

# DETERMINATION OF HYDRO POND LOCATIONS THROUGH ARCHYDRO MODEL AND SUITABILITY ASSESSMENT

Gerelt-Od Munkhdii<sup>1</sup> Bayanmunkh Norovsuren<sup>2\*</sup>, Dagva Rentsendagva<sup>3</sup>, Zaya Mart<sup>2</sup>, Oyunbileg Erdenebadrakh<sup>2</sup>, Bolormaa Batsuuri<sup>4</sup>, Javzandulam Bataa<sup>2</sup>

<sup>1</sup>Department of System dynamics modelling, Centre for Policy Research and Analysis, Ulaanbaatar, Mongolia  
Email : [odko.tf@gmail.com](mailto:odko.tf@gmail.com)

<sup>2</sup>Department of Spatial Data Analysis, Centre for Policy Research and Analysis  
Email: [bayan1225@gmail.com](mailto:bayan1225@gmail.com), [javzacpra@gmail.com](mailto:javzacpra@gmail.com), [zaya.mart@gmail.com](mailto:zaya.mart@gmail.com), [oyunbileg1208@gmail.com](mailto:oyunbileg1208@gmail.com);

<sup>3</sup>Executive director, Centre for Policy Research and Analysis Ulaanbaatar, Mongolia  
Email: [re.dagva@gmail.com](mailto:re.dagva@gmail.com)

<sup>4</sup>Associate Professor, Department of Geography, The National University of Mongolia  
Ulaanbaatar, Mongolia  
Email : [b.bolormaa@num.edu.mn](mailto:b.bolormaa@num.edu.mn)

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**ABSTRACT:** Mongolia's water resources consists of 70 percent surface water and 30 percent underground water. Ulaanbaatar city is capital of Mongolia. It is only supplied with the underground water and at high risk of groundwater shortage and pollution. Thus, Ulaanbaatar is about to run out of water and there is need to extract water from additional surface water resources.

The purpose of this study is to estimate hydro pond locations around the Tuul river of the Ulaanbaatar city based on archydrology model and suitability assessment analysis. Tuul river runs through the southern part of the capital city of Mongolia, continuing in a western direction in large loops. The construction of an artificial hydro pond will allow the Tuul river to adjust its flows and use a combination of surface and underground water in order to solve drinking and industrial water supply in the city. Multicriteria analysis and Archydro method were applied in this study. The objectives of evaluating the suitable area for the construction of a new hydro pond by the analysis of basic conditions (constraint map) and multiple criteria and determining the integrated assessment of suitability were carried out. The result is estimated that there will be a water complex with a volume of 5846 million cubic meters in a total area of 26.1 km.



Figure 1. Result map of Archydrology, Analytic hierarchy process

The upper part of Tuul River has very good water quality (figure 1). Also, it is not necessary to make the possible location of dams and ponds only based on feasibility assessment, and it is important to determine the pattern of surface water flow of the basin and to produce results in combination with suitability assessment. The ecological importance of the hydro pond is the flow of the Tuul river and the groundwater supply will be restored. The advantage of this study is to identify the hydro pond's location using remote sensing and GIS technologies which have been done for the first time in Ulaanbaatar city, Mongolia.