

## Conclusion

The Republic of Belarus is situated in the central part of the European continent. Among the 50 European states Belarus is located at 13th place in the occupied territories and the 14th – in the total population.

According to estimates by the International Monetary Fund (IMF) existing in Belarus economic model looks competitive. GDP per capita calculated at purchasing power parity amounted in 2009 12.7 thousand \$. This is the second figure in the CIS after Russia, it is also lower compared with the neighboring countries of EU – Poland, Lithuania, Latvia.

According to IMF forecasts, if in Belarus will continue the current pace of economic growth, then by 2015 rate of GDP per capita in the country at buyer-term capacity will be higher than in Latvia and nearly matched with Russia and Lithuania.

**Air pollution.** The main source of pollution of atmospheric air is transport. The contribution of mobile sources of emissions of the particles is 43%, oxides of nitrogen – 63%, and carbon monoxide – 89%.

Hydrocarbons, mostly goes into the atmosphere from the housing and public utilities-households and transportation of liquid and gaseous fuels by pipes.

Ammonia emissions are mainly caused by agriculture (50%); transport and communications accounted for 20%; of housing and communal services – 17%.

Sulfur dioxide emissions associated with electric power, lead – with the production of building materials, cadmium – from engineering and metalworking industry.

Every year dust cleaning system is captured more than 2,5 tons of pollutants, the effectiveness of existing systems is 82-88%.

State of atmospheric air in cities is good enough controlled: the average concentration of pollutants were generally below the established standards of quality, daily average concentration of total particulate matter and nitrogen dioxide exceeded the MPC only in some cities.

Number of «problem» areas with respect to air pollution in industrial centers of the country in 2009 decreased in comparison with 2007 by 22%.

In most controlled cities strong tendency to a reduction in levels of air pollution by formaldehyde is revealed. The content of sulfur dioxide in atmospheric air is steadily low. On the contrary, the content of nitrogen dioxide in air has increased in some cities by 1,2-2,0 times. In the cities of Gomel Region (Gomel, Mozyr, Rechitsa), Vitebsk and Grodno an increase in air concentrations of particulate matter is observed in 1,2-2,1 times.

**Climate change.** 2005-2009 were not an exception of a series of warm years. Period of warming that began in the late 1980's: the average annual air temperature is higher than the climatic norm on 1,0-2,0 °C, only winter and spring of 2006 were below normal.

Since 1989 for the entire period of meteorological observations, the warmest was 2008 mainly due to warm winter. Spring 2007 was the warmest for the entire period of meteorological observations in Belarus.

It should be emphasized that during the period 2005-2009 it has not been established clearly marked trends of annual and seasonal average air temperatures.

Annual rainfall for the period 2005-2008 was close to normal, in 2009 the rate was exceeded by 24%.

In the spring of 2008 for Belarus in general and a number of individual regions (Vitebsk, Minsk and Mogilev) as the period under review, and for the entire period of meteorological observations was marked the maximum rainfall.

It should be noted that the warming climate in Belarus is accompanied by an increase in the number of dangerous meteorological and agro-meteorological phenomena (squall lines, heavy rains, frost in the southern part of the country on the reclaimed areas, droughts).

Emissions of greenhouse gases amounted to an average of 87.9 million tons per year without considering the absorption and 56.6 million tons a year, taking into account the absorption of carbon dioxide. In the structure of emissions more than 65% is carbon dioxide, about 17% of nitrous oxide, about 16% – methane; other greenhouse gases in the sum is less than 1% of total emissions.

About 64% of greenhouse gases has originated in the energy, 25% – for agriculture, in industry, solvent use and waste add up to about 10% of greenhouse gas emissions.

Total greenhouse gas emissions from 2005 to 2008 increased from 84.5 to 91.1 million tons without absorption and with 53.7 to 60.0 million tons, taking into account the absorption of carbon dioxide, the increase occurred in all sectors except the sector «the use of solvents».

The specific emissions of greenhouse gases amounted to an average of 423.5 t/km<sup>2</sup> a year without taking into account the absorption and 272.9 t/km<sup>2</sup> a year, taking into account the absorption of carbon dioxide, per capita – 9.3 tons/person per year without taking into account the absorption and 6,0 m/person per year, taking into account the absorption of carbon dioxide.

**Country's water resources** are sufficient to meet current and promising water needs. According to the index of exploitation of water resources (2,8-3,0%), total water consumption for all sectors of economic activity does not provide substantial pressure on available water resources in the country.

Domestic water consumption per capita average for Belarus in 2009 did not exceed 145 liter/person per day and night. That corresponded to the level of water consumption in most European countries (120-150 L/person per day and night).

Drinking water supply of settlements is carried out mainly by groundwater. Surface water is partially used in Minsk and Gomel.

The quality of drinking water is primarily are in norm of sanitary requirements, except for high natural content in the water of iron and manganese in some cases, boron, fluoride and some other components.

So, about 2 million people in the country use water of higher iron content than the sanitary norm (0,3 mg/L), adopted in Belarus.

The provision of population with centralized water supply is 86%, including the rural population – 57%. Non-centralized water supply sources use about 1.4 million people, including the rural population – 1.1 million people. About 11% of the 42.6 thousand controllable mine wells do not meet hygienic requirements for the sanitary-chemical and microbiological levels.

Discharge of waste water into water bodies tend to decrease, with diminishing of regulatory-treated wastewater and increasing of the standard-setting (without treatment) water.

The annual average content of organic matter (BOD<sub>5</sub>) in water of rivers, usually does not exceed the MPC, with the exception of the Western Bug and some sections the Mukhavets, the Dnieper and the Svisloch where recorded higher annual average BOD<sub>5</sub>.

The annual average water content of ammonia nitrogen more MPC noted, for some sections of the river the Western Dvina and its tributaries – the Polota and the Ushachi and the Neman (Stolbtsy). For the Western Bug is installed downward trend in the contamination of ammonia nitrogen. Elevated concentrations of contaminant detection in water the Mukhavets on a segment of the river from g.Kobrina to Brest.

Significantly improved the state of the Dnieper, the pollution of nitrogen ammonium in 2009 noted only in the area of Rechitsa and.Loev. Elevated levels of it is observed in water the Sozh in the Gomel. Unfavorable gidrochemical parameter of ammonium is typical to the Berezina. Contamination of the Pripyat found only on the stretch of river in the area of Pinsk.

Average annual concentrations of nitrates in the water of the rivers did not exceed the MPC. However, in some of rivers marked the annual average phosphorus content of phosphate, which is greater than MPC. To the rivers with busy phosphate mode the Western Bug and the Mukhovet are included, the Dnieper below Loev, as well as on the part of the river the Berezina below Borisov and above Svetlogorsk. Pollution of the waters of the Western Dvina and the Neman is not revealed.

Assigned phosphate phosphorus pollution of the rivers is low. However, the reference conditions for the functioning of river ecosystems to some extent are upset and there are real preconditions for the eutrophication of watercourses.

The main amount of wastewater containing pollutants formed in the housing and communal services, in 2009 in rivers stepped of 91% of all ammonia nitrogen, nitrite nitrogen 89%, 90% of phosphorus of phosphate and 81% are of organic origin.

Wastewater treatment facilities in cities across the country, as a rule, are not used to full capacity. The capacity on municipal wastewater treatment plants varies from 32 to 70%.

**Biodiversity.** In the conservation of biological and landscape diversity in Belarus a major role Specially Protected Natural Areas (PNA) plays. Currently, Belarus has a protected park, 4 national parks, reserves, as well as natural monuments of national and local, area and number of years of change.

A number of protected areas has the international nature of protection status: eight national reserves included in the list of wetlands of international importance (Ramsar sites), six protected areas have the status of important plant areas, and fourteen – are included in the list of territories with large importance to the conservation of wild birds in Europe.

The area of forest, including forested lands increases in the country. The tendency to increase forest cover has reached 38,5%.

Forest is characterized fairly by good state of individual tree species (pine, birch, black alder), determined on the basis of defoliated crowns. Average percent of defoliation in all major forest-forming species was 17,7% in 2009.

Over the past few years, there were positive trends in the number increasing of species threatened with extinction; restore and expand the natural areas of their residency.

On January 1, 2009 under the protection of 3,078 wildlife residencies and the residencies of wild plants belonging to the species included in Red Data Book of Belarus were placed (2039 residencies 71 species of wild animals and 1039 residencies 103 species of wild plants).

**Land Resources.** Over the past five years the area of «forest» and «forest-covered» land increased by 172.5 thousand hectares, the farm land has decreased by 84,6 thousand hectares. The area disturbed, unused, and other lands significantly reduced. Lands of conservation organizations, recreation, recreational, historical and cultural purposes increased by 8.9 thousand hectares (5,6%).

Total area of eroded and erosion-prone land in the country is more than 4 000.0 thousand hectares, including arable – about 2,600 hectares. The share of water erosion is 84%, wind erosion – 16%.

In the soils of examined over a five year period, in 44 cities of Belarus noted the oil and heavy metals, and a lesser extent of sulfates and nitrates.

Chemical contamination of land is usually local in nature and does not turns out to be a significant impact on the ecological state of the environment.

**Agriculture.** The use of organic and mineral fertilizers in Belarus has significant environmental impacts at the present level of agricultural production.

**Transportation.** The main passenger about equally necessary to train and automobile (bus) transportation, with a five-year period revealed-Lena downward trend in the share of rail and road transport in the total volume of passenger traffic and the increase in air transport

The main contribution to turnover (75,8%) makes rail, second place is taken by car (24%). However, the trend towards a decrease in the share of rail transport in total freight traffic and an increase in the share of road.

**Waste.** During the five-year period the volume of waste production in Belarus amounted to an average about 34,656 tons annually, about 68% of which are halite wastes and sludge from clay-halite salt. And the volume of formation of production waste (excluding wastes from potash ore) in 2009 compared with 2005 increased in 1,5 times mainly due to the growth of waste of mineral origin, as well as waste vegetable and animal origin.

The formation of municipal solid waste averages 3,060 tons a year. Over the past ten years the share of specific formation of waste increased from 0.485 to 0.877 kg/person/day and approached the figure characteristic of the EU (0,85-1,70 kg/person/day).

The volume of waste at storage facilities in 2009 compared to 2005 increased by 11,5% and reached 911,600 tons. Amount of waste in the salt dumps RUE «Belaruskaly» increased annually by an average of 19,222.4 thousand tons, and the total amount of sludge halite clay-salt – to 2,584.3 thousand tons.

Specific level of finally disposed waste in the total amount generated from the industry averaged over last five years to 66.5%; for halite wastes and halite clay-salt waste – from 92.8 to 97.0% with an average of 95, 6%.

The volume of municipal solid waste disposed at landfills in 2009 was 16,739.1 m<sup>3</sup>, an increase compared with the two previous years in 1,2 times mainly due to consumption waste.

**Radiation situation** in the country over the past five years has remained stable. The levels of dose, the radioactivity of natural precipitation and aerosols in the air, were constant with the established long-term figures.

In towns Bragin, Narovlia, Slavgorod, Khoïniki, Chechersk located in zones of radioactive contamination, levels of doses are typical for the country towns before the accident at the Chernobyl nuclear power plant.

Concentration of cesium-137 and strontium-90 in water of medium and large rivers have dropped considerably, but for most controlled rivers data of radio nuclides remains above the levels typical before the accident.

Radiation situation on the agricultural lands of the country has improved significantly. The content of long-lived radionuclides cesium-137 and strontium-90 in the soil decreased by about 40% due to natural decay.

The main areas of agricultural land contaminated by cesium-137 concentrated in Gomel (47,3% of total area) and Mogilev (23.6%) regions. In Brest, Grodno and Minsk regions the proportion of contaminated land is small and amounts to 6.1%, 2,6 and 3,6% respectively.

Contamination of the strontium-90 has more local character. Radionuclide contamination of soil by the strontium-90 with a density of more than 6 kBq/m<sup>2</sup> was detected in 10% of the total area of the country. Maximum levels of strontium-90 in the soil are typical for a 30-km zone around Chernobyl and reach 1798 kBq/m<sup>2</sup> in Khoyniki district of Gomel region.

**Environmental management.** Fairly well-developed legal framework in the field of environmental protection and rational use of natural resources are formulated in the country.

Financing of environmental protection in general reduces the specific emissions and discharges of pollutants and provides relatively stable state of environment in the country in terms of high economic growth.

The current system of economic regulation designed to stimulate existence of business is aimed to reduce environmental impacts by reducing energy and resource consumption, adoption of preventive measures, to ensure environmental security.

Ensuring continuous operation of the National Environmental Monitoring System of the Republic of Belarus is one of the main directions of state policy on environmental protection.

Education, training on the environment security is effected in Belarus within the framework of the national education system as a single and continuous process.

The current system in Belarus of environmental information guarantees the right of citizens to receive such information.

According to the evaluation of the UN EEC, the level of environmental education and training of citizens of the country is quite high.

The Republic of Belarus on a regular basis interacts with major international organizations in the field of environment: the United Nations Environment Program (UNEP), Economic Commission for Europe (UN ECE), the Development Program (UN DP), World Bank and the Global Environment Facility (GEF), World Meteorological Organization (WMO) and others.

Belarus is a Party to the 13 global and 9 regional international agreements and 34 bilateral and multilateral treaties.

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