

SECTION 4

CLIMATE CHANGE AND SUSTAINABLE DEVELOPMENT. RENEWABLE ENERGY SOURCES AND ENERGY CONSERVATION

WEB-APPLICATION FOR GEOINFORMATION MODULE AS A PART OF UNIFIED DATA BASE OF PERSISTENT ORGANIC POLLUTANTS

D. Chemerevsky, U. Ivaniukovich

*Belarusian State University, ISEI BSU,
Minsk, Republic of Belarus
chemervelo@mail.ru*

According to Stockholm Convention on Persistent Organic Pollutants (POPs) countries-participants should take measures to eliminate or reduce the release of POPs into the environment. Belarus is one of 152 signatories of Stockholm Convention. This circumstance imposes on our country a number of obligations. One of them is development and maintenance of unified data base of Persistent Organic Pollutants that will contain all information connected with POPs utilization, storage, transition and elimination. Unified data base of POPs will be implemented as an open source web-application. Belarus Research Center "Ecology" is main executor of this important international obligation. Proposed geoinformation module is a part of the project.

Keywords: Stockholm convention, persistent organic pollutants, ASP.NET, C#, web-application, GIS, MySQL.

Web-application for unified data base of persistent organic pollutants is developing on ASP.NET MVC technology. According international obligations the web-application should be open source and anyone can use provided public information. MySQL data base management system (DBMS) is using to store large amount of data. The main reasons of this choice is openness of software product and DBMS performance. The aim of our work is development geoinformation module which will be integrated in web-application of unified data base.

To reach main goal we should complete a number of tasks. They are: 1) set up connection to unified data base; 2) create necessary layers on map of territory of Belarus; 3) develop user interface; 4) display special information on the map and give users ability to choose kind of displayed data; 5) develop administrative and user parts of this geoinformation module.

These tasks are solved: frontend part by using Google Maps API, HTML, CSS and Java Script programming language with it's different frameworks; backend part by using ASP.NET technology and C# programming language; storage access part by using DBMS MySQL and SQL programming language.

LEGAL REGULATION OF USE AND PROTECTION OF SURFACES IN THE CONTEXT OF SUSTAINABLE DEVELOPMENT

A. Khrystsiuk

*Yanka Kupala State University of Grodno,
Grodno, Republic of Belarus
aliona_xk@mail.ru*

In this article, some aspects of the legal regulation of the use and protection of subsoil in the context of sustainable development are considered. The study of the presented direction requires an integrated approach that provides for the wide application of scientific knowledge from various fields. Subsoil use often leads to negative anthropogenic impact on the environment, which causes significant harm both to the environment as a whole, and to its individual components, natural objects.

Keywords: sustainable development, mineral resources, mineral resources, environment

The strategic goal of sustainable development of the Republic of Belarus is a dynamic increase in the level of well-being, enrichment of culture, the morality of the people on the basis of the intellectual and innovative development of the economic, social and spiritual spheres, preserving the environment for present and future generations. One should agree with the opinion of E. M. Babosov that sustainable development is a regulated development that provides for a high level of management activity and purposeful effective control by the state over the change taking place in the country in all segments of the socioeconomic and political system [1]. Realization of the concept of sustainable development as a program for future world development requires solving the problem: reflection of the principle of sustainable development "in all normative legal acts on the basis of which sustainable development is provided in the Republic of Belarus" [2].

Sustainable social and economic development of the country is largely determined by the balanced use and reproduction of natural resources, which are the basis of material production and national security. So in the sub-program "Study of mineral resources and the development of the mineral resources base" of the state program "Environmental protection and sustainable use of natural resources" for 2016–2020, approved by the resolution of the Council of Ministers of the Republic of Belarus No. 205 of March 17, 2016, it is stated that the main the purpose of the state program is to ensure the protection of the environment, rational nature management, environmental safety of the country and the transition to a "green" economy, as well as the fulfillment of the international obligations of the Republic of Belarus in the region and environmental protection. To achieve this goal, it is necessary to solve the problem of identifying mineral deposits, geological support of projects in the field of construction, melioration, defense, ecology, assessment and forecast of the state of mineral wealth in areas prone to dangerous geological processes and phenomena.

One of the essential conditions for increasing the efficiency of measures applied by the state in the field of use and protection of subsoil resources is the establishment of a more precise mechanism for compensation of caused to the environment as a result of violation of the legislation on the protection and use of mineral resources. In turn, the mechanism of compensation for harm ensures the restoration of the state of the environment.

We believe that there is a need to improve the legal preventive mechanisms that ensure the preservation of the bowels, as well as the security of the processes of compensation for damage caused to the environment as a result of violation of the subsoil legislation, legal instruments. The development of a clear system of conceptual priorities in the sphere of the use and protection of mineral resources, their consistent consolidation in the legislation and implementation in law enforcement and law enforcement activities of state bodies will contribute to the sustainable development of relation son the use and protection of mineral resources.

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ENERGY ASSESSMENT OF FUEL BASED ON "TORF-CROWN" AND "TORF-IVA"

E. Ivanova, V. Pashinsky, A. Butko

*Belarusian State University, ISEU BSU,
Minsk, Republic of Belarus
belka_ket@mail.ru*

The results of the study of the calorific ability of reeds and willow and on its basis mixtures of "peat-reed" and "peat-willow".

Keywords: peat, reed, short rotation coppice, willow, fuel

Currently, much attention has been paid to the problem of restoring peat bogs and using the territories of spent peatlands in the Republic of Belarus. Thus, the Resolution of the Council of Ministers of the Republic of Belarus No. 1111 of 30.12.2015 approved the "Strategy for Conservation and Rational Use of Peatlands", which defines the main problems in this area and the current state of peatlands. Proceeding from the document, restoration of not less than 15 % of the area (about 75 thousand hectares) should be provided.

The restoration of peat bogs is directed, first of all, to restoring the process of peat accumulation, which involves the interconnection of vegetation, water and peat. Ordinary cane can be used as vegetation in repeated flooding. In future, it can be used as biofuel during the 1st year from the beginning of the plantation.