International Cartographic Association
Association Cartographique Internationale

Determining of potential location for dam construction through geospatial analysis and modeling. Case study: “C.Z. Pograxhë” in the Republic of Kosova

Bashkim IDRIZI [a], Valon AZIZI [b,*]

[a] *University of Prishtina “Hasan Prishtina”, - bashkim.idrizi@uni-pr.edu, bashkim.idrizi@yahoo.com*
[b] *University of Prishtina “Hasan Prishtina” – valon.azizi@uni-pr.edu*

* Corresponding author

Keywords: Analytical Hierarchy Process, geospatial analyses, cartographic modeling, Kosova, GIS

Abstract:

The supply of water not only for domestic consumption needs, but also for the irrigation needs of agricultural lands, has turned into a current challenge considering the increase in population and the need for clean water in the Republic of Kosova. Determination of the potential location for the construction of the accumulation dam in the “C.Z. Pograxhë” through Geospatial Analysis based on multiple criteria decision modeling, has been carried out relying on geospatial data collected from different sources: from institutions, field surveying and provision of spatial data from the webservices, that as a result provided sufficient data for performing the necessary geospatial analyses and modeling in this research.

The main objective of this research was to identify the suitability of the study area in order to select the most optimal location for the construction of the storage dam, using the geospatial analysis and modeling made possible by the GIS software, based on the analytical hierarchy process (AHP), namely on the weight of the factors decision makers who are taken into account in performing the analyzes and achieving the required results. Since there are no defined conditions and standards, this paper will serve as an case study of how, through a GIS software, the interweaving of multiple and necessary conditions can be used in screening for determining the location for the construction of dams, and as a result, to provide the spatial information for the most suitable location for the construction of the dam in “C.Z. Pograxhë”, and therefore concrete solutions will be offered for the screening process in the establishment and management of new water resources.

The research outputs show that the geospatial analysis carried out in the AHP based in GIS software is quite efficient in achieving the results. In the framework of this statistical analysis, 2 cases were analysed, where the height of the planned dam is close to the height of the “Prëlepnica” accumulation dam (40 m), but it was not prejudged what would be the optimal height of the dam:

1. The height of the planned dam would be 32 meters (from the point with the lowest altitude of 458 m where the dam is planned to be erected up to the height above sea level of 490 m),

2. The height of the planned dam would be 42 meters (from the point with the lowest altitude of 458 m where it is planned to raise the dam up to the height above sea level of 500 m).

Since the values of the total volume in the planned dam at a height of 42m, capture a total value of the volume V=3,289,858 m^3, the problem of water supply would be solved for the next 20 years, while the planned dam at the height of 32m according to the calculated volume V=1,686,807 m^3, the problem of water supply would be solved for about the next 10 years.

In paper in proceedings and presentation in conference, entire model of calculation, data structure and cartographic outputs will be presented.

Abstracts of the International Cartographic Association, 10, 119, 2025
32nd International Cartographic Conference (ICC 2025), 17–22 August 2025, Vancouver, Canada.
https://doi.org/10.5194/ica-abs-10-119-2025