

HARMFUL SUBSTANCES EMISSIONS AND QUALITY OF THE AMBIENT AIR

EMISSIONS OF HARMFUL SUBSTANCES

Key question

Do emissions of acidifying substances, ozone precursors and PM precursors have adverse effect on the health of people and ecosystems?

Key messages



In the period 1990 - 2010 emissions of acidifying substances (nitrate, sulfur oxides and ammonia), estimated in acidifying equivalent show a decrease of 63 % - from 47,57 thousand tones to 17,6 thousand tones.



In the period 1990 - 2010 ozone emissions show a decrease of 74% - from 1016 thousand tones to 268 thousand tones.



In the period 1990 - 2010 PM emissions of PM /PM10/ are decreased with 62%, from 897,4 thousand tones to 343,4 thousand tones.

Key question

Does Bulgaria carry out its international commitments to reduce emissions of harmful substances in the air?

Key messages



All the commitments of Bulgaria born under Directive 2001/81/EC on the levels of emissions of SO₂, NO₂, NMVOC and NH₃ in 2010 are fulfilled.



In 2010 the desulfurization facilities caught 642,6 thousand tones sulfur dioxide.



Household heating is still the main source of PM₁₀, emitting 58% of the total quantity released in the atmosphere.

AMBIENT AIR QUALITY

Key question

Are the admissible ceilings for defending the human health in air pollution achieved?



In the period 1990 to 2010 there is a significant decrease in the levels of emissions of all main ambient air pollutants, followed by improvement in the ambient air quality.



In 2010 compared to 2009 the percentage of the population affected by the sulfur dioxide levels is decreased from 3% to 0,57% and by the ozone - from 4% to 0,84%.



The percentage of population living with levels of PM₁₀ over the admissible ones is still high – 57% and with such ones for nitrogen dioxide – 22%.



There is no problem with the levels of pollution with benzene, nickel and arsenic.

CLIMATE CHANGE

CHARACTERISTICS OF FALLS AND THE TEMPERATURE

Key question

What were the temperatures in Bulgaria in 2010?

Key messages



In Bulgaria 19 of the past 22 years after 1989 year have positive anomalies of the average annual air temperature compared to the climatic norm of the basic period 1961 – 1990.



For the period 1971-2010 the average surface air temperature of the air in the country is increased with 1.5°C.



The warming-up trend started in the end of 70s still continues in 2010. 2010 is amongst the 10 warmest years, and the decade 2001-2010 is warmer than the previous one (1991 - 2000г.).



The average annual temperature in 2010 was over the climatic norm with 1°C. This is the 13th consecutive year with temperatures higher than the usual for the country.



The summer of 2010 was 1,7°C warmer than the climatic norms, with average monthly temperatures in August higher than the usually warmest year month July.



During the second half of 2010 one more month was warmer than the previous one. A number of meteorological stations reported records in high average monthly temperatures for November.

GREENHOUSE GAS EMISSIONS

Key question

Are the national and international targets set for Bulgaria for the GHG emissions met?

Key messages



For the period 1988 – 2010 the basic GHG emissions show reduction trend. In 2010 the total GHG emissions emitted are – 61472,06 Gg CO₂-eq. or 47,8 % from the basis year's emissions.



GHG emissions per capita went down from 14,3 tones CO₂- equivalent in 1988 to 8,2 tones CO₂- equivalent in 2010. This indicator moves Bulgaria closely to the average EU levels.



The analysis of the data from the National inventories for the period up to 2010 in comparison to the Kyoto target shows that the GHG emissions are significantly lower than the base 1988 and presently Bulgaria has the necessary reserve to ensure the carrying out of the obligations of the State under Kyoto protocol.

WATER RESOURCES MANAGEMENT AND WATER QUALITY

WATER RESOURCES AND WATER USE CHARACTERISTICS

Key question

What is the quantity of the fresh water resources in the country, how are they formed, is there a risk of water scarcities?

Key message



Compared to other European States, Bulgaria is relatively rich in fresh water resources both as absolute volume and per capita.



Water resources are formed mainly by the external flows and are unevenly spread over the territory.



Water scarcities may arise in regions with low shower levels, high population density, water consuming economic sectors together with specific nature-geographic features.

Key question

What are the needs of water in Bulgaria, what is the structure of the water use and the main trends? What is the pressure of the water-abstraction over the states' water resources and to what extend the water management is sustainable regarding the available resources? What are the differences in water abstraction between the country's regions?

Key messages:



The group settlement water supply systems ensure access to drinking water for 99 % of the population.



After 1990 the water abstraction in the country is being rapidly decreased due to the limitations for irrigation and the overall restructuring of the economy. After 2000 the level and structure of the water use in the state are stabilized.



The pressure over the water resources measured with the exploitation index at national level is under 10%, e.g. the water abstraction in Bulgaria does not cause stress to the water ecosystem. Water scarcities may be observed in separate regions with lower resources availability, high population density and intensive economic activities.



Simultaneously Bulgaria is rated among the leaders for average abstraction of water per capita and is amongst the European states depending mainly on the surface water sources – due to the significant water volumes used for cooling in the energy sector. Annually ca. 60% of the water abstractions in the country are used for cooling processes in the energy production, which though after use are taken back to the sources. The territorial spread of activities using water as well as different natural-geographic features determines the big regional differences over the state.

Key question

What is the structure, what are the trends of the water use? Is the water use sustainable for different economic sectors?

Key messages



Significant drop in the water use for the period 1990 – 1995 due to the economic restructuring, and after the 2000 there is relative stabilization of the water quantities.

 The Energy sector is the biggest water user. In absolute volume the cooling water records slight drop, but their share in the overall water use increases due to the changed water use structure.

 From 1990 to 1997 decreases the use of the drinking water in the households, after that period it is stabilized at 90 to 100 l/day ca. per capita. Significant regional differences in the consumption are recorded.

Key question

What are the main trends, showing the formation, discharge and treatment of waste water from the households and the industry, what are the costs for water and ecosystems protection?

Key messages:

 In the period 1990 – 1995 the quantity of the wastewater is decreased rapidly, due to the restructuring of the economic activities, relative stabilization is seen after 2000.

 Annually ca. 58% of the formed industrial and 72% of the domestic wastewater are treated on-site or in SWWTP (2000-2010).

 After 2005 the number of the put into operation SWWTPs is increasing.

 The relative share of the wastewater treated with secondary and additional methods is increasing.

 Although slowly, the share of the population linked to the public sewage network and SWWTP is increasing.

 The comparison with other European states shows that Romania and Bulgaria are at the bottom of the list of the share of population connected to SWWTP.

 The renovation of the public sewage system network and construction of the modern treatment plants requires high level of investments and the necessary technological time for construction.

SURFACE WATER STATUS

Key question

Is there an improvement in the quality of the surface water that is affecting their use for drinking water sources on one hand and on the other - as a habitat for a number of water organisms?

Key messages

 In the period 1996-2010 the trend to improvement in the quality of water seen during the recent years is stable, still there are some water bodies in risk. Specific programs were developed for these bodies aiming at achievement of the good ecological status until 2015.

 For the period 1996-2010 concentration of NH₄-N (ammonia nitrogen), BNO₅ (Biochemical need of Oxygen) and PO₄ (Orthophosphates) show a decrease.

 For the period 1996-2010 no significant change is seen for the dissolved oxygen and NO₃.

 During the past 2010 there is clear trend for improvement in the quality of the surface water in Republic of Bulgaria as regards the basic chemical indicators, both in short and in long-term.

 In the period 2009 - 2010 the majority (80%) of the river monitoring points on the main streams in Bulgaria are in the range very good to moderate status (data from the hydro biological monitoring of surface water program, part of the National Environmental Monitoring System). There are still water bodies in risk, covered by programs of measures aiming at achievement of the good ecological status in 2015 r.

GROUND WATER STATUS

Key question

Is the quality of the ground water improved which is affecting their use as drinking water sources on one hand and on the other – to feed water and earth ecosystems?

Key messages

 In the period 1996 – 2010 gradual improvement in the quality of the ground water is observed for most of the indicators.

 In the period 2000-2010 seven out of the nine ground water indicators (ammonia, nitrite ions, permanganate oxidation, sulfates and chlorides, total iron and manganese) show a decrease.

 The percentage of the points in which the average annual concentrations of nitrates are above the nitrates quality standard in the period 1996-2010 show minor changes compared to 1996 with slight increase in 2008 and further halt in the last three years.

 The trends of change for the nitrate contents in the ground water during two triennial periods 2005 – 2007 and 2008 – 2010 show prevailing of the percentage of rapid increase in the nitrate contents in the open ground water while for the karst water sources significant decrease or lack of trend is observed.

LAND USE AND SOIL STATUS

Key question

**How much and in what proportion from the agricultural, forest and other semi-natural and natural lands are taken out for the development of the urbanized territories?
What are the trends in the changes of the land use- by area and type?**

Key messages

 In the period 2005 - 2010 the agricultural land, and to lesser extend – the forest, semi-natural and natural lands are decreasing due to the increasing urbanized ones. Expansion of the residence areas and infrastructure sites is the reason for the increasing urbanized territories.



In 2010 we see again the trend for decrease of the agricultural land and increase of the other types, predominantly the urbanized ones.

Key question

Are Bulgarian soils fertile?

Key message



In the period 2005 -2010 the soils in the country have very good ecological status as regards the biogenic elements and organic matter reserve.

Key question

What are the irreversible soil losses resulting from degradation processes?



In the period 2005 – 2010 a trend to limit the water erosion is observed, both as regards the area spread and the average annual soil loss.



In the period 2005 – 2010 the wind erosion shows relatively stable area of spread and soil lost.



In the period 2005 – 2010 there is a trend for expansion of the landslide processes. The number of land slopes is increased, as well as the area affected.

Key question

Are the soils in Bulgaria polluted?

Is the fertilization of the agricultural land balanced as regards the soil quality?

To what extend the non-secured stocks for banned and out of use plant protection products is a thread to the soils status?

Key messages



In the period 2005 – 2010 the soils in the country have good ecological status as regards the pollution with heavy metals, metalloids and persistent organic pollutants.



In 2010 compared to the previous year, there was no significant change in the amount of mineral fertilizers used by type and as total quantities. As a percentage of utilized agricultural land in the country, fertilized areas represent 39,4% - for nitrogen fertilizers, almost 8% - for enriched with phosphorus and 4,12% for enriched with potassium soils.



For the period 2000 - 2010 strong positive trends were observed in the management of storage of prohibited and obsolete plant protection products. The number of unsafe storage and quantities of banned and obsolete pesticides stored in them decreases.

BIODIVERSITY. NATIONAL ECOLOGICAL NETWORK

Index of the common birds types in Bulgaria

(SEBI 1 – Abundance and spread of chosen species)

Key question

Which bird species decrease their abundance and spread in Bulgaria?

Key message



The general trend for the period 2005-2010 for **all 38 common species** is to reduce the number by **17%**, which is 3% more than the previous estimate for the period 2005-2009. The previous assessment shows an overall reduction of the index of birds inhabiting agricultural lands by 9%, while present one shows a further reduction to 16%. Previous evaluation showed a positive trend in status of forest bird species, but present was negative with a decrease of 7%.

Key question

How effective is the setting of protected areas as a tool for biodiversity conservation and as a response to the loss of biodiversity?

Key message



At the end of 2010 the number of protected areas in Bulgaria is 953 and their total area is 582 458,1 ha (5,2% of the country). There is a tendency to increase the size of protected areas and for the period 1991 – 2010 it has doubled.

**Protected areas under the Habitats Directive and Birds Directive in Bulgaria
(SEBI 8 - Protected areas under the Habitats Directive and Birds Directive)**

Key question

Did the States propose sufficient number of sites under the Habitats Directive and Birds Directive?

Key message



In Bulgaria, by the end of 2010, 335 protected areas of the network "Natura 2000" covering 30% of the country were adopted by the Council of Ministers. At the end of 2010 the number of protected areas designated under the Birds Directive in Bulgaria is 114 with a total area of 2,267,624 ha (20,4% of the country) and the number of protected areas designated under the Habitats Directive is 231 with a total area 3,330,101 ha (30% of the country). The proposed areas for Bulgaria were assessed as adequate in terms of representativeness of species and habitats. Sufficiency index was 94,3%.

**Invasive alien species for Bulgaria
(SEBI 10 - Invasive alien species in Europe)**

Key question

Is the number of invasive alien species in Bulgaria increasing or decreasing? What invasive alien species should be the target of governing action?

Key message



The cumulative number of alien species in Bulgaria has risen steadily since 1900. As foreign invasive and potentially invasive in Bulgaria were defined totally 50 types of fern and

seed plants, 30 species of animals and 20 species of fungi. The most severe invasion of invertebrates is in the Black Sea ecosystem. Most vulnerable to the introduction and naturalization of alien plant species are man-made habitats, followed by riparian habitats.

Key question

How does the number of wintering populations of waterfowl in Bulgaria change?

Key message



For the period 1997-2010, there was a reduction by half in the number of waterfowl. Although in the short term the number of wintering birds in the country for the past 5 years changed in a narrow range and remained relatively constant in the long run for the last 10 years is seen a reduction of the birds with more than 50%.

FOREST

Key question

How is the contribution of the current management of forest resources to global carbon cycles evaluated?

Key messages



Forest area – For the past 10 years a steady trend is seen in the increase of forest area.



There is a clear trend of increasing tree stock in the last five years, better expressed in coniferous trees.



Stocks of carbon in the biomass of coniferous and deciduous tree species for the last five years have grown.

WASTE AND MINERAL RESOURCES

Quantity of the generated waste

Key question

Waste Management: Is the hierarchy of waste management obeyed?

Key messages



In the last 3 years the amount of waste generated in the country decreases. The waste generated in 2010 were 15,241 kt and 2430 kt less than in 2009. The reduction of waste is mainly due to:

- Further development and optimization of systems for separate collection of recyclable waste;
- Implementation of the objectives of the National program for waste management;
- Increase in the amount of waste given for recycling;
- Termination of the activities of large industrial enterprises.

Quantity of the municipal waste generated

Key question

Prevention of waste generation: Does the amount of generated municipal waste in the country decrease?

Key messages



Over the past 10 years the amount of generated waste in the country decreases. Municipal waste for 2010 was 3091 kt. Since 1999 the average quantities of municipal waste per capita in Bulgaria are lower than those for the EU-27. The reduction of the generated waste is mainly due to:

- Improvement of the system for measuring the quantities of waste by installing weighbridges in landfills, increased scrutiny by stakeholders and others;
- Further development and optimization of systems for separate collection;
- Introduction of economic instruments:
 - Additional charges for each tone of waste disposed;
 - Additional product fee for plastic bags;
- Implementation of measures of the National strategic plan for phased reduction of the amount of biodegradable waste disposed at landfills (2010 -2020);
- Decrease of the population.

Quantity of the municipal waste disposed

Key question

Disposal of waste: Does the share of landfilled municipal solid waste in the country decrease?

Key messages



Development of infrastructure for waste management with the support of OP "Environment 2007-2013" - construction of 23 regional systems for waste management in the country.



In 2010 started the construction of municipal outdoor areas for collection and composting of separately collected "green" waste from parks and gardens.



Raising public awareness about the benefits of separate collection of waste and to their use as a valuable economic resource..



Increase of households covered by home composting systems.



In 2010 recycled municipal waste is 26 kt, 3041 kt are disposed. Disposal of household waste by landfilling remains the most popular method for treatment of municipal waste in the country.

Generated and recycled / recovered packaging waste

Key question

Is there an increase in the share of recycled packaging waste?

Key messages



Relatively high levels of consumption of plastic, paper and cardboard packaging are maintained. Compared with previous years, in 2010 there was significant decrease in the consumption of glass packaging.



In 2010 packaging consumption is around 43 kg / year / per capita.

 In 2010 the country has reached a total of 62% percent recycled material and 62% recovery of waste packaging.

 Developing systems for separate collection of packaging waste - the population covered is 5,743,963 inhabitants.

RADIATION CHARACTERISTICS OF THE ENVIRONMENT

Radiation status of the environment

Key question

Does the radiation status of the environment in Bulgaria represent a threat to public health and ecosystem health?

Key messages

 In 2010, the National Automated System for continuous monitoring of radiation gamma-background has not recorded values of gamma radiation background different than natural.

 There was no trend observed for increasing volume specific activity of natural and technogenic radionuclides in the ambient air.

 In the monitoring of the radiation condition of uncultivated soils no values of specific activity of natural and technogenic radionuclides exceeding the background ones were found.

 Surface water streams and pools in the country have good radiation status.

Radiation exposure of the population

Key question

Is there any further exposure of the population in areas of nuclear facilities - NPP "Kozloduy", "PHRAO – Novi Khan"?

Key messages

 Assessment of annual effective dose of exposure over the background of the population to the activities of the "NPP Kozloduy", based on the results of the 2010 radiation monitoring in the region is less than 0,01 mSv - the limit below which no further measures for optimization of radiation protection of the population are needed.

 Assessment of annual effective dose of exposure over the background of the population to the activity of "PHRAO- Novi Khan" based on the results of the biennial radiation monitoring of environmental sites and the living environment in the region of PHRAO – Novi Khan in nearby settlements (villages of Novi Khan, Krushovitsa and Gabra) shows no deviation from normal radiation status, common for the country and under 0,01 mSv - the limit below which no further action is necessary to optimize the radiation protection of the population.

 Assessment of annual effective radiation exposure of the population resulting from transboundary pollution in the country following the accident at the Chernobyl NPP is under 0,01 mSv. In none of the tested food samples is registered content of radionuclides above the levels of reporting to the European Commission established by Recommendation 2000/473/EURATOM.

NOISE POLLUTION

Key question

Is the country's population exposed to the noise over limits adversely affecting human health?

Key messages



In 2010, to the EC has been reported noise map for 89,260 km major road sections in Bulgaria (with traffic of over 6 million annually) and Action Plan with the strategic noise maps /SNM/ of the City of Plovdiv.



The results of the SNM of the cities of Sofia and Plovdiv show that people exposed to over the limits round-the-clock noise in Sofia are 58,92% and 73,98% in Plovdiv. Over the limits night noise affects 72,23% of the inhabitants of the capital and 73,40% of the residents of Plovdiv. Analysis of SNM for agglomerations shows that the main cause of excess noise is the intense traffic.



The measured daytime noise levels in cities for the period 2000 - 2010, show as prevailing ranges 68-72 dB (A) and 63-67 dB (A), while the limit is 55-60 dB (A). Unfavorable retain of high levels of noise in large cities, where population density is high, means severe acoustic environment associated with the occurrence of health risk.

ENERGY

Energy consumption

Key question

Does the energy consumption and environmental loads caused decrease?

Key messages



During the period 2000 - 2010 the ultimate energy consumption increased by 5,0% as a result of increased consumption in the transport sector and household sector and a reduction in the Industry.



In 2010 gross domestic consumption of fuels and energy in the country amounted to 17,829 ktoe¹ and compared to 2000 decreased by 7,2%.

Energy intensity

Key question

Are the indicative targets of the National Action Plan on Energy Efficiency 2008-2010 attained as regards energy intensity?

Key message



The final energy intensity is being decreased by over 5% averagely per year. The overall energy savings by 2009 under Directive 2006/32/EC on energy end-use efficiency and energy services is not less than 444,46 ktoe (5168 GWh), which significantly exceeds the indicative

¹ Thousand tones petrol equivalent

target of 209 ktoe for the first interim period (until 2010) and represents nearly 71% of the indicative target by 2016 (627 ktoe).

 Still the final energy intensity of Bulgaria remains highest among the EU countries.

Consumption of energy from renewable sources

Key question

Is the set for Bulgaria indicative target for 2010 for 11% share of electricity produced from renewable energy sources achieved?

Key message

 In 2010 not only the set national indicative target for 2010 for 11% share of electricity from renewable sources in gross inland consumption of electricity was achieved, but is also overachieved by 4%.

TRANSPORT

Key question

What are the trends in the characteristics of passenger and freight transport in Bulgaria with a view to their impact on the environment?

Key messages

 In 2010, a slight revival of passenger transportation by the means of public transport is observed, resulting in an increase in work done for the carriage of passengers by air and electric transport.

 Almost 100% of domestic freight is carried by road transport. The structure of the freight changes and the share of road transport have increased from 51,9% in 2000 to 80% in 2010, at the expense of the share of rail transport, which decreased from 44,9% to 12,6 % in 2010².

Consumption of fuels for transport

Key question

Does the fuel consumption for transport continue to increase the pressure on the environment?

Key messages

 In the period 2000 - 2010, the share of transport in final consumption of fuels and energy increased from 22,2% to 31,4%. The main consumer is the road transport, which consumes 91,4% of the total amount used in the energy sector.

 In 2010 biofuels consumption continues to be insignificant, while retaining the range of previous years. The share of biofuels in overall fuel consumption in transport sector in 2010 amounted to 0,97%

 The national indicative target of 5,75% biofuel share in total energy consumption in the sector in 2010 was not achieved.

Emissions of pollutants and greenhouse gases from transport

² NSI Data

Key messages



Emissions in ambient air of carbon monoxide from road transport for ten years decreased by 54%.



Emissions of nitrogen oxides in ambient air from the road transport for ten years decreased by 25%.



Transport emits 26,63% of total nitrogen oxides and 13, 33% of carbon monoxide emissions.

FINANCING OF ENVIRONMENTAL ACTIVITIES

Total cost of protection and restoration of the environment

Key question

What is the consumption of financial resources for environmental protection in the country?

Key message



In 2010 the cost of protection and restoration of the environment at the national level is estimated at 1273, 8 million lev, as their share of the gross domestic product was 1,8%. A decrease is reported in comparison to 2009 by 0,5%.

Consolidated cost of environmental protection

Key question

What financial resources are managed and spent on programs of the Ministry of Environment and Water in 2010?

Key messages



Consolidated expenses covered by the budget of the Ministry in 2010 under the programs on the environment amounted to 557 084 million lev, which are about 84, 929 million lev more than in 2009.



The implementation of expenditure of the budget amounts to 85% of the planned.

Generated income

Key question

Are the values set in Law on the structure of the State Budget for 2010 attained for the revenue of the Ministry of Environment and Water?

Key messages



Implementation of revenue by 31.12.2010 amounted to 8,743,202 lev or 81% of the planned 10,854 million lev.



Reported income from concessions exceeds the planned with 917 992 lev.



About half of the planned funds from fines and penalties are not received.