

SUSTAINABLE DEVELOPMENT OF TERRITORIES OF MINING REGIONS

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Purpose. Developing innovative technologies of mining coal seams and increasing the competitiveness of coal produced and providing further diversification of the mine using the "post-mining" concept as the basis for sustainable development of the coal mine region.

Methodology. The research has been carried out to substantiate the principles of sustainable development for mining regions improving coal mining technology at Western Donbass mines. The implementation of innovative technologies of mining coal seams allowed to increase the competitiveness of coal produced and aimed to address a number of environmental, social and economic challenges of the region with further coalmine diversification.

Findings. The coal industry is one of the most developed sectors of the Ukrainian fuel industry. Most of the workers (93%) and fixed assets (78%) are concentrated here. Mass closure of mines in Dnipro and Western Donbass regions provoked the emergence of "depressed areas" with significant social and environmental problems. During economic instability, the problem of achieving sustainable development of territories in Ukraine is particularly important. According to sustainable development indicators, Ukraine is far behind European countries. Ukraine faces a number of environmental issues that impact human well-being and biodiversity. As one of the key problems, mining plays a very important role in stimulating the economy of Ukraine. On the other, overexploitation has led to the depletion of natural resources as minerals and water. Mining activities have long-term impacts on terrestrial ecosystems, including land degradation, deforestation, loss of fertile topsoil, changes in the topography and hydrologic conditions, and pollution of usable surface and groundwater, including drinking water supply. Solid and sometimes toxic waste is accumulating due to outdated technologies, unsustainable consumption and insufficient recycling practices. However, rehabilitation and reclamation of degraded areas, as well as the use of clean green energy will make these regions more attractive for life. In addition, when the mining exploits natural resources that are not renewable, it is necessary to transform the mine land into the other forms to support sustainable development.

Key words: sustainable development, coalmine diversification, mining, environment

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INCREASING OF ENERGY EFFICIENCY OF COAL MINING USING DATA ANALYSIS METHODS

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Purpose. Analysis of the influence of geological and mining technical factors on the drift stability to determine the reliable and effective support of workings during the service period.

Methodology. Investigation of the features of the excavation work during the coal seam mining. Conducting computational experiments to determine the stress-strain state of a rock mass and the construction of a support system.

Findings. Analysis of the impact of mining and geological and mining factors on the stability of underground workings throughout the life of the mine. The stress-strain state, pressure influence and conditions of workings support depending on mining and technological parameters are investigated. The artificial neural network was constructed and trained for regression analysis. Regression analysis using the construction and training of an artificial neural network on the basis of the data obtained to determine the degree of influence of each specific parameter on the stability of working. Experiment results are established the zones of high pressure in the sides of the workings (especially the left side) had the greatest influence on the workings stability. The influence of the reference pressure zone on the left side of the working is up to 82% of the total. The trained neural network can be successfully used in the future when designing excavations in this