

Collecting, Processing and Presenting Water Statistics in the Republic of Belarus

By Zhanna Vasilevskaya
*Ministry of Statistics and Analysis
Republic of Belarus*

The Republic of Belarus is fairly well supplied with water resources. The territory serves as a watershed for basins of the Baltic Sea and the Black Sea. Altogether there are 20.8 thousand rivers to the total length of 90.6 thousand km, 10.8 thousand lakes and over 9,000 bogs. The major portion of river flow (about 59%) is formed within the country, and a water inflow from the territories of neighboring countries (Russia and the Ukraine) reaches 41%. Part of the river flow is accumulated in lakes and water-collecting areas of the republic (6.7 km³ and 3.1 km³, respectively).

The available natural water resources of Belarus are quite sufficient for meeting the current and future needs for water. They range up to 57.9 km³ in an average year, of which 34 km³ are formed within the country. Rivers of the Black Sea basin and rivers of the Baltic Sea basin account respectively for about 55% and 45 % of annual water discharge. In wet years, the total water flow of rivers increases to 92.4 km³ and in dry years (95% supply) it decreases to 37.2 km³ a year.

1. Information and National Statistical Reporting

Statistics of the Republic of Belarus is working with a number of government and other agencies to produce a range of statistical measures regarding the natural environment and the impact of economic and social activities on the environment. Such, the collection, processing and dissemination of water statistics in Belarus are mainly carried out by the Ministry of Statistics and Analysis (Minstat), Ministry of Natural Resources and Environmental Protection (Minnat) of the Republic of Belarus and research institutes under their jurisdiction. It covers measurement, processing and recording of quantitative and qualitative characteristics of water resources, which are included in national statistical reporting forms No. 2-rs (water) and No. 2-rs (waste).

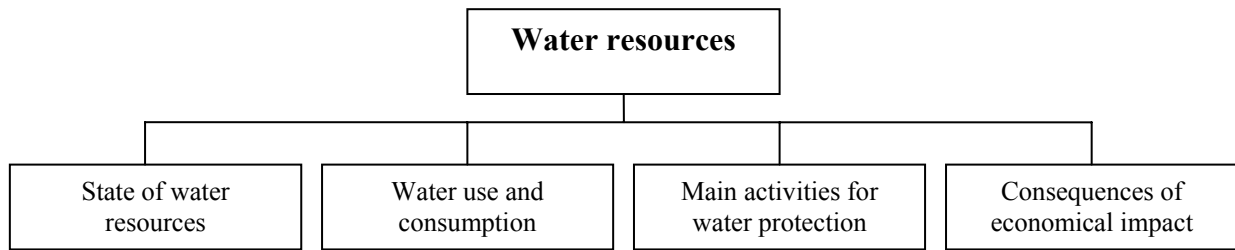
Nowadays, the statistical reporting form – No. 2-rs (water) – is binding to all water users: industrial, building, transport, agricultural and other enterprises, organizations and institutions, legal entities and physical persons irrespective of their departmental subordination, forms of ownership, water supply sources, sinks for wastewater. Regional Committees for Natural Resources and Environmental Protection define the Users' List according to the criteria set by the Ministry of Natural Resources and Environmental Protection. The Initial Inventory for Water Use is carried out by the Instruction for Water Inspection and covers measurement, processing and recording of quantitative and qualitative characteristics of withdrawals and discharges in due form.

The production and consumption waste subject to environmentally safe use and removal are collected by national statistical reporting form No. 2-rs (waste). All entities, such as industrial associations, enterprises, organizations (including collective farms), that have an independent budget and at which production and consumption wastes are accumulated and utilized, submit an annual report to Minnat regional committees and Minstat.

Water statistics of the Republic of Belarus is presented by system of indicators, which is quite completed and detailed, and allows:

- to give the environmental estimation of water resources;
- to monitor the changes taking place in water sources due to economic activities;
- to make a comparative assessment of water use.

All source data are collected by subject directories and can be presented in the following way:



Taking into account the national specific, where the special attention is paid to the quality of water, all data are divided by two main groups:

- *data characterizing quantitative state of water resources;*
- *data characterizing qualitative state of water.*

The first group combines statistical indicators for the quantitative assessment of water resources. It reflects a correlation between quantitative indicators of water resources and processes of changes occurring to water bodies, such as natural changes (measuring of water inflows, outflows and changes in storage between years for inland water), changes caused by economic activities, and characterizes water use and consumption, their impact on water bodies.

This group includes quantitative characteristics of water resources and consists of:

1. State of water resources	- river network (a length, drainage area and annual river flow); - number and parameters of holding ponds by main river basins; - lakes; - resources and storages of ground water.
2. Economical impact on water resources	- water abstraction from natural sources (of which from groundwater resources) - main indicators of water use/consumption, including water use by regions and branches of economy for industrial use, of which a water of drinking quality, reused and successively used water; - water losses during transport; - waste water discharge (into surface water bodies and ground water resources holding ponds, into holding ponds, evaporation ponds on filtration fields) - polluted waste water discharge; - discharge of polluting substances into surface water bodies; - discharge of waste water purified according to standards into surface water bodies.
3. Activities for water protection	- specified criteria and quotas of water abstraction from natural sources; - specified quotas of waste water discharge; - number of sewage works
4. Consequences of economical activities	- effect of water abstraction/discharge onto annual river's flows (changes of annual flows: decrease and increase)

The second group, with qualitative indicators, presents basic characteristics of the water quality before and after economical impact and reflects the qualitative parameters of the first group such as: average annual and maximum concentrations of polluting substances into surface water bodies of

the republic; discharge of main polluting substances by branches of economy and average chemical composition of ground water, and etc.

2. The National Water Cadastre. It has been mentioned, that information on the quantity and quality of groundwater, surface water and etc. is collected by a diverse range of organizations. To provide a general overview of the state and pressures on the water resource is used the National Water Cadastre, which is prepared by Ministry of Natural Resources and Environmental Protection of the Republic of Belarus and comprises the Surface Water Cadastre, Groundwater Cadastre and Water Resources Cadastre. The basis for cadastres is statistical reporting forms No. 2-rs (water) and No. 2-rs (waste).

The Surface Water Cadastre contains data on:

- The hydrological, hydrochemical and hydrobiological state of water bodies (rivers, canals, lakes, reservoirs and ponds);
- Monitoring stations and periods over water bodies; changes in the hydrographic network under the influence of economic activities;
- The hydrographic and morphological specifications of water bodies and their watersheds, i.e. monitoring over the level and temperature of water, water discharges, sediment formation, ice thickness, thermal stores of reservoirs, the chemical and biological composition of water.

The Ground Water Cadastre covers information on:

- operational stores and possible groundwater resources;
- monitoring stations over ground waters (wells, springs, shaft wells);
- data on the regime of ground waters (level, temperature, quality, selection), their chemical and biological composition.

The Natural Resources Use Cadastre is made up of data on:

- Location and major parameters of withdrawals waste discharges, treatment facilities, reservoirs and ponds;

- in-channel water use (recreation, fishery, water transport, hydropower);
- withdrawals and discharges by qualitative and quantitative indices (data on users' statistical reporting and hydrochemical sewage analysis);
- the operating regime of big withdrawals and reservoirs;
- Irrigated, drained as well as wetted areas.

Information on the Water Cadastre comes into Minnat electronic database (the Research Institute on Use of Water Resources). The Water Cadastre is practically published every year on a paper medium and sent to the libraries and becomes available to wide circle.

3. Existing problems. Water is probably the most monitored feature of the Belarus environment. Even so, national data is rather limited. About 20% of information on water resources needs an additional attention and development. First of all, it is data on water use by small enterprises, which are not covered by environmental accounting, and water use by households. In our opinion it can be

solved by working out and application of a special statistical form that should be used for a sample survey of small enterprises and households on water use.

Secondly, the cost estimation of water resources is a problem area. The decision of this task would help to:

- ✓ give the complex assessment of water resources;
- ✓ receive the total amount of expenditures for water protection activities;
- ✓ assess interactions between water resources and the economy.

In general, the current purpose is to establish a well functioning statistical/monitoring system for water resources. Such a system should be able to describe the water quality/quantity, to explain the reason for the present water quality and quantity, and define goals for future water use. As a matter of fact, the system will provide the baseline for implementation of proper measures to decrease the pollution load from specific point and non-point sources. Moreover, the results obtained from the monitoring system will provide an information feedback from remedial measures taken, and data collection and reporting should facilitate the use of data in enforcement processes.