

PRELIMINARY HYDROLOGICAL FORECAST FOR THE MAJES-SIGUAS PROJECT AND PROBLEMS ASSOCIATED WITH WATER MANAGEMENT IN THE AREQUIPA REGION IN SOUTHWESTERN PERU

Natalia UTNICKA-ŁYDEK

*AGH University of Science and Technology, Faculty of Geology,
Geophysics and Environmental Protection;
al. Mickiewicza 30, 30-059 Krakow, Poland*

The hydrotechnical project Majes-Siguas, started in 1973 and its aim is to direct waters flowing out from under the Nevado Mismi glaciers as also the rivers Apurimac and Colca to the desert plain Majes-Siguas westward from Arequipa. The situation was caused by diminishing sources of waters in this area. Little precipitation, weaker and weaker supply of the waters coming from the melting glacier mantles on the nearby volcanoes and additionally, the El Nino phenomenon, made the government ready to undertake the realization of this project in order to find a solution to the problems. Main goal is to provide people with water and increase the number of cultivable grounds supplying food for the rising amount of people in Arequipa as well as surrounding villages and towns.

Peru is a country where the water resources are disproportionately spread. More than 97% of the water resources occur in the less urban areas with scarce population. The smaller part of the resources is placed in the much more urbanized regions such as: Lima, Arequipa, Trujillo and Chiclayo with a majority reaching 65% of the population of Peru. 80.4% of GNP of this country also comes from these areas. Currently, 1,280,000 km² is being irrigated, which accounts for about 30% of the whole Peru (www.ana.gob.pe). The goal of such countries policy is to increase the alimentary safeness and to develop agrarian policy. The electoral slogans such as: “Agua por todos”, meaning: “water for everyone”, attract more and more settlers to the regions of Majes, only making the problem worse, because the irrigation project Majes-Siguas, which disturbs the water relations in Arequipa, can lead to catastrophic changes in the future.

The whole investment is going to replace the well-prospering arable terrace system that formerly existed in the Colca Valley. Nowadays only 40% of the area of the terraces is being used. However, the ecological results of this project have already made their impact on the environment, it seems to be certain, that it would be much more difficult to encourage settlers to work in the high Andes, on a small and almost inaccessible fields. The substantial reduction of waters flowing into the Rio Colca is also noticeable, and in time this trend will be increasing because of the fact that the brooks from Altiplano, supplying the river, are directed to Rio Chiliti from which water is extracted for Arequipa, a city of 800,000 people, struggling with a deficit of drinking water (Gałaś 2008).

Another possible problem can be increasing salinity and contamination of soil, caused by enormous evaporation in this area, which in turn can contribute to making growing crops and farming virtually impossible.

According to the initial analysis of project Majes-Siguas, it can be concluded that it would be impossible to predict interchangeable results of this project without the development of a monitoring system. That is why, further research aimed at defining the exact hydrological forecast for this region appears to be justified. Soon, water balances for the mountain areas that supply the project Majes-Siguas as well as for the areas being subjected to direct irrigation will be performed. Moreover, the analysis of the changes in the chemical composition of soils will be carried out as well.

REFERENCES

- Gałaś A., 2008. Problemy gospodarki zasobami środowiska w okolicy Kanionu Colca, Peru. *Gospodarka Surowcami Mineralnymi*, 24, 2, 135–152.