Climate Change Risks for Safety of the Mining Tailing Dams and Proposition for Some Solutions

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Introduction

Geotechnical construction could suffer greatly in the future due to the accelerating climate change, with soil covers used in mining tailing dams as some of the most vulnerable. Tailing dams failures have been increasingly common during 20 century especially during 1950’s-1970’s causing human life loss. It is crucial to eliminate these constructions in the future, but before that tailing sludge could be used in various technologies. Case study here focuses on Bosnia and Herzegovina (B&H) which has the most intensive mining activities in Europe in recent years.

Climate change considerations in Bosnia and Herzegovina’s mining regions

Climate projections indicate that there will be an increase in the number of days with intense rainfall (R5060) in the interval from 1.5 to 3 at the investigated locations. Such changes can pose a threat to large inflows of water, floods and spills of contents from reservoirs into the surrounding area.

Expected change of intensive precipitation (climate index R5060) in Bosnia and Herzegovina for the period 2011-2040, in relation to the base period (1971-2000).

Proposition for application of the mining tailings as the metal-source for nanotechnologies: results in our team on red mud and iron mine in recent years

Iron mine tailings: Preparation of carbon/metal oxide filter catalyst

Iron mine tailings: carbon-shelled hematite-lithium batteries anode

References:

1. References.

Conclusions

- The mining can and should be done in a “greener” manner. Europe needs self-sufficiency
- Not only ore deposits, but tailings as well hold a potential for raw material exploitation.
- Tailings, which are endangered by the climate change, HAVE to be eliminated in the future.
- Use of metal mine tailings as the resource for nanotechnology-huge potential energy savings