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# **THE STATE OF ENVIRONMENT IN THE REPUBLIC OF BELARUS**

NATIONAL REPORT

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In the national report «The state of environment of the Republic of Belarus» there is information which characterizes the condition and change tendencies for last five years (2005-2009) of atmospheric air, surface waters, plant and animal life according to the international ecological indicators are presented. Features of use and protection of water, ground and biological resources of the country are reflected, priority directions of the state policy of the environment protection, including management of nature protection activity, the ecological information, formation and education, international cooperation are shown.

The report is prepared for state structures of management, scientific and public organizations, the country, and also foreign partners by the objective information about the state of environment of the Republic of Belarus, natural resources of the country and their protection.

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## Introduction

At the present time environmental policy, which is held at the state level, is a key element of sustainable development of the Republic of Belarus. Issues of ecological and economic activity, sustainable usage of natural resources are at the head of the national priorities. Implementation of environmental policy firstly intends to ensure the government bodies, scientific and public organizations, population of the country, as well as foreign partners the objective systematic information about the state of environment, natural resources and its protection.

In contrast to the annual information-analytical publications characterizing the ecological situation the national report «State of the Environment of the Republic of Belarus» leads the results of the environmental assessment for the last five years, reflects the priorities of state policy in the field of environment.

The purpose of the report is to assess the environment of Belarus and to expose the tendencies of changes over a five year period (2005-2009) with application of international environmental indices, to identify causes and effects of present day ecological conditions which allow as the whole to improve and standardize the analytic component of such kind documents.

For the first time the structure and content of the national report are based on the recommendations, which are set out in «Guide on Preparation of Assessment Reports for Protection of Environment , based on Application of Environmental Indicators in the East European States» (ECE/CEP/140) . The proposed environmental indicators are developed by the European Economic Commission of the United Nations Organization and are reflected in document «Recommendations to Governments of Eastern Europe, Caucasus and Central Asia States on Application of Environmental Indicators and Preparation of the Assessment Reports on Environmental Protection on its basis» (ECE/CEP/2007/8).

In accordance with the above mentioned documents the system of key environmental indicators of the Republic of Belarus is prepared, which includes both international and national ecological indicators. The approved ecological indicators allow to compare national indicators with similar indicators for other countries in Europe, to develop priorities and objectives of ecological policy, to evaluate the effectiveness of nature conservation measures. The core list of ecological indicators used in compiling the national report, is structured as separate issues (chapters), which include the following groups of indicators with the priority in terms of national and international requirements. They are: air pollution and ozone destruction, changes of climate, water resources, biodiversity, land resources, agriculture, energy, transport and wastes. Each chapter provides an analysis of key indicators with international status, in some cases supplemented by national of indicators used in Belarus.

Indicators for energy are excluded from the report status, since the time of compiling the report, there were no data to analyze them. In characterizing the other groups of indicators definite difficulties also appeared, linked as a rule with existing non-conformity of proposed indicators and the availability of statistical data for its implementation.

Indicators of the level of current radioactive contamination of air, river water and soil are considered as specific ecological indicators for Belarus.

The national report consists of introduction, conclusion, general part (geographic situation, socio-economic development of Belarus and the country's population), nine chapters, corresponding to a certain group of indicators, and a chapter devoted to questions of management on environmental protection.

Air pollution and the ozone layer are considered for the analysis of air emissions by priority pollutants, quality of atmospheric air in urban areas, atmospheric concentrations of ozone and ground-level ultraviolet. Climate change was characterized using the annual average of indicators of air temperature and precipitation for the five-year period, as well as data on emissions of greenhouse gases. Information about dangerous hydrometeorological phenomena is provided additionally.

Characteristics of water resources include the largest list of ecological indicators. They describe the quantitative parameters of the renewable fresh and groundwater, its use, reflect the level of development of water resources, give an idea about the quality of drinking water and the state of river water.

Analysis of the country's existing protected areas and forest land issues to preserve rare and endangered species of wild animals and wild plants are presented in the chapter «Biodiversity».

According to the recommendations of the above Guide, the state of land resources was considered by indicators such as confiscation of land from productive state and land affected by soil erosion. Available data observations of the chemical pollution of land held under the National Monitoring System Environment Program in the Republic of Belarus allowed to submit a report to provide information on soil pollution in cities.

Agriculture as a factor of pressure on the environment is characterized by two key indicators – using of mineral fertilizers and organic fertilizers.

The main environmental indicators used in the report to assess the impact of transport on the environment are of passenger and cargo handling. Refers to the amount of transport services for passengers and cargo, they can reveal the extent of its impact on the environment (fuel consumption, emissions of pollutants, noise emissions, etc.) Correlation between passenger and freight traffic by kinds of transport makes it possible to evaluate the effectiveness of measures aimed to protect the environment from pollution.

Section «Waste» is based on three main indicators, adapted to the available statistics in Belarus – producing of waste, recycling and use of waste production, final disposal of wastes.

As for Belarus, the contamination of the environment is the most serious environmental problem. In the report there is a special chapter, which deals with the level of radioactive contamination of air, water and soil.

The final chapter is devoted to the environmental management and the effectiveness of environmental policy in Belarus.

Contained in the national report data can be used for various processing steps to improve public policy and regulatory framework in the field of environmental protection. They are necessary for the development of economic instruments to regulate environmental protection, planning and implementation of environmental activities at the national and local levels.

The report uses information materials of the Ministry of Natural Resources and Environmental protection of the Republic of Belarus, the Ministry of Health of the Republic of Belarus, the Ministry of Housing of the Republic of Belarus, the National Statistics Committee of Belarus and State Committee on property of the Republic of Belarus.

Environmental assessment carried out mainly with the use of data published in ecological bulletins «State of Environment of Belarus» for 2005-2009, which are based on material provided by the following institutions and companies:

State institution «National Center for Radiation Control and Monitoring» of Department of Hydrometeorology of the Ministry of Natural Resources and Environment of the Republic of Belarus (Ministry of Nature);

State Institution «National Hydrometeorological Center» of the Department of Hydro-meteorology of the Ministry of Nature;

State Scientific Institution «Institute of Physics of NAS of Belarus»;

BSU institution «The National Research Center for ozone-stratum monitoring»;

Republican Unitary Enterprise «Central Research Institute of Complex Utilization of Water Resources»;

Forest inventory Republican Unitary Enterprise «Belgosles»;

State Scientific Institution «Institute of Experimental Botany by name of Kuprevich» NAS of Belarus»;

State Scientific-Production Association «Scientific and Production Centre for Bioresources» NAS of Belarus;

Republican Scientific Branch Unitary Enterprise «Institute of Soil and Agrochemistry» NAS of Belarus;

Republican National Scientific Research Unitary Enterprise «Belarusian Research Centre «Ecology».

The National report «State of the Environment of the Republic of Belarus» is prepared at the State Scientific Institution «Institute for Nature Use» NAS of Belarus and compiled by: Kadatskaya O.V., Sanets E.V., Struck M.I., Bykova N.K., Malchikhina A.V., Ovcharova E.P., Savchenko S.V., Zhivnach S.G. and Kavtsevich T.K. (cartographic materials).

General editing and coordination of work on the implementation of the report was realized by Candidate of Geographic Science Kadatskaya O.V.

The results of the analysis of ecological indicators presented in the National report were examined and approved by experts from the Ministry of Natural Resources and Environmental Protection of the Republic of Belarus, comprising: Ambrazhevich M.L, Germenchuk M.G., Dobritsky A.V., Zharkina A.I., Komosko I.V., Kuzmenkov S.K., Panteleyeva O.A., Pilipchuk A.S., Rudko I.V., Rusaya I.E., Savich O.V., Savchenko V.V., Trafimovich T.F. and the editorial board consisting of: Rachevsky A.N., Varavka V.N., Savich O.V.

# 1. Overview

## Geographical location

The Republic of Belarus is situated in the central part of the European continent. The country territory is compact. Her area of 207.6 km<sup>2</sup>, length from north to south – 560 km, from west to east – 600 km

Among the 50 European states of Belarus is located at the 13th place in the occupied territories and the 14th – in terms of population. The share of country accounts for 2.1% of the area and 1,3 % of the population of the Europe accordingly. Belarus is comparable by area with countries such as Britain and Romania, in quantity of population – with Belgium, Greece, Hungary, Portugal and Czech Republic.

Belarus is a landlocked country and has no way out to sea. The nearest sea ports of neighboring countries are Kaliningrad, Gdansk, Ventspils, Klaipeda, which are located at the distance of 250-350 km from the border of Belarus.

Belarus is a member of the Commonwealth of Independent States (CIS) and is located at the junction of two major interstate associations – the Commonwealth and the European Union (EU). In the north, east and south the border passes by the CIS countries – Russia and Ukraine, in the west and northwest with the EU member states – Poland, Lithuania, Latvia (*Figure 1.1*). This creates favorable conditions for cooperation with the CIS countries and the EU.

The country has an advantageous economic and geographical position, lying on the intersection of the shortest transportation routes from Central Russia to Western Europe and the Baltic Sea to the Black Sea. Two trans-European corridors – № 2, № 9 pass through the country. The first one goes in the direction «West – East», its length within Belarus – 610 km, the second – «North – South» with a length of 457 km.



Figure 1.1 – Map of Belarus

The energy transit from Russia to Western Europe is provided through Belarus. The country traversed by the main oil and gas pipelines (pipeline the «Yamal – Western Europe» and the «Druzhba» pipeline) and heavy-duty power lines pass through the country.

The territory of Belarus is crossed by the transcontinental railway road, which runs from the Pacific to the Atlantic oceans. It represents the shortest path from the dynamic-developing Asia-Pacific region to one of the world's major economic centers – the European Union.

### Natural conditions

The surface of Belarus as a whole is flat. It is characterized by alternation of elevated, flat and low-lying spaces, with swamps and lakes. The main features of the present topography is largely due to the continental icing.

The country climate is moderately continental with Atlantic cyclones. Winters are mild, with prolonged thaws, summer – moderately warm. The average January air temperature in the southwest  $-4,4^{\circ}\text{C}$  and in the north-east of  $-8^{\circ}\text{C}$ ; in July,  $-17,0$  and  $18,8^{\circ}\text{C}$  respectively. The average annual rainfall varies from 550 mm in the south to 700 mm in the uplands median strip. The western transfer of air masses is dominated in Belarus.

The predominant soils are turf-podzolic, peat and alluvial ones. The regulation of the water regime is often required for agricultural use.

As part of the natural vegetation forests are dominated, which alternate with meadow and marsh zones. The main forest tree is the pine. Pine forests cover more than half of the total forested area. The animal world is represented mainly by the species of mixed forest, there are also taiga and steppe species.

The territory of Belarus is a watershed for the basins of the Baltic and Black Seas. Totally in the country, there are 20,8 thousand rivers, the total length of 90.6 thousand km and 10,8 thousand lakes.

The territory of Belarus has a rather high level of conservation of natural complexes. The share of those which are in a natural or near natural state, is  $2/3$  of the total area of the country. There are large regions (Lake District, Polesie) with conservation of large



areas of natural ecosystems – forest, marsh, meadow, which have not only national but also the European importance for conservation of biological and landscape diversity.

The mixture of forests and lakes with rugged relief, which is characteristic of the natural complexes of Belarus, creates favorable conditions for development of ecological tourism. But especially valuable in this respect is the northern part of the country where such combinations are the most numerous.

In the depths of Belarus deposits of various minerals have been found. Especially large reserves are presented in potash and rock salt, and ground and mineral waters, which are of high quality. The country also has large reserves of mineral building materials and peat. In addition, industrial value provides such minerals as oil, brown coal, combustible slates, iron ore, and some others.

However, Belarus has not enough their own hydrocarbons. Therefore, oil and natural gas are imported from abroad.

### Socio-economic development

In the 2000's (except 2009) the economic development of Belarus was carried out rapidly. After the recession of 1990-ies, in 2003 the pre-crisis level of 1990 GDP was made. Subsequently, the pace of annual growth amounted to  $8.6 - 10.2\%$  (Figure 1.2). In 2009, due to the influence of global financial and economic crisis the country's GDP has remained almost at the level of the previous year, its growth reached only  $0.2\%$ .

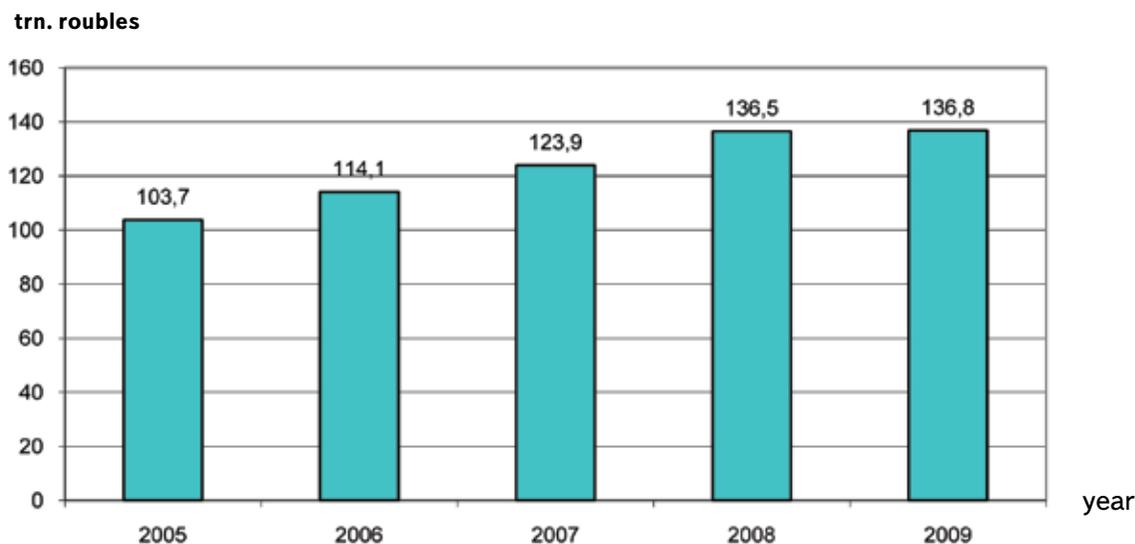


Figure 1.2 – Trends in GDP of Belarus for 2005 – 2009. (Prices 2009)

In 2000-ies, the growth of investments in fixed assets was carried out by faster pace. In absolute terms, they increased over the past 9 years in 3 times; in relative terms – in 1,6 times, with 20% of GDP in 2000 to 31% – in 2009. Such an investment share is close to the optimal value.

In the GDP structure the basic value belongs to the sphere of goods production. In 2009 its share was 44.7% (Figure 1.3). The share of services was 41.2%.

Industry plays the leading role in production sphere. It forms the fourth of GDP. Four industries yield in its internal structure almost 4/5 of production – fuel (about a quarter), mechanical engineering and metalworking (the fifth part), food (almost the sixth part), also chemical and petrochemical (approximately the eighth part) (Fig. 1.4).

In agriculture, crop production predominates in Belarus – 55%, cattle breeding is 45%. The area of 0.90 hectares of agricultural land relates on one inhabitant, 0.57 hectares of this land are arable.

The transport network of the country includes 5,5 thousand km of trunk railways, 85.7 thousand miles of automobile public roads, including 74.3 thousand km of firm covering. Density of rail transport network is 2.6 km/100 km<sup>2</sup>, the automobile network – 35.8km/100km<sup>2</sup>. Belarus has also 7.4 thousand km of gas main lines, about 3 thousand km of pipelines, 1,1 thousand km of oil product pipes. The length of the airways is more than 5 thousand km.

The economy of Belarus has enough marked export orientation. The share of exports of goods and services in the second

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