Investment Proposals in the Field of Extraction of Mineral Resources on the Territory of the Republic of Belarus

Peat

More than 9 thousand peat deposits (their parts) with total reserves of about 4 billion tons have been discovered in Belarus.

In total, 88 deposits (their parts) have been prepared for development in the republic with total reserves of industrial categories A+B+C1 in the amount of 171.1 million tons, as well as preliminary estimated reserves of category C2 - 19.4 million tons.

Currently, 47 deposits (their parts) are being developed with an annual production of 1.8 million tons.

Explored peat reserves make it possible to increase the capacity of existing enterprises and are an attractive object for investing in new production facilities for the production of various products.

Peat deposits belong to the sedimentary genetic type of organogenic origin, which is formed as a result of the death and incomplete decay of bog plants under conditions of increased moisture with a lack of oxygen.

Peat deposits can be used as a raw material for the production of fuel briquettes, fuel peat for pulverized combustion, carved peat, lump peat and peat for composting. Also, peat from the deposits of the republic can be used for the production of peat-based fertilizers.

Peat deposits have been discovered throughout the republic, the largest reserves are concentrated in the Minsk and Brest regions.

Distribution of peat reserves by regions of the Republic of Belarus

Region	Number of deposits	Reserves of categories, thousand tons	
		industrial A+B+C1	preliminary estimated C2
Brest	12	56 629	0
Vitebsk	21	22 048	0
Gomel	10	4 705	18 975
Grodno	16	17 653	498
Minsk	18	52 948	0
Mogilev	11	17 162	0
Total in the republic	88	171 145	19 473

Sapropel

Deposits of sapropel on the territory of the republic are associated with bottom sediments of modern lakes and peat bogs.

94 deposits (their parts) of lacustrine sapropels have been discovered on the territory of the republic. The total industrial reserves of industrial categories $A+C_1$ are 72.131 million tons. Of these, 15 deposits are being developed. The annual production is about 18 thousand tons.

The average calculated degree of volumetric silting of lake basins is 51%. The highest thickness of sapropels of 30 m was recorded in Lake Sudobl, Minsk Region.

In the structure of explored reserves, silica-type sapropel makes up 64%, organic - 19%, carbonate - 8% and mixed - 9%. The ash content of sapropels varies from 35 to 59%, averaging 49%.

Sapropel can be used as a fertilizer, feed additives in agriculture, health resorts and medicinal purposes, medicine.

Distribution of sapropel reserves by regions of the Republic of Belarus

Region	Number of deposits	Reserves of industrial categories $A+B+C_1$, thousand tons
Brest	17	12098,39
Vitebsk	37	18695,16
Gomel	10	16322,48
Grodno	10	5732,05
Minsk	11	12383,24
Mogilev	9	6900,18

Brown coal

On the territory of the Republic of Belarus, 4 brown coal deposits have been identified - Brinevskoye, Zhitkovichskoye, Tonezhskoye and Lelchitskoye. The total reserves of brown coal in industrial categories $A+B+C_1$ are 141.3 million tons. The deposits are not being developed.

Brown coal deposits in Belarus belong to the sedimentary genetic type.

According to their quality characteristics, the coals of these deposits are suitable for use as energy and municipal fuel. The most explored are the Zhitkovichskoye and Brinevskoye deposits in the Gomel region. There are thick coal layers here and they are located shallow. They can be mined in an open way.

The Brinevskoye deposit is located in the Petrikovsky district of the Gomel region. The deposit was explored in detail in 1996-2002. It consists of one coal deposit, within which an industrial seam is distinguished with an average thickness of 9.0 m and a depth of 39.7 to 93.6 m.

Industrial stocks in categories $B+C_1$ amount to 30 million tons, preliminary estimated - 11.8 million tons. Brown coals are suitable for briquetting, pulverized combustion, production of humic fertilizers and plant growth stimulants.

The Zhitkovichskoye deposit is located in the Zhitkovichi district of the Gomel region. Consists of 4 isolated coal deposits: Northern, Southern, Naydinskaya and Kolnenskaya. The average thickness of the reservoirs for deposits is: 2.9-5.8 m with an average depth of 27.0-32.0 m.

Reserves of brown coal prepared for industrial development at the deposit amount to 45.8 million tons. On the basis of the deposit, it is possible to build a lignite open pit with an annual capacity of 1.2 million tons. Coals are suitable for use as an energy raw material and municipal fuel.

The Tonezhskoye deposit is located in the Lelchitsky district of the Gomel region. 3 coal seams are industrial at the deposit, of which the first seam is of greatest interest, lying at a depth of 38.2-131.9 m. Its average thickness is 6.54 m. Brown coal can be used in the fuel and energy and chemical industries.

The preliminary explored reserves are 21.4 million tons, and the preliminary estimated reserves are 20.6 million tons.

The Lelchitskoye deposit was discovered in 1981. In 2011-2012, preliminary exploration of the northern section of this deposit was carried out.

The deposit is located to the south of the settlement Lelchitsy, Gomel region. The depth of the roof varies from 80.0 to 580 m. The deposit consists of three layers with a thickness of 0.5 to 14.1 m. Average thickness in layers: 1 – 2,27, 2 – 5,69, 6 – 1,81 m.The most promising direction for the use of brown coal from the Lelchitskoye deposit is energy.

The preliminary explored reserves are 63.8 million tons, and the preliminary estimated reserves are 14.4 million tons.

Tripoli

On the territory of Belarus, within the Mogilev region, 6 deposits of tripoli were discovered. Tripoli can be used:

- in agriculture as a universal ameliorant (trap flour) for regulating the moisture capacity and acidity of soils, binding mobile forms of cesium and strontium and preventing contamination of plants with radionuclides;
- in animal husbandry and poultry farming, as a feed mineral additive;
- in chemical industry as a catalyst for the production of target products - camphene and dipentene used in the perfumery, medical and chemical industries;
- in the food industry as a filter material;
- in the production of building, ceramic and heat-insulating materials, as active additives in the production of cement.

The field of tripoli **Stalnoye** is being developed in the Khotimsk region with an annual production of 3,000 tons. Industrial reserves amount to 30.5 million tons. The average thickness of the productive stratum is 14 m, it occurs at depths of 2.0-16.0 m. Engineering and geological conditions are favorable for open pit mining.

Due to the relatively high content of calcite, the tripoli of the deposits are classified as carbonate tripoli. In addition, tripoli are characterized by a high content of zeolites.

The mineral deposits are suitable not only for the production of organo-mineral products, but also for the production of cement.

5 deposits of tripolite have been preliminary estimated in the republic.

Deposit	Administrative region	Power, m		Reserves, thousand tons
		overburden	minerals	
Druzhba	Khotimsky	13,4	14,77	30 489
Ivanovskoe	Klimovichsky	2,34-7,57	2,3-2,6	224
Sovna	Klimovichsky	2,0-13,5	8,76	1 339
Perlovskoe	Klimovichsky	0,5-18,5	5,0	2 400
Murashkino	Klimovichsky	4,0-12,0	2,0-11,0	50

Mineral underground water

Currently, 245 sites of water intakes of mineral underground water deposits (their parts) have been explored on the territory of the republic.

Region	Number of deposits	Industrial stocks ($A+B+C_1$), m^3/day
Brest	19	4 722,6
Vitebsk	29	22 068,9
Gomel	71	14 518,6
Grodno	10	1 431,7
Minsk	78	14 326,7
Mogilev	38	4 531,2

The total industrial reserves of mineral underground waters of categories $A+B+C_1$ are 61.6 thousand m^3/day.

122 sites of water intakes of mineral water deposits are in operation. The total withdrawal of mineral water for various purposes is about 686 thousand m^3 per year.

Mineral waters are used for medicinal and drinking purposes and balneological treatment in sanatoriums and preventive medical institutions, for bottling under various trademarks at factories and enterprises, as well as for technical purposes to maintain reservoir pressure during the development of oil fields.

Reserves of mineral underground waters are confined to deep-seated aquifers and weakly aquiferous horizons and complexes, represented by dolomites and sandstones of the Middle Devonian, Vendian and Riphean sandstones of the zone of slow and very slow water exchange.

Mineral waters of Belarus have different chemical composition and mineralization. By chemical composition, they are divided into 6 hydrogeochemical classes: hydrocarbonate-chloride, hydrocarbonate-sulfate, sulfate, sulfate-chloride, chloride, chloride-sulfate, sometimes with a high content of specific components: fluorine, bromine, iodine, radon and humic acids.

Depending on the amount of mineralization, three main types of mineral waters are distinguished:

- drinking medicinal-dining rooms with mineralization from 1 to 10 g/dm^3;
- drinking medicinal waters with mineralization from 10 to 15 g/dm^3;
- water for balneological purposes with mineralization over 15 g/dm^3.

Fresh groundwater

The natural conditions of the Republic of Belarus favor the accumulation and renewal of significant groundwater resources.

Currently, 662 sites of water intakes of fresh groundwater deposits (their parts) with operational reserves of 6.4 million m^3/day have been explored on the territory of the country.

Region	Number of deposits	Industrial stocks ($A+B+C_1$), thousand m^3/day
Brest	137	933,6
Vitebsk	121	836,8
Gomel	191	1092,5
Grodno	47	802,9
Minsk	120	1937,1
Mogilev	46	780,1

According to the chemical composition of the water, they are mainly bicarbonate calcium-magnesium with a mineralization of up to 1 g/dm^3, from soft to moderately hard, often with a high content of iron (more than 1.0 mg/dm^3) and a lack of fluorine.

The use of fresh groundwater for household and drinking purposes with approved reserves is carried out at 279 water intake sites for centralized water supply in 229 cities, industrial centers and facilities.

The extraction of fresh groundwater in 2020 amounted to 458.9 million m^3.

The water resources of the republic are sufficient to meet the current and future needs of not only the local population, but also open up great prospects for existing and potential producers of bottled mineral and fresh water.

Minerals