

## Monitoring of Illegal Resources Excavation by Aerial Photogrammetric Technology in Lithuania

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As the depths of the earth are mineral resources, their extraction is a significant economic indicator of the countries. Planned, supervised and orderly mining of useful resources is a routine process with minimal impact on the environment and excavation increasing each year. As demand increases, so does illegal and disorderly mining sites, which causes significant damage to the environment and the economy. Using aerial photography technology, illegal mining sites have been calculated throughout the territory of Lithuania and quantities have been excavated over 20 years. The Lithuanian Geological Survey performed the State Damaged Land Management Plan 2014-2020 approved by the Minister of Environment and carried out an audit of all Lithuanian cadastral damaged areas of more than 0.3 ha - "Collection and systematization of information on damaged lands" [1]. The purpose of this project was to identify the sites and condition of the land damaged by any mining operation; to calculate excavated mineral resources; to accumulate and systematize information on damaged lands and based on the collected data to identify the damaged lands to be treated first. The results of this work showed that 3300 sites of more than 0.3 hectares are affected by casual damage (fig. 1). The damage done to the country's economy and environment has been assessed. The estimated amount of minerals extracted is 15 million cub. m. and amounts to about 70 million euros in damage. Aerial photography technology has proven its worth in calculating excavated resources and can be used for monitoring.

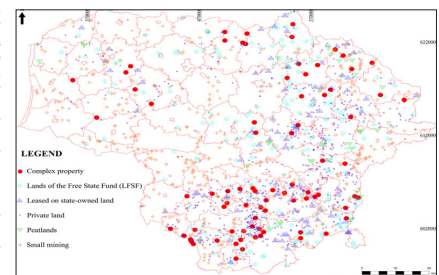


Fig. 1. Plan of damaged land area.

### Biography:

Audrius Armanavicius is a 3rd year doctoral student of Geology Science from Lithuania at the Nature Research Centre. His specialization is mineral deposits, their exploration, quarry design and monitoring using aerial photogrammetry technologies.