

# Geotechnical risks in sterile dumps construction at the lignite open pits from Romania

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## ABSTRACT

Lignite quarries produce a grate volume of sterile which is stored in exterior and interior dumps. Constructing exterior sterile dumps in hilly terrain areas, across valleys and slopes, creates big stability issues because of the inappropriate arrangement of the foundation, the water presence in and under the dump, the nature of the rocks. The presence of a mixture of sandy-argillaceous or dusty rocks, with variable humidity, in the dumps lead to plastic cession phenomena and to plastic surface slides or to regressive or progressive depth slides, with unfavorable effects on the area objectives (public or private proprieties, constructions, communicating systems etc.). In this paper are presented the causes and the producing mechanism of these landslides, the unfavorable effects and the possibilities of their elimination through projecting and executing the construction and arrangement works of sterile dumps.

Keywords: lignite, rock, dumps, stability, geotechnical, risk, landslide.

## GENERAL CONSIDERATIONS

Oltenia lignite deposits are located in the south-western Romania and they are situated in the structural unit within Subcarpathian Depression, the area between the Danube and Olt Rivers (Figure 1). In the pliocene deposits of this area (dacian, romanian and pleistocene) were highlighted 21 layers of coal, stationed in clay-sandy formations, from which are exploitable strata V - XII.

Current reserves of coal of the deposit amount to approx. 1250 million tons and are subject to exploitation in underground mines and open pits. Since the commencement of exploitation and recovery of lignite deposits in mining basins of Oltenia (1965 - 1967) were extracted over 800 million tons of lignite. Also, from open pits and underground exploitation have been extracted and stored large quantities of sterile rocks, up to over 4800 million m<sup>3</sup>.