	n.e.	Depending on availability of subsidies and regulation
T5	Road transport	Increasing the use of biofuels	Legal Fiscal Finance Awareness and campaign	n.e.	Depending on the production of biofuels

Source: The Second NAPCC

**Table 1.5 Policies and measures in agriculture sector**

Measure	Sub-sector	Activity	Instruments	Annual GHG reduction in 2010 (Mton)	Year of implementation
A1	Animal's breeding	Manure management	Finance R&D	0.07	Gradually from 2005
A2	Agricultural fertilization and Irrigation	Improved fertilization practices Improving the irrigating technologies in order to reduction of the water consumption	Legal Finance R&D SAPARD and State Fund Agriculture	0.17	Gradually from 2005

Source: The Second NAPCC

### ***1.3.6. Forestry***

The areas of annual afforestation have varied from 28,040 ha up to 89,660 ha, and this allowed over 1 million ha of new forests be established in the past 35 years, hence, over 1/3 of the country's forests were re-established. The creative policy in the field of forestry resulted in a quick increase of the total volume of above-ground mass of wood in the forests of Bulgaria. The total volume of wood in the Bulgarian forests has increased from 244.68 mil. m<sup>3</sup> (in 1955) up to 396.02 mil. m<sup>3</sup> (in 1990), i.e. the amount of standing wood has increased by 61.8% in 35 years.

The consequences of this favourable effect on the forests in Bulgaria are obvious: the erosion in all the large water-catchment basins in the country was liquidated; the living conditions in many territories in the country improved, as well as the forests' microclimatic, hydrological, ameliorative, etc., i.e. all the peerless favourable functions of the forests in Bulgaria have been improved.

### ***1.3.7. Waste Management***

Landfill sites are widely used in the country. The typical amount of waste to be disposed at regional landfill sites varies between 50,000 and 100,000 ton per year. The governmental policy in this field is directed towards building up a system of 54 regional landfill sites and closing down these landfills which do not meet the legal requirements. With the setting up of these regional landfill sites the environmental friendly waste treatment of all waste generated in the country will be secured.

The following measure is provided with resources in this sector:

- **Utilization of the captured methane for production of electricity**

The implementation of this measure is linked to the employment of new technologies for the country, and they are in an initial state of implementation and operation.

## **1.4. European Union Emission Trading Scheme**

Bulgaria has already started work on the application of the Directive establishing a scheme for greenhouse gas emission allowance trading (Directive 2003/87/EC). The emission trading scheme is the main EU instrument to fulfil the commitments under Kyoto Protocol. The Emissions Trading in the EU started on 01.01.2005, and Bulgaria is to start on 01.01.2007 along with the EU membership of the country.

The Directive will take effect for Bulgaria upon its accession to the European Union on 1 January 2007. Should its accession be postponed, Bulgaria would nonetheless have the option of joining the Community scheme on 1 January 2007, subject to the Bulgarian Government's decision and upon signature of the relevant agreement with the Union. Emission allowance trading provides flexibility to installation owners in their efforts to achieve emission reductions most efficiently and in accordance with their development strategies.

The Scheme's main elements include:

1. Allocation of emission allowances by means of National Allocation Plans
2. Greenhouse gas emissions permits issued to each installation
3. Monitoring, verification and reporting of emissions
4. Registries to ensure the accounting of transactions concerning emissions allowances
5. Compliance control and penalties

Pursuant to the Environmental Protection Law from 1 January 2007, the Bulgarian installations covered by the Directive's Annex I will not be allowed to emit carbon dioxide unless they hold an

emissions permit. Installations holding such permits will have to monitor their carbon dioxide emissions and report them annually. They will also have to surrender a number of allowances equal to their total emissions during the preceding calendar year.

Before the launch of the trading scheme, the Government will allocate allowances to each installation in accordance with a National Allocation Plan. The process will be based on fair and transparent rules in keeping with the criteria set out in Annex III of the Directive.

The development of the Bulgarian National Allocation Plan (BNAP) is coordinated by an interdepartmental working group of the Ministry of the Environment and Water, the Ministry of the Economy and Energy, the Ministry of Regional Development and Public Works, the Ministry of Finance, the National Statistical Institute, and non-governmental organisations, including: the Bulgarian Industrial Association and the associations of the industries included in the Scheme, i.e.: the Bulgarian Association of the Cement Industry; the Bulgarian Chamber of the Energy Industry; the Chamber of the Paper and Pulp Industry; Glass Industry; the Chamber of the Ferrous and the Non-Ferrous Industry; the Bulgarian Chamber of the Chemical Industry; the Bulgarian Union of Ceramic Workers (Order ПД-186/06.04.2005). Technical assistance for the Plan is provided by Bulgarian and Dutch consultants with funding from the PSO Programme of the Government of the Netherlands.

The plan was introduced to the Government in April 2006.

Upon the completion of each BNAP development stage, MOEW publishes relevant information on its website [www.moew.government.bg](http://www.moew.government.bg).

## 2 Trends and projection of GHG emissions

### 2.1. Trends of GHG emissions

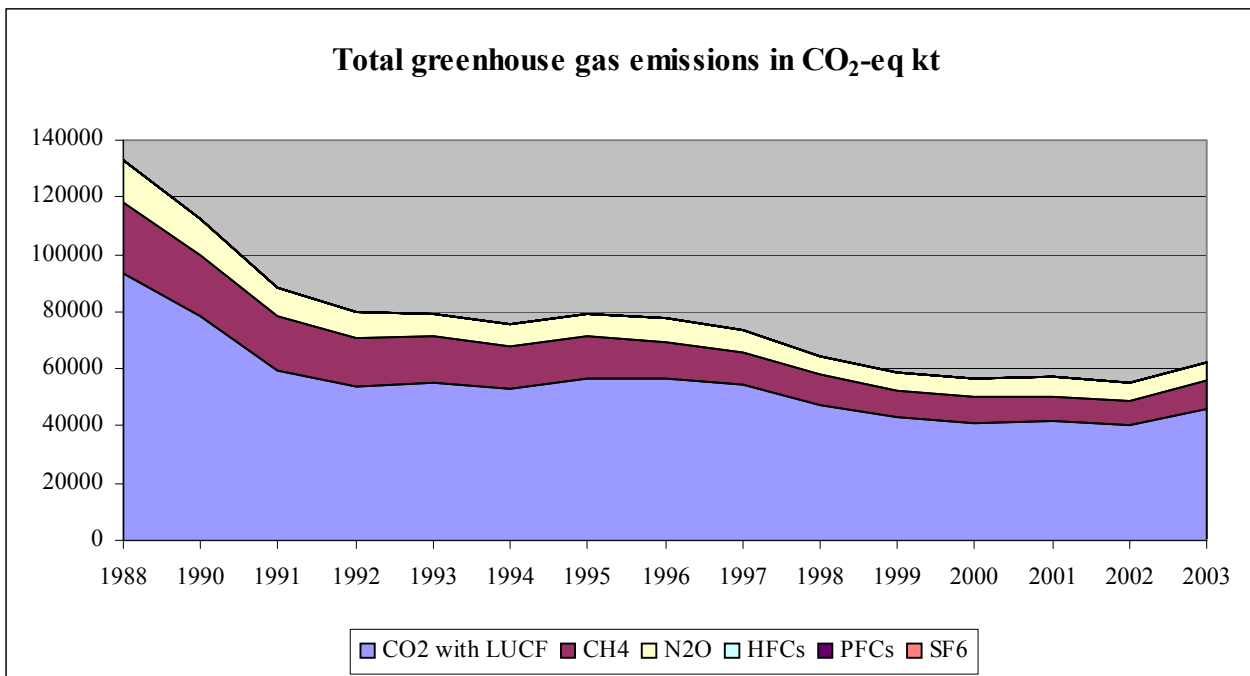
The GHG Inventory for the year 2003 revealed that the overall GHG emissions expressed in CO<sub>2</sub>-eqv. are 69 167 Gg not taking into account the sequestration in sector Land use Change and Forestry. The net emissions (including the sequestration from LULUCF) are 62 111 Gg.

The main greenhouse gases to be reported pursuant to UNFCCC are as follows:

- Carbon dioxide - CO<sub>2</sub>;
- Methane - CH<sub>4</sub>;
- Nitrous oxide - N<sub>2</sub>O ;
- Hydrofluorocarbons – HFCs;
- Perfluorocarbons – PFCs;
- Sulphur hexafluoride - SF<sub>6</sub>.

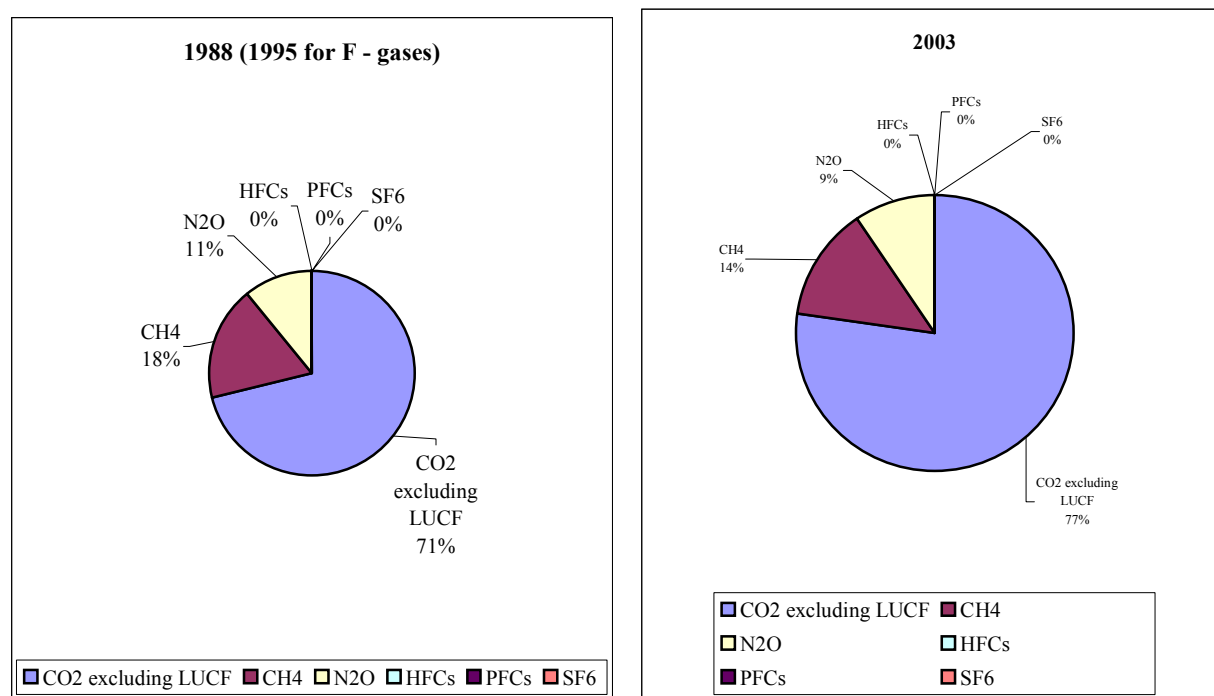
Each of these gases has a different warming effect. As an example, the gases HFCs, PFCs and SF<sub>6</sub> (so called F-gases) have much greater warming effect compared to methane, carbon dioxide and nitrous oxide.

**Figure 2.1** Change in the overall GHG emissions for the period 1988–2003



Source: The National 2003 GHG Emissions Inventory Report, submission 2005

**Figure 2.2 Share of particular GHG**



Source: The National 2003 GHG Emissions Inventory Report, submission 2005

There can be seen that in the year 2003 the overall of the GHG emissions expressed in CO<sub>2</sub>-eqv. registered an significant increase in comparison to the year 2002 mainly due to the agreement with the EU for early termination of the operation of two nuclear facilities with total capacity of 880 MW and annual electricity production above 5 TWh. The emissions for the year 2003 are 50% from the emissions in the base year 1988 and increased in comparison to the previous 2002 on 9.2%.

**Table 2.1** represents shares of the overall GHG emissions by sectors for the period 1988-2003. The percentage was calculated out of the overall emissions without taking into account the CO<sub>2</sub> sequestration.

**Table 2.1 Share of the overall GHG emissions by sectors for the period 1988-2003, %**

Sector/ years	1988	1990	1991	1992	1993	1994	1995
Energy	71,02	70,58	70,7	71,38	74,18	73,41	74,01
Industrial processes	7,53	7,7	6,49	6,08	5,89	7,23	8,48
Agriculture	9,85	10,19	10,43	9,36	7,79	7,43	6,51
Forestry	-3,71	-5,13	-7,88	-8,49	-8,56	-8,7	-8,62
Waste	11,59	11,53	12,38	13,19	12,15	11,93	11,01

Sector/ years	1996	1997	1998	1999	2000	2001	2002	2003
Energy	74,71	76,42	77,71	77,32	76,3	78,18	77,5	77,3
Industrial processes	8,62	8,14	6,44	7,02	8,32	8,07	7,65	7,99
Agriculture	6,37	6,59	7,13	8,2	7,8	6,48	7,3	6,62
Forestry	-7,72	-8,51	-9,62	-10,94	-13,66	-14,25	-13,09	-10,2
Waste	10,29	8,85	8,72	7,46	7,58	7,27	7,55	8,09

Source: The National 2003 GHG Emissions Inventory Report, submission 2005



**Table 2.2** represents the emission trends of the basic GHG, the overall emissions (not taking into account the LULUCF) and the relative share of the overall emissions to the emissions from the base year 1988 referred to as 100 %.

**Table 2.3** represents the summary of emission trend per source category and gas.

**Table 2.2 The emission trends of the main GHG, CO<sub>2</sub>-eqv., Gg**

Source category	1988	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
CO <sub>2</sub> with LULUCF	93 439	78 376	59 438	53 497	55 409	53 167	56 891	56 378	54 592	47 393	43 330	40 927	42 005	40 440	46 265
CO <sub>2</sub> excluding LULUCF	98 572	84 533	67 074	60 910	62 884	60 469	64 416	62 895	61 463	54 253	50 530	49 903	51 472	48 758	53 321
CH <sub>4</sub>	24 925	21 393	18 777	17 459	15 712	14 592	14 240	13 165	11 303	10 441	8 903	9 038	8 320	8 482	9 366
N <sub>2</sub> O	14 805	12 943	10 176	8 698	7 968	8 010	8 248	8 056	7 789	6 489	6 352	6 723	6 626	6 275	6 456
HFCs	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
PFCs	76	47	21	28	19	46	47	46	37	69	44	33	16	21	21
SF <sub>6</sub>	0	0	0	0	0	0	1	1	2	2	2	2	2	3	3
<b>Total</b>	<b>138 377</b>	<b>118 916</b>	<b>96 047</b>	<b>87 095</b>	<b>86 584</b>	<b>83 117</b>	<b>86 954</b>	<b>84 164</b>	<b>80 595</b>	<b>71 255</b>	<b>65 830</b>	<b>65 699</b>	<b>66 437</b>	<b>63 539</b>	<b>69 167</b>
<b>Index (1988 = 100)</b>															
Index CO <sub>2</sub> excluding LULUCF	100	85.8	68.0	61.8	63.8	61.3	65.3	63.8	62.4	55.0	51.3	50.6	52.2	49.5	54.1
Index CH <sub>4</sub>	100	85.8	75.3	70.0	63.0	58.5	57.1	52.8	45.3	41.9	35.7	36.3	33.4	34.0	37.6
Index N <sub>2</sub> O	100	87.4	68.7	58.8	53.8	54.1	55.7	54.4	52.6	43.8	42.9	45.4	44.8	42.4	43.6
Index [group of six]	<b>100</b>	<b>85.9</b>	<b>69.4</b>	<b>62.9</b>	<b>62.6</b>	<b>60.1</b>	<b>62.8</b>	<b>60.8</b>	<b>58.2</b>	<b>51.5</b>	<b>47.6</b>	<b>47.5</b>	<b>48.0</b>	<b>45.9</b>	<b>50.0</b>
Index (1995 = 100)															
Index HFCs	0	0	0	0	0	0	100	0	0	0	0	0	0	0	0
Index PFCs	160.9	100.8	45.4	59.5	40.5	97.6	100.0	97.7	79.4	147.9	92.8	70.6	34.7	45.6	44.1
Index SF <sub>6</sub>	0.0	0.0	0.0	0.0	0.0	0.0	100.0	103.7	138.9	145.1	149.0	176.7	181.4	198.9	199.7
Index [group of new gases]	147.7	92.5	41.7	54.6	37.2	89.6	100.0	92.3	76.3	139.3	88.8	69.1	36.3	46.8	45.4

Source: The National 2003 GHG Emissions Inventory Report, submission 2005

**Table 2.3 GHG emission trends by source category, Gg CO<sub>2</sub>-eq.**

Source category	1988	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
<b>1. All energy (combustion and fugitive)</b>	<b>98 282</b>	<b>84 641</b>	<b>68 530</b>	<b>62 305</b>	<b>64 769</b>	<b>61 608</b>	<b>64 584</b>	<b>63 074</b>	<b>61 673</b>	<b>55 409</b>	<b>50 899</b>	<b>50 131</b>	<b>51 943</b>	<b>49 241</b>	<b>53 466</b>
<b>1A. Energy: fuel combustion</b>	95 011	82 432	66 583	60 298	62 755	59 638	62 478	60 999	59 816	53 539	49 274	48 332	50 179	47 511	51 741
CO <sub>2</sub> :1. Energy industries	43 217	39 601	37 106	33 862	34 092	30 945	31 572	30 652	30 936	27 078	25 760	26 216	29 036	26 466	28 330
CO <sub>2</sub> :2. Industry	24 755	21 821	14 758	12 093	13 296	15 032	18 023	17 499	17 691	14 221	12 283	11 868	10 788	10 198	11 402
CO <sub>2</sub> :3. Transport	13 814	10 864	6 525	6 435	7 444	6 547	6 845	6 306	5 315	6 475	6 212	5 881	6 014	6 317	7 098
CO <sub>2</sub> :4. Other sectors	8 940	5 381	4 086	4 610	4 117	3 325	2 621	3 238	2 678	2 989	2 491	1 896	1 638	2 074	2 206
CO <sub>2</sub> :5. Other	0	1 006	882	196	733	810	315	261	112	49	0	0	0	0	0
CH <sub>4</sub>	111	105	68	69	72	71	76	69	59	62	63	60	55	59	59
N <sub>2</sub> O	4 174	3 655	3 158	3 031	3 002	2 909	3 027	2 975	3 024	2 664	2 465	2 411	2 648	2 398	2 647
<b>B. Fugitive fuel emissions</b>	<b>3 271</b>	<b>2 209</b>	<b>1 947</b>	<b>2 007</b>	<b>2 013</b>	<b>1 970</b>	<b>2 106</b>	<b>2 074</b>	<b>1 857</b>	<b>1 870</b>	<b>1 625</b>	<b>1 799</b>	<b>1 764</b>	<b>1 730</b>	<b>1 725</b>
CH <sub>4</sub>	3 271	2 209	1 947	2 007	2 013	1 970	2 106	2 074	1 857	1 870	1 625	1 799	1 764	1 730	1 725
N <sub>2</sub> O	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>2. Industrial Processes (ISIC)</b>	<b>10 425</b>	<b>9 232</b>	<b>6 293</b>	<b>5 303</b>	<b>5 139</b>	<b>6 071</b>	<b>7 401</b>	<b>7 280</b>	<b>6 570</b>	<b>4 593</b>	<b>4 620</b>	<b>5 465</b>	<b>5 362</b>	<b>4 863</b>	<b>5 527</b>
CO <sub>2</sub>	7 846	6 866	4 599	3 908	3 936	4 620	5 355	5 202	4 843	3 490	3 784	4 041	3 997	3 704	4 286
CH <sub>4</sub>	82	63	46	44	51	68	74	69	74	63	58	74	51	46	59
N <sub>2</sub> O	2 422	2 255	1 626	1 324	1 133	1 338	1 921	1 962	1 614	968	732	1 314	1 295	1 089	1 159
HFCs	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
PFCs	76	47	21	28	19	46	47	46	37	69	44	33	16	21	21
SF <sub>6</sub>	0	0	0	0	0	0	1	1	2	2	2	2	2	3	3
<b>3. Solvent and Other Product Use</b>	<b>NE</b>	<b>NE</b>	<b>NE</b>	<b>NE</b>	<b>NE</b>	<b>NE</b>	<b>NE</b>	<b>NE</b>	<b>NE</b>	<b>NE</b>	<b>NE</b>	<b>NE</b>	<b>NE</b>	<b>NE</b>	<b>NE</b>
<b>4. Agriculture</b>	<b>13 632</b>	<b>12 225</b>	<b>10 108</b>	<b>8 171</b>	<b>6 803</b>	<b>6 236</b>	<b>5 678</b>	<b>5 382</b>	<b>5 319</b>	<b>5 081</b>	<b>5 401</b>	<b>5 125</b>	<b>4 306</b>	<b>4 640</b>	<b>4 579</b>
CH <sub>4</sub> Enteric fermentation	4 049	3 784	3 486	2 887	2 251	1 893	1 791	1 730	1 669	1 717	1 742	1 665	1 306	1 448	1 502
CH <sub>4</sub> Manure management	1 524	1 501	1 319	1 073	859	729	725	664	586	622	636	569	405	471	512
CH <sub>4</sub> Rice cultivation	119	90	69	38	26	7	12	22	32	28	12	30	33	44	48
CH <sub>4</sub> Field Burning of Agricultural Residues	42	42	44	31	25	26	28	15	25	22	25	22	25	28	17
N <sub>2</sub> O Manure Management	1 056	1 030	921	760	606	510	496	461	422	452	467	429	321	368	395
N <sub>2</sub> O Agricultural soils	6 829	5 766	4 254	3 372	3 028	3 064	2 619	2 485	2 577	2 234	2 511	2 404	2 210	2 273	2 100
N <sub>2</sub> O Field Burning of Agricultural Residues	14	13	15	10	7	7	8	5	7	6	8	6	6	7	5

Source: The National 2003 GHG Emissions Inventory Report, submission 2005

## 2.2. GHG emission projections

Decision making for GHG emission mitigation is closely related to the actual GHG emissions in the country as assessed by the inventories and the projections for their mid-term trends (i.e. until 2020). GHG projections are elaborated taking in consideration the trends of key macro-economic, technological, demographic and other indicators that determine the economic development of the country.

Three scenarios for GHG emission projections until 2020 were developed, analysed and compared:

- “without measures” scenario(No M);;
- “with measures” scenario;” (M);
- “with additional measures” scenario. ” (Add M).

### 2.2.1. “Without measures” scenario

The “**without measures**” scenario is based on the assumption for intensive economic development with emphasis on energy intensive technologies and limited application of energy efficiency improvement measures in industry and agriculture. This scenario was originally developed in 1994 (before Bulgaria ratified the UNFCCC) for the preparation of the First National Communication on Climate Change. The GHG emissions forecasts for this scenario are given in **Table 2.4**.

**Table 2.4 GHG emission projections per sectors for “without measures” scenario, CO<sub>2</sub>-eqv**

Year	Energy	Industrial processes	Agriculture	Land use and forestry	Waste	F-gases	Total
2000	64697	7214	6324	-8976	6461		<b>84696</b>
2005	70936	8457	6781	-7800	9000		<b>95174</b>
2010	77560	10173	9370	-7700	10056		<b>107159</b>
2015	89178	11453	12196	-7800	11122		<b>123948</b>
2020	95617	12353	15269	-7900	12397		<b>135636</b>

Source: The Energy Institute JSC

### 2.2.2. “With measures” scenario.

The “**with measures**” projection encompasses currently implemented and adopted policies and measures, and those measures that are given in the energy sector. It envisages a growth rate of electricity demand by 62.8 % for the period 2000-2020. The GHG emissions forecasts for this scenario are given in **Table 2.4**.

**Table 2.5 GHG emission projections per sectors for “with measures” scenario, CO<sub>2</sub>-eqv**

Year	Energy	Industrial processes	Agriculture	Land use and forestry	Waste	F-gases	Total
2000	48051	5691	5389	-8976	4975	131	<b>64236</b>
2005	51617	6051	5177		5164	260	<b>68268</b>
2010	69778	7681	8682		4491	350	<b>90981</b>
2015	72044	8946	11111		3853	390	<b>96344</b>
2020	77640	9468	13359		4150	430	<b>105048</b>

Source: The Energy Institute JSC

### 2.2.3. “With additional measures” scenario

The “with additional measures” scenario comprises planned policies and measures for GHG mitigation. It is based on the same key macroeconomic characteristics. The GHG emissions forecasts for this scenario are given in **Table 2.6**.

**Table 2.6 GHG emission projections per sectors for “with additional measures” scenario, CO<sub>2</sub>-eqv**

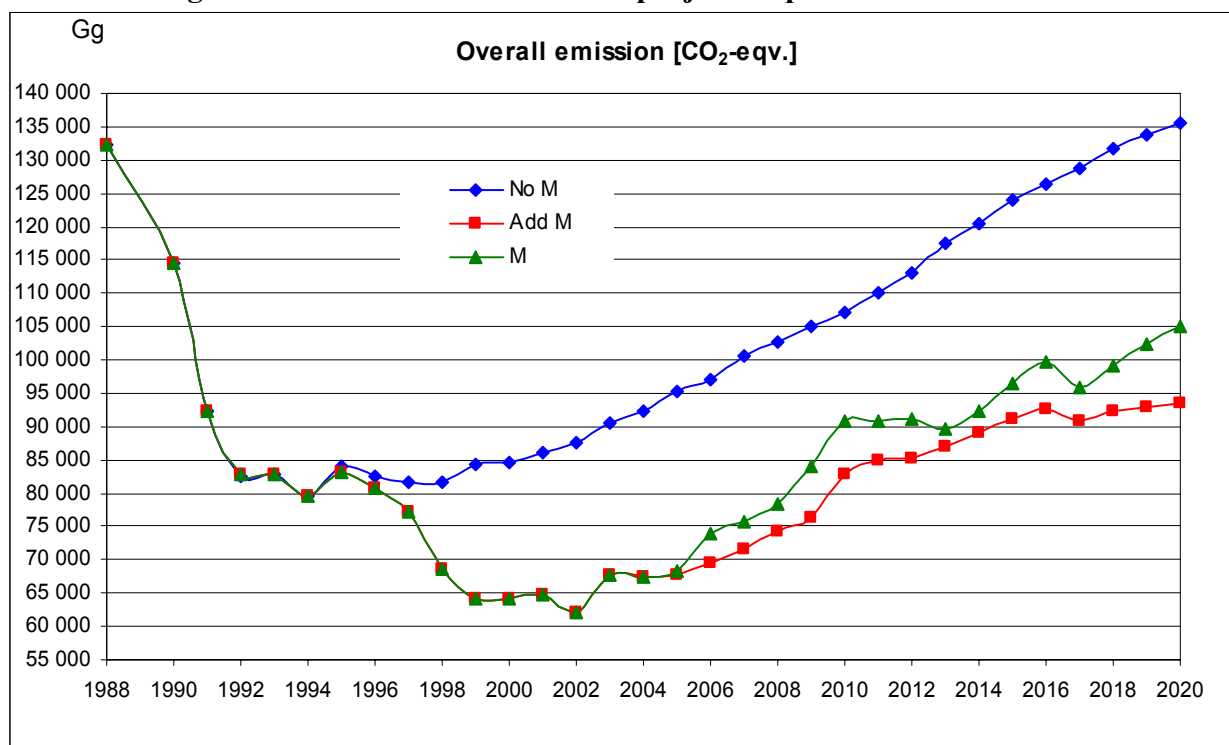
Year	Energy	Industrial processes	Agriculture	Land use and forestry	Waste	F-gases	Total
2000	48050	5691	5389	-8976	4975	131	<b>64235</b>
2005	51483	6051	4919	0	5164	260	<b>67875</b>
2010	62366	7459	8248	0	4446	290	<b>82809</b>
2015	67991	8946	9947	0	3794	355	<b>91034</b>
2020	67769	9468	12069	0	3913	415	<b>93635</b>

Source: The Energy Institute JSC

The historical GHG emissions for the period 1988-2003 and the emissions projection for the period 2004 -2020 for the three scenarios are presented in **Figure 2.3**.

It is obvious that the country has no problems to fulfil the commitment for 8% emission reduction compared to the base year.

**Figure 2.3 Overall GHG emissions projection per the three scenarios**



Source: The Energy Institute JSC



### **3 Assessment of the Contribution of the Local Measures and the utilization of the Flexible Mechanisms**

#### **3.1. Total effects of policies and measures**

The total effect of the policies and measures on reduction of greenhouse gas emissions can be determined by comparison of the “without measures” scenario on one hand and the “with measures” and “with additional measures” on the other. The emissions for the “with measures” are reduced gradually and there is even bigger reduction for the “with additional measures” scenario, when performing a comparative analysis with the “without measures” scenario.

Data for the emission allocation by sectors according to the three scenarios is given in **Table 3.1**.

The rated reduction according to the three scenarios of greenhouse gas emissions by sectors when implementing the “with measures” scenario compared to the “without measures” scenario is given in **Table 3.2**.

The additional rated reduction of greenhouse gas emissions by sectors when implementing the “with additional measures” scenario compared to the “without measures” scenario is given in **Table 3.3**.

The assessment of the comparisons in the two tables above presents the following features:

- The comparison of the “with measures” and “without measures” scenario indicates significant decrease of the GHG emissions in Waste sector (- 42-65 %) and about twice less reduction in Energy sector (- 10-27 %).
- The potential for GHG emission reduction in the “with measures” scenario has been realized on more than 70%, which is indicated by the relatively small reduction of GHG emissions in the “with additional measures” scenario. In this case, the reduction compared to the “with measures” scenario is within the range 5-13%;
- The biggest reduction is in the Energy sector, due to the big potential of the electricity production sector.

The measures taken in the country have a significant impact on the emission reduction and the most significant impact for the year 2010 is in the “Waste” sector (-55%), “Industrial processes” (-24%) and “Energy” (-10%)

Additional measures have the strongest impact in the “Energy” sector (-11%) and in “Agriculture” (-5%).

**Table 3.1 GHG emissions by sectors according to the three scenarios [Gg CO<sub>2</sub>-eqv.]**

Years	Energy			Industrial processes			Agriculture		
	No M	M	Add M	No M	M	Add M	No M	M	Add M
2000	64697	48051	48051	7214	5691	5691	6324	5389	5389
2005	70936	51617	51483	8457	6051	6051	6781	5177	4919
2010	77560	69778	62366	10173	7681	7459	9370	8682	8248
2015	89178	72044	67991	11453	8946	8946	12196	11111	9947
2020	95617	77640	67769	12353	9468	9468	15269	13359	12069

Years	Land use and forestry			Waste			F- gases		
	No M	M	Add M	No M	M	Add M	No M	M	Add M
2000	-8976	-8976	-8976	6461	4975	4975		131	131
2005	-7800	0	0	9000	5164	5164		260	260
2010	-7700	0	0	10056	4491	4446		350	290
2015	-7800	0	0	11122	3853	3794		390	355
2020	-7900	0	0	12397	4150	3913		430	415

Source: The Energy Institute JSC

**Table 3.2 Reduction of greenhouse gas emissions by sectors for the “with measures” scenario compared to the emissions for the “without measures” scenario, %**

Years	Energy	Industrial processes	Agriculture	Land use and forestry	Waste	F-gases
	M / No M	M / No M	M / No M	M / No M	M / No M	M / No M
2005	-27,2	-28,4	-10,44	0	-42,28	0
2010	-10,03	-24,49	-7,34	0	-55,34	0
2015	-19,21	-21,88	-8,89	0	-65,36	0
2020	-18,80	-23,35	-12,50	0	-66,52	0

Source: The Energy Institute JSC

**Table 3.3 Additional reduction of greenhouse gas emissions by sectors for the “with additional measures” scenario compared to the emissions for the “with measures” scenario, %**

Years	Energy	Industrial processes	Agriculture	Land use and forestry	Waste	F-gases
	Add. M / M	Add. M / M	Add. M / M	Add. M / M	Add. M / M	Add. M / M
2005	-0,25	0,0	-4,98	0	0	0
2010	-10,62	-2,89	-4,99	0	-1,002	-17,41
2015	-5,62	-8,89	-10,48	0	-1,53	-8,97
2020	-12,71	-12,50	-9,66	0	-5,71	-2,49

Source: The Energy Institute JSC



## **3.2. Assessment of the fulfilment of the Bulgaria commitments under the Kyoto Protocol**

### ***3.2.1. Joint Implementation mechanism***

The Joint Implementation (JI) mechanism is defined in Article 6 of the Kyoto Protocol and allows an UN FCCC Annex 1 country to reduce its emissions through implementation of a project in another Annex 1 country, while the achieved project GHG emission reductions are transferred from the project host country to the investor country.

The position of the Republic of Bulgaria on JI, as expressed in National Communications is as follows:

- JI is economically effective because it allows global GHG emission reduction under minimal expenses;
- JI mechanism could facilitate for the introduction of the latest technologies in the country;
- JI is a voluntary activity with two or more participants and the activity must be undertaken and/or approved by the governments of the two participants.

Bulgaria is amongst the first countries in the world, which host JI projects, according to Article 6 of the Kyoto Protocol at UNFCCC. As a result, the country has already gained some experience in various aspects of the JI mechanism, amongst which: conclude a Memorandum of understanding/Cooperation Agreements with other Annex I countries, consultancy on the possibilities on the realization of JI projects, procedures for support and approval of particular projects.

The department “Climate change policy” at the “Strategy, European integration and international cooperation” directorate in MOEW is responsible for the application of the flexible mechanisms of the Kyoto Protocol and for the execution of the procedures for assessment and approval of JI projects in Bulgaria. The department is also responsible for the EC Directive, introducing the Emission Allowance Trading Scheme.

The use of the JI mechanism in Bulgaria started in 2000 with the establishment of a JI mechanism unit as an independent structure in the State Agency for Energy Efficiency under the direct supervision of the Ministry of Environment and Waters.

A procedure of approval of JI projects has been set and is in place in Bulgaria, and it requires the assessment of each project by a Steering Committee for JI projects (SC JI), which committee is formed by the order of the Minister of Environment and Waters and consists of 8 members, experts from different institutions concerned – the Ministry of Environment and Waters, Ministry of Finance, Ministry of Industry and Energy, Ministry of Regional Development and Public Works, National Forestry Directorate, Executive Energy Efficiency Agency. The chairman is the Minister of Environment and Waters. SC JI carries out an assessment of compliance with criteria, elaborated in advance.

Seven Memorandums of Understanding/Cooperation Agreements have been signed aimed at JI cooperation – with The Netherlands, The Swiss Confederation, The Kingdom of Denmark, Republic of Austria, Prototype carbon Fund at World Bank, Japan and the Kingdom of Sweden. Memorandums with Finland, France, Spain and Italy are expected to be signed until the end of 2006.

Bulgaria is ranked as the most attractive country for investment in Joint Implementation project, according to the Top 3 rating of the Agency for independent analysis – Point Carbon. The country has already taken advantage numerous times from this very favourable situation.

As an implementation of the signed bilateral agreements, 12 projects have been approved and some of them have already started. The execution of those projects will lead to greenhouse gases emission reduction more than 8 mln. tons carbon dioxide equivalent for the period 2008-2012.

#### **List of the Approved Joint Implementation Projects**

1. Cogeneration gas plant “Biovet JSC”, Pestera, investor – “Biovet” SC
2. Reduction of greenhouse gases through gasification of the cities Veliko Tarnovo, Gorna Oryahovica and Lyaskovec, investor – “Overgas Inc” SC;
3. Rehabilitation of the heating system in TPP Sofia, City of Sofia, investor “Toplofikacia” Sofia JSC;
4. Rehabilitation of the heating system in TPP Pernik, City of Pernik, investor “Toplofikacia” Pernik JSC;
5. Reduction of nitrous oxides in “Agropolichim SC, city of Devnia, investor “Agropolichim” SC;
6. Paper factory Stambolijski SC, city of Stambolijski, Investor – “Stambolijski” SC;
7. Vacha Cascade, investor “National electrical Company” JSC;
8. Greenhouse gas reduction through gasification of Sofia municipality, city of Sofia, Investor “Overgas Inc.” SC;
9. Greenhouse gas reduction through gasification of Varna municipality, city of Varna, Investor “Overgas Inc.” SC ;
10. Cogeneration in TPP Plovdiv JSC, city of Plovdiv, investor “Toplofikaciya Plovdiv” JSC;
11. Common project for installation of cogeneration gas plants, put together as several sub projects – Polimeri SC; Kostenev HHI SC; Toplofikaciya Kazanlak SC; Toplofikaciya Yambol SC;
12. Utilization of biomass in Sviloza SC, city of Svistov, investor “Sviloza” SC;

A significant number of projects are supported at Project Idea Note stage. Now follows the process of a further development and possible approval.

#### ***3.2.2. Second national action plan on climate change, 2005-2008***

The Second NAPCC is developed in the light of the modern understanding of the policy to combat climate change. To sketch the current setting and relevance, the historical trend in the change of greenhouse gas emissions in Bulgaria and the baseline scenario for future emissions development are presented, along with Bulgaria’s vulnerability to climate change. Because the EU accession is an important driver for climate change policies, the relevant EU policies and legislation in the different sectors of the economy are described.

In the NAPCC, the individual sector mitigation policies and measures are described in detail, including the estimation of the emission reduction and requirements for implementation. Since financing from flexible mechanisms is important for the realization of these measures, a special chapter is dedicated to the implementation of the Kyoto mechanisms Joint Implementation and International Emissions Trading. Also the situation of the EU Emissions Trading Scheme for large industrial emitters in Bulgaria is described.

The effect of the policies and measures proposed in the plan are evaluated for the first commitment period under the Kyoto Protocol (2008-2012). Also an outlook until the year 2020 is provided to explore the long-term development of emissions. This development will be taken into account in establishing Bulgaria's position in the upcoming negotiations, on the post-2012 international climate regime.

The Second NAPCC includes mainly measures that do not require significant financial support from the state because the present economic situation in Bulgaria does not allow for the allocation of extensive government funding for implementing climate change related policies and measures.

The implementation of the policies and measures on climate change is vitally important for the near future as the country has significant reserves for emission reduction according to the objective of the Kyoto Protocol. There are numerous advantages for the adoption of the National action plan on climate change. It will contribute to:

1. Compliance with the requirements of the UNFCCC and the Kyoto Protocol in regard to the control, assessment and the reporting of GHG emissions.
2. Preparing for a high economic growth – above the expected trend, assurance that the GHG emission increase trend can be reduced and will not slow down the economic growth.
3. Opportunities for Bulgaria to earn dividend from the participation in the “Flexible mechanisms” – a set of market instruments that support the countries to comply with their obligations with minimal expenses. The financing of these sources will stimulate investments in the country and will increase the competitiveness of the Bulgarian economy.
4. Complying with the requirements of EU legislation for joining the community.
5. Readiness to fulfil the future post 2012 commitments of the international conditions on climate change mitigation, which are likely to include obligations for further emission reductions after the first Kyoto period of commitments 2008-2012. Having a proper climate change strategy will place Bulgaria in a better position, regardless of the type of conditions which will be adopted after 2012.

### ***3.2.3. Scheme for greenhouse gas emission allowance trading following Directive 2003/87/EC***

The directive establishes a scheme for emission allowance trading within the Community. The directive is introduced in the legislation of the countries and is applied for greenhouse gas emissions from certain activities in the energy sector, the production and reprocessing of metals, mineral industry and others.

The conditions and rules for allocation of GHG emissions allowances are determined by a regulation of the Council of Ministers.

A National plan for allocation of emission allowances is prepared, in order to set the ceiling of the emission quantity of installations that participate in the trading scheme and to distribute the burden for emission reduction:

- Amongst the sectors that participate in the emission trading scheme and the rest of the economy;
- Amongst the sectors that participate in the emission trading scheme;
- Amongst the installations in the frameworks of the participating sectors.

In regard to the forthcoming accession of our country to the EU, a number of commitments to improve the environment, the territories and installations attached to the TPP areas, have been undertaken.

## **4 Activities and Programmes to Achieve the Commitments under the Article 10 and Article 11 of the Kyoto Protocol**

### **4.1. Activities under Article 10 a of the Protocol – improving the quality of the inventories.**

#### **Development of the GHG inventory in Bulgaria**

As a Party included in Annex I to the UN Framework Convention on Climate Change (UNFCCC), Bulgaria has the commitment to implement annual inventories of greenhouse gas (GHG) emissions by sources and removals by sinks using the GHG inventory methodology approved by the UNFCCC.

The Inventory for 2003 is prepared according to the UNFCCC Guideline approved by the Subsidiary Body for Scientific and Technological Appliance on 06-14.12.2004 in Buenos Aires. The rules and the structure of the National GHG Inventory Report are formed by this Guideline, which is elaborated in compliance with the Revised IPCC Guidelines, 1996 and Good Practice Guidance for National GHG Inventories, 2000.

In the National Inventory Report are described the GHG emissions trends for the period 1988-2003. As well and:

1. Methods and data for assessment of the uncertainty of the annual GHG emissions and trends;
2. Key sources of the GHG emissions according to the methods from type Tier 1 and Tier 2 described in the Good Practice Guidance;
3. Assessment of the system of Appliance and Control of the Quality.

Attached are tables with data and GHG emissions, following the Common Report Format (CRF) for annual inventory reporting. These tables are completed for the basis for Bulgaria year – 1988 and for each year of the period 1990 – 2003.

Without drafting and approving a special program for improvement of the inventory, the country takes into account the remarks and recommendations by the inspecting teams of the Secretariat of the Convention each year and improves the ways for information collection and emission factor assessment.

The information sources (activities data) are already provided with special questionnaires and have been instructed for the necessity and ways for information verification. Because of this, the quality of information received from NSI, MAF, MEE and their units has been significantly improved.

#### **National System for Estimation of Anthropogenic GHG Emissions**

Article 5 of the Kyoto Protocol mandates that all parties included in Annex-B should have in place a national system for estimation of anthropogenic emissions for all GHG not covered by the Montreal Protocol before 01.01.2007. The following objectives and tasks are to be implemented with a national system in: administration, data collection and processing, capacity and implementation of GHG emissions monitoring.

The MOEW has made the decision to develop the National System as subsystem to the National Air Pollution Monitoring System. The Environmental Protection Act of the Chapter 2 “Information about Environment” and Chapter 8 “National System for monitoring of the Environment” as well a the existing administrative structure of the ExEA are sufficient and allow to organize the National

System for Assessment of GHG emissions. The process is under way within the MOEW structures without assignment of external consultants and developers.

### **National GHG register in Bulgaria**

The requirement for the establishment of a functioning National register for book-keeping of the allocation, ownership, turning over, transfer and revoking GHG emission allowances in Bulgaria has been introduced by Article 131 k (1) of the Environmental Protection Act and is one of the necessary conditions for the adequate and flawless functioning of the European emission trading scheme, and also for emission transfer according the Kyoto Protocol mechanisms. The Register must be functioning from 01.01.2007 according to the Emission trading directive but it will be established few months earlier in order to be tested for its functionality.

The development and administering of a National register is entirely within the responsibilities of the Ministry of Environment and Water. The progress on the development of the National register is at the following stage:

- Three experts, who will administer the National register, have been appointed in EEA, after proper training.
- The GRETA licences software for the Register management has been purchased (with the financial support of the Danish Environmental Protection Agency).
- Commercial negotiations with companies have been carried out for hosting the technical part of the Register within their protected equipment.

The following objectives are to be achieved before 01.01.2007:

- To draft and adopt a Regulation for the set of rules and the functioning of the National register for book-keeping of the allocation, ownership, turning over, transfer and revoking GHG emission allowances until the end of 2006 (a project supported by the Danish Environmental Protection Agency is being prepared).
- To finalize the negotiations for hosting the technical part of the Register;
- To start the operation of the Register before the end of 2006.

## **4.2. Adaptation Measures to Reduce Climate Change Impacts**

### **4.2.1. Agriculture**

The objectives of adaptation measures in agriculture are to support and sustain the agricultural production and to bring to minimum the impact of climate change by reducing the vulnerability of the agricultural crops.

The adaptation to climate change will be carried out in various forms, including technological innovations, changes in arable land, changes in irrigation, etc. Technological innovations include the creation of new cultivars and hybrids, which have higher productivity during changes in the climate.

**The specific adaptation measures cover:**

- Measures for increasing irrigation and irrigated agriculture adaptation of the country towards climate changes;
  - Adaptation measures to improve management, use and protection of water resources in irrigated agriculture during climate change;

- Adaptation measures to improve management efficiency and use of existing irrigation systems and elaboration of technological and technical means for irrigation under climate changes;
- Adaptation measures for use of rational and economically viable irrigation regimes for irrigated crops and elaboration of the technologies for cultivation under climate change
- New zoning of the agricultural resources and agricultural crops;
- New cultivars and hybrids to be adapted to climate change;
- Optimization of soil treatment;
- Adaptation phyto-sanitary measures

#### **4.2.2. Forestry**

For the forests in the low part of the country (up to 800 m a.s.l.) where most significant climate changes can be expected, the strategic task in the management should be adaptation towards drought and improving the stability of the forests.

For the forests in the higher parts of the country, i.e. over 800 m a.s.l. where the expected changes probably will not be drastic, the aims are: preserving the biodiversity, resistance of the ecosystems, multifunctional management, and system of protected natural territories.

The natural and introduced forest tree and shrub species in Bulgaria have great capacity for good adaptation to the eventual climate change in this century.

Through thinning out of the young stands, the living space of the rest of the specimen is increased, and the light and water regime is improved. In that manner the adaptation possibilities of the tree stands are increased and as a result the biomass increases too. The forestry management projects foreseen about 120 thousand ha to be cultivated annually with average timber output of 2 801 800 m<sup>3</sup>.

#### **4.3. Activities under Article 10 – national programs to reduce GHG emissions**

The measures for GHG emission reduction in the country are arranged in numerous governmental, administrative and regional programs and action plans. The more important of them are:

##### **Second National Action Plan on Climate Change**

After an analysis of the results of the execution of the First national action plan, carried out in 2002, a decision for the development of the Second national action plan for the period 2005-2008 has been taken. The Plan was approved by the Government and has been published in Bulgarian and English.

##### **Programmes and plans for energy effectiveness**

The national Energy Efficiency Agency has developed and published a long term (until 2015), and a short term (until 2007) energy efficiency program. These programs take into account the impact of the measures for energy efficiency on the GHG emissions.

The Ministry of transport has developed a draft of a program for improving the energy efficiency of the transport sector. The program is being coordinated on a inter-ministerial level.

The municipalities are developing and implementing programs for the improvement of the energy efficiency in their regions.

## **4.4. Joint Implementation projects and collaboration agreements**

### **4.4.1. “Joint implementation”**

In article 6 to the Kyoto Protocol the possibility is laid down for the Annex-I countries to decrease their greenhouse gas emissions by investing in emission reduction projects in other Annex-I countries (in practice economies in transition), so called “Joint implementation” (JI).

Bulgaria has already gained substantial experience with JI projects development and approval. An increasing number of interested countries, investors and contractors are interested in developing JI projects in Bulgaria. More detailed analysis of the problem is presented in p. 3.2.1 of the report.

### **4.4.2. Joint Implementation bilateral agreements**

These agreements are main political instrument and a tool for successful project implementation in the area of environmental protection. The features of these agreements with different countries are given bellow:

#### **• Kingdom of Holland**

The Ministry of Foreign Affairs of the Republic of Bulgarian is the coordinator of projects from the MATRA program, carried out within the framework of the Memorandum for Understanding, signed between the Republic of Bulgaria and the Kingdom of the Netherlands. The MATRA Pre-Accession program envisages financing of long term projects, which main objective is the institutional strengthening of the governmental sector if the adoption and implementation of the *acquis communautaire* in the following areas: Development of social policy and improvement of the labour condition, environmental policy and others.

The Ministry of Economy and Energy of the Republic of Bulgaria is the coordinator of projects for technical cooperation on the pre-accession part of the program of the Dutch government – PSO. The objective of the program is the development and consolidation of a competitive market economy through free transfer of know-how technologies and free technical help (consultations, training, work meetings, seminars, etc.) for the strengthening of the Bulgarian governmental institutions in various sectors of the economy, with the objective to support the Bulgarian accession to the EC through development of projects for acquiring and adopting the *acquis communautaire*.

#### **• Germany**

The cooperation with Germany is regulated by the Agreement between the government of the Federal republic of Germany and the Republic of Bulgaria for cooperation in the field of environmental protection, signed in 1993. According to the set procedure, during the annual meetings of the Management group for implementation of the agreement, the priority areas between the two countries are set in which framework bilateral cooperation projects will be financed. In addition to federal level cooperation with the Federal republic, cooperation is also carried out with various provinces. A very active cooperation is with the Free country of Bavaria. MOEW actively participates in the sessions of the Joint commissions Bulgaria-Bavaria in section III – “Environmental protection and regional development

#### **• Denmark**

More than 60 environmental projects, managed by the Danish Environmental Protection Agency have been financed by the DANCEE program before 2004, and the free financial support from the



Danish state amounted to about 37 mil. euro. joint project at the sum of 2.3 mil. euro have been implemented until the end of 2004.

- **Belgium**

#### **Flanders**

The financing of environmental projects by Flanders is based of the signed Agreement for cooperation between the governments of Bulgaria and Flanders in May 2001, which has approved the two year Program for Bulgarian Flemish cooperation (2002-2004). The projects are implemented jointly with a Flemish partner – company, organization or institution, based in the boundaries of Flanders, which on its behalf must deposit the project at the Flemish international relations administration.

#### **Wallonia**

The financing of environmental projects by Wallonia is based of the signed Agreement for cooperation between the government of the Republic of Bulgaria on one side and the government of the French community of the Kingdom of Belgium and the government of Wallonia on the other side, signed in October 1998 and in force since 30 June 2000. According to this Agreement, the First two-year cooperation program ended in 2003. During the meeting of the Joint commission Bulgaria Wallonia on November 13-14 2003, a Protocol for a second two-year program has been signed.

- **Principality of Monaco**

The principality of Monaco finances projects related to protected areas, biodiversity protection, and development of eco-tourism and creation of infrastructure for ecotourism in Bulgaria for more than 10 years. A management plan for the Veleka-Silistar region has been developed. The financial resources are aimed at educational programs, support of the system for information boards, establishment of structural base for the development of eco-tourism and preservation of protected areas.

#### ***4.4.3. Cooperation with International organizations and financial institutions***

- **United Nations Development Program (UNDP)**

UNDP supports environmental projects in Bulgaria since the establishment of its representative in Sofia in 1993. The current environmental projects at the present time amount to an 8% of the UNDP program in Bulgaria with a tendency for increase.

The projects are financed mainly by the Global Environmental Fund (GEF) as UNDP is one of the three executive agencies of GEF, together with the World Bank and the United Nations Environmental Programme (UNEP).

- **Central European Initiative**

The Central European Initiative (CEI) is an intergovernmental cooperation forum. It was established in Budapest in November 1989 by 4 countries – Austria, Italy, Hungary and Yugoslavia.

Members of SEI are 17 countries at present. The CEI works according to the EC Charter and all documents from the Helsinki Process. CEI is in fact, an open platform for all incentives, programs and projects, presented by a member-state, according to its interest.

There are 18 working groups in CEI, one of which is on environment. The sub-group on environment and transport is chaired by Austria and Hungary. It was created for future development,

coordination and assessment of the application of the Directive for sustainable transport in the CEI member-states.

#### **4.5. Technology transfer support**

Being a country in transition, Bulgaria does not have significant financial resources for the management of its environmental policy. The reasons for this are the restrictions, imposed by the Currency board.

As a country in transition, Bulgaria has no obligations to support technology transfer for countries out of Annex I of the Convention. Bulgaria is a recipient of technology transfer support. The forthcoming EC membership imposes certain environmental standards. The possibilities to adhere to them are foreign investments, international cooperation and various EC environmental funds.

**The main national and international sources for financing of environmental projects are:** State budget, The national trust eco fund, The pre-accession European Union funds for candidate member countries – ISPA, The Phare program and SAPARD, the bilateral cooperation agreements, International organizations and financial institutions.

##### ***4.5.1. State budget***

Each year, in addition to the Annex to the Law on the State Budget of the Republic of Bulgaria, the financing of environmental installations and sites at the municipalities is approved: municipal waste water treatment plants, collectors to them, sewage pumping stations, and municipal solid waste landfills for household waste.

In the draft of the Annex to the Law on the State Budget, in the List of environmental installations and sites, envisaged for construction are included sites and installations: from the Annex to the Law on the State Budget from the previous year, which are transitional; cofinanced from foreign donor programs; listed in the National waste management program, and the National program for priority construction of urban waste water treatment plants for settlements of over 10 000 population equivalent, adopted by the Council of Ministers; and collectors for the listed in the national program urban waste water treatment plants.

##### ***4.5.2. The enterprise for management of environmental activities (EMEA)***

Its operation is regulated by the Statues for the organization and functioning of the Enterprise for management of environmental activities (RCM 319/29.12.2002, SG issue 3 from 10.01.2003).

The Enterprise (EMES) **finances priority investment objects**, included in the National program for priority construction of urban waste water treatment plants for settlements of over 10 000 population equivalent in the Republic of Bulgaria, the National waste management program and the National plan for biodiversity protection.

##### ***4.5.3. National trust ecofund***

The fund has been established as independent legal entity by the Law for environmental protection for managing the funds, given to Bulgaria as a grant by the government of the Swiss Confederation during the swap deal “Debt for Environment” between Bulgaria, Switzerland and other donors.

**Priority areas** of the fund are:

- elimination of past damages to the environment ;

- reduction of air pollution;
- protection of water purity;
- protection of biodiversity.

#### ***4.5.4. European Union pre-accession funds for candidate member countries***

The pre-accession funds are for the period of preparation of the candidate-member countries for full membership in the EC. Through them, Bulgaria receives certain financing – about 100 mill. euro annually from the ISPA program (approximately 50 mill. euro for the Transport and Environment sectors) and 52 mill. euro annually from the SPARD program. The pre-accession support has on one side the task to support the infrastructure development for the Transport and Environment sectors and to help the development of the agricultural sector, and on the other – to train the administration step by step to work according to the procedures, typical for the EC structural funds, which are available for member-countries only.

##### **• The ISPA program – sector “Environment”**

The program is open for Bulgaria for the period 2000-2006. The value for the entire seven year period is about 350 mill. euro, or an average of about 50 mill.euro per year. The projects are proposed by the Bulgarian government through the Council for regional development at the Council of Ministers.

Large investment sites are financed at a minimum 5 mill. euro, that are priority for the country and in compliance with the adopted National programs in the sectors “Water quality improvement”, “Waste management” and “Air quality protection”.

##### **• Phare program**

The Phare program finances project on two main tracks – National Phare program and Phare program – Transboundary cooperation.

##### ***National Phare program***

Since the year 2000, the National Phare program in the environment is oriented mainly towards institutional projects, i.e. educational projects and projects for improving the administrative capacity and institutional building that will help the implementation of environmental legislation. The projects are carried out in the so called “**twinning**” scheme. Typical for this kind of projects is the joint work of experts from Bulgarian ministries and other administrative institutions, competent in the area of application of the environmental legislation with experts from environmental ministries and agencies from member-countries.

##### **The main activities, carried out in the framework of the twinning projects are:**

1. Drafting legislation and programs in the environmental sector;
2. Preparation and carrying out educational seminars’
3. Development, printing and distribution of methodological and informational materials;
4. Running information campaigns.

##### **• SAPARD program**

The fund for support of pre-accession measures in the agricultural sector and farming development in the candidate-countries, during the period for preparation for membership, is known as SAPARD.

It helps the development of sustainable agriculture and sustainable agricultural development under the requirements for environmental protection.

The SAPARD projects are coordinated by the Ministry of agriculture and forestry (SAPARD Agency).

#### **4.6. Environmental Education and Public Awareness. Environmental Research**

Bulgaria does not have a particular strategy or program for environmental education and public awareness on the climate change problems. There is no wide spread public discussion amongst the government, economic agents, non-governmental organizations and ordinary people on the issues of climate change. The lack of coordination amongst all interested parties results in an information flow, which is far away from a consistent and in depth analysis, as should be for this problematic area.

Bulgaria carried out a project for self assessment of the capacity of the country in the field of sustainable development in 2004.. Specific objectives and tasks have been elaborated to improve the situation and direct and indirect assets have been recognized that allow the tasks to be solved in a short period of time. The European funds will provide may financial means for long term perfection of Bulgaria's capacity for adequate management of topics on global climate change.

The topics of environmental protection and climate change are included in school syllabuses in the educational and cultural field "Natural science and environment". They are studied in most details in the "Geography" subject but also, even in lesser scale in "Environmental chemistry" and "Biology".

The environmental disciplines are getting more and more attractive amongst future students and researchers due to the big perspective for the development of the environmental sector and the financial resources, which will arrive in short- and long-term environmental projects.

A step forward towards the improvement of the environmental capacity was the "Specialized course on vocational training of chemistry teachers on environmental protection", carried out in 2005. Also more and more portals can be found in Bulgarian internet space, containing thousands of publications, documents, informational bulletins and reference books on environmental problems.

The Bulgarian business was involved in the issues, concerning changes in the environment with the creation of a working group at the Ministry of Environment and Water (MOEW), which discusses projects and legislation, transposing Community environmental norms.

Next, it can be noticed that MOEW spreads the obligation undertaken through numerous seminars, trainings, work meetings, conferences, round tables, etc. with all parties concerned. The Ministry created and maintains a Web page in Internet, which is a main source of information for the public for the process of preparation of Bulgaria joining the European Union in the field of environmental protection.

The legislation projects in the area of environment and application programs for various directives in the sectors "Air quality", "Waste management", "Industrial pollution and risk management", and "Water quality", that have been presented during the negotiation process with the European Union, have been developed with the support, and also coordinated with all operators or sectors concerned.

The environmental research is financed not only on national level but also in cooperation with research organizations from EU member-countries within the Sixth Framework Programme.

Taking into consideration the importance of climate change, the Bulgarian Academy of Sciences created a Scientific-Coordination centre on global changes.

The more important research projects with international participation at present include:

***National Information System for Air control in real time PHARE 9916***

**The main objectives of the project are a further and full implementation of EU Air Quality Legislation by improving the administrative capacity of EEA and REIs with regard to QA/QC in the National Ambient Air *Monitoring* System (.**

***Development and implementation of a soil monitoring and assessment framework for the republic of Bulgaria***

The *project* is deemed to be a pro-active step towards complying with the upcoming soil *monitoring* legislation of the EU

***Development of national system for monitoring of the biological diversity and protected areas in Bulgaria***

The main objectives of the project is to strengthening the Bulgarian infrastructure for *monitoring* of the biodiversity and protected areas to ensure that the monitoring is in conformity with the EU-directives 92/43/EEC (habitat directive) and 79/409/EEC (bird directive).

**Strengthening of the capacity and development of a Bulgarian national system for information management and reporting according to the IPPC directive** - The project aims at strengthening the capacity of the Executive Environment Agency with regard to issuing permits and reporting in accordance to the IPPC-directive (96/61/EC).

**FOR FURTHER INFORMATION PLEASE CONTACT:**



**Ministry of Environment and Water**

**67, William Gladstone Str.  
1000 Sofia  
Bulgaria  
Daniela Stoytcheva  
Phone: +359 2 940 61 35  
E-mail: [dstoytcheva@moew.government.bg](mailto:dstoytcheva@moew.government.bg)**

**REPUBLIC OF BULGARIA**

**Report on Demonstrable Progress to Achieve Commitments under the Kyoto Protocol**

**Elaborated by the Ministry of Environment and Water**

**By assignment to the Energy Institute JSC**

**Contributors:**

Christo Christov, Hristo Vassilev, Violeta Hristova, Boian Neshev, Vesselin Alexandrov,  
Paskal Jelev, Kiril Tagarov, Daniela Petkova, Luben Boyanov, Liuba Hristova