

THE INFLUENCE OF CLAY MINERALS ON SLOPE STABILITY IN LANDSLIDE AREAS OF THE POLISH FLYSCH ZONE

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Landslides are one of the most common events that cause natural disaster. Major landslides in Poland occur in the southern part of the country in the Polish Flysch (Outer) Carpathian Mountains. Till now, 20.000 places of appearing landslides have been counted. This is more than 95 % of all landslides in Poland, which represents only 6 % of the country.

Sliding is a common process in the Beskid Wyspowy Mountain range. Slides occupy approximately 3 % of the total area of mountain range (Bober, 1984). The widespread is caused by local geology, which is dominated by flysch-type formations alternating layers of shale and layers of shale and sandstone as well as by presence of shale and debris cover that had evolved via weathering processes.

Generally two locations in the Beskid Wyspowy (the landslides in Kłodne and Łososina River Basin) were chosen to show different ways of looking at the problem of slope instability. A very intensive and chaotic building construction in the Carpathian valleys and on the slopes adds to larger and larger damages in the area every year.

In all above, mentioned locations the relatively fresh material of the landslide head was sampled and investigated. The composition of the bulk samples and the clay fraction, grain size, water content, pH values, electrical conductivity, cation exchange capacity and carbon content were measured and the soil type was described. The mineral composition of the less than two microns of this material was determined by X-Ray diffraction. High amounts of mixed layer minerals, vermiculite and illite were found. Additionally the Atterberg limits were determined.

The aim of this project is to make an assessment based on the methodological background and case study to explain the mass movements, which cause structural damages. The analysis of the results of the laboratory studies and field surveys should give information about the landslide problems in the Beskid Wyspowy.

Reference

Bober J. (1984): Rejony osuwiskowe w polskich Karpatach fliszowych i ich związek z budową geologiczną regionu. *Biuletyn Instytutu Geologicznego*, **340**,115-158.