

ROLE OF PEAT DEPOSITS AND PEAT IN THE NATURE AND HUMAN LIFE

I.I.Lishtvan

State scientific institution

"Institute for Nature Management, National

Academy of sciences of Belarus "

220114, Minsk, Str.F.Skoriny, 10, Phone+(375 017) 267 22 12

SUMMARY

Peat deposits as natural formations can be found worldwide. Time of their formation is estimated in millennia. Peat is a slowly renewed natural resource – peat accumulation does not exceed 1 mm per year or approximately 1 t per hectare.

Peat deposits vary in structure and hydrology, have great biological efficiency. Their role in the formation of organic matter, production of oxygen and absorption of greenhouse gases is substantial, similar to or even higher than that of wood. If the structure of a geographical landscape includes peat deposits they have a decisive impact on hydrology of the region and river systems. The important role of peat deposits in the formation of the local climate and creation of specific conditions for faunal and floral biodiversity is well-known. The development of peat deposits in the general process of nature management should not only be rational, but also biosphere compatible. The main thing here is not to allow a misbalance of biosphere processes and circulation of substances and energy at regional level. Systems and actions aimed at minimization of negative transformations of these processes are already developed.

Peatlands in Belarus

Peat as a colloid-high-molecular multicomponent system in a natural condition holds a considerable quantity of moisture of various power categories which mainly are a solution of low – and high – molecular connections. When drained, peat deposits lose their specific natural function of storing water which affects their hydrology, resulting in changed hydrologic and temperature conditions in the region where they are located. The number of plant species is reduced and their bio-type-chemical efficiency decreases, including medicinal, fodder, food and vitamin-rich plants. In Belarus there are special programs giving unique natural peatlands the status of especially protected natural territories. The total area of peat deposits in Belarus is estimated to be 2.4 million hectares with geological stocks of peat being 4.2 billion tons. About 1.4 million hectares are in a natural state.

Industrial utilization of peat

Of all solid combustible minerals the Republik of Belarus (peat, brown coals, combustible slates) peat has the widest utilization in the national economy. Peat has been used as fuel, organic and mineral-organic fertilizers, as a chemical-technological raw material, and for

manufacturing products for environmental protection. Reclaimed peat deposits by means of hydro-techniques (about 1 million hectares) have radically changed the agricultural economy of the country. Examples are: machine building, peat wax production (about 400 t were produced using technology developed at the Institute of Peat), precision casting, mould models and in manufacturing polyurethane items for the vehicle industry.

The abundance of peat in Belarus and its highly recognized value of its organic matter stipulate the complex approach to peat processing which resulted in a wide set of various products and materials which do not have processing analogues of other kinds of natural resources. Along with peat use as a fuel, and the reclaimed peat deposits as agricultural lands, new opportunities of peat processing have been opened lately. Such peat-based products include: organic and organic-mineral fertilizers, fertilizing mixes and ameliorants, biostimulants and growth substances, bacterial preparations, a wide assortment of products for the professional grower and hobby markets, absorbents of harmful substances including radionuclides as well as impurities in volatile substances and waters, wood dyes, chemical fibres, fabrics, leather sorts, special anticorrosive additives, rust converters and conservation additives, coal-alkaline reagents for chisel equipment and manufacture of building materials, metallurgical raw materials, waxes, model compounds for precise casting in mechanical engineering, separating lubricants for the production of products based on foam-polyurethane for the motor industry, heat-insulating materials and hydrophobisators for them, medical products, household chemical goods, cosmetics, polygraphy and other products, including peat-coal briquettes.

Future peatland and peat utilization in Belarus

Many of these materials are already being produced by the industry, others pass the stage of pilot or trial checking. It is important to stress that when setting up the production of a specific product, a waste by-product of one process can be the initial raw material for another specific product, which may result in the creation of complex enterprises on resource saving small-waste technology.

In the Republic of Belarus there is a special Government program called "PEAT". This development program goes until the year 2020 and is focused on the development of peat deposits, the processing of peat, and the organization of new manufactures. The research foci and activities within the "PEAT"-program include:

- Peat resources and their rational use;
- Peat in decision-making within the fuel and energy sector and industrial problems;
- Peat in the decision-making related to agricultural problems;
- Assessing the impact of the development of peat deposits on the environment.

The program provides the basis for an essential increase of peat extraction and manufacture of various new materials and products for many branches of the Belarus economy.