SECTION: GEOLOGY AND GEODESY

THE APPLICATION OF GIS TECHNOLOGIES IN THE ANALYSIS OF THE PECULIARITIES OF THE MINING INDUSTRY OF UKRAINE DURING THE WAR (ON THE EXAMPLE OF THE CITY KRYVYI RIH)

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Geographic information systems (GIS) play an important role in many industries, including the mining industry. Given the current geopolitical challenges, particularly in times of war, GIS technologies are becoming indispensable for real-time analysis and monitoring of the situation, which is critical for the effective management of natural resources and infrastructure. One of the important centers of the mining industry in Ukraine is the city of Kryvyi Rih, which plays a key role in the country's economy due to its rich iron ore deposits. In a time of war, the use of GIS technologies to analyze and ensure the stability of the mining industry becomes extremely important.

Geographic information systems allow you to integrate spatial data and information about objects, which allows you to perform effective analysis and make informed decisions. In the mining industry, GIS is used to assess geological conditions, plan the development of deposits, monitor the condition of quarries and mines, and ensure occupational and environmental safety. In times of war, these technologies become even more important as they allow for rapid response to changes at the front, adjust production processes, store information about important facilities, and provide logistics routes.

Kryvyi Rih is one of the world's largest iron ore mining centers. It is home to large enterprises that meet the needs of not only Ukraine but also exports to many countries. The city has a well-developed infrastructure and is an important economic center. However, during the war, Kryvyi Rih's mining enterprises were targeted for shelling and sabotage, which jeopardizes the stability of raw material supplies and, as a result, the country's economic security.

Let us consider possible examples of the use of GIS technologies during a military conflict:

1. Monitoring and management of mining facilities [1]: GIS allows you to create interactive maps with data on the state of production facilities, which allows you to track their damage as a result of shelling or explosions. This helps to quickly determine which parts of the enterprise need urgent repair or restoration.

2. Optimization of logistics [2]: In the conditions of hostilities, it is important to ensure the safety and efficiency of ore transportation. GIS technologies allow analyzing existing transport networks, predicting possible risks and offering alternative routes for product delivery, minimizing losses.

3. Assessment of geological and ecological conditions [3]: War can lead to changes in geological conditions, in particular, to collapses or damage to coal or iron ore seams. With the help of GIS, it is possible to monitor these changes, which allows you to ensure the safety of production and reduce the negative impact on the environment.

4. Exploration analysis and planning [4]: GIS can help identify the most promising areas for further exploration of new deposits and assessment of their potential. In conditions of limited resources, it is important to ensure effective planning to preserve strategic stocks.

5. Situational response and crisis management [5]: In the event of an escalation of the conflict, GIS allow to quickly update information on the current situation in the mining area, as well as provide accurate data for planning the evacuation of workers or the transfer of equipment.

Conclusions. The use of GIS technologies in the mining industry during wartime is extremely important to ensure the sustainability of enterprises, especially in cities such as Kryvyi Rih, which are of strategic importance to Ukraine's economy. These technologies help not only to respond quickly to changes in the situation, but also to preserve and develop the country's mining potential in the face of modern challenges. They provide flexibility, efficiency and security in managing production processes, which is essential for economic recovery and support during the war.

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