ABSTRACT

Nepal has a huge hydropower potential. In fact, the abiding nature of Nepali rivers and the steep gradient of the country's topography provide ideal conditions for the development of some of the world's largest hydroelectric projects in Nepal. Determining the best possible sites for hydropower is a cardinal task for pursuing hydropower projects. Use of technology for this can help in many ways along with the reduction of manual errors. There is a need for an approach that can be used to access hydropower potential sites using Geospatial technology.

Our project fabricated a model by using geospatial technology that helps in determining the possible sites for hydropower projects based on multi parametric analysis around the Madi watershed. ASTER DEM of 30m resolution was used for carrying out hydrological assessment in GIS from which various factors that affect the site suitability was determined along with calculation of TRI. On the basis of the weightage given to the reclassified data for each parameter different possible site on the basis of their level of suitability was determined. After knowing the best possible sites for Madi water, a Geoprocessing model was prepared that could automate and document our spatial analysis and data management process in an easier manner. Our model assembled together sequences of processes and Geoprocessing tools where output of one process as the input to another process.

This project will aid decision makers in the energy sector to optimize the available resources in selecting the suitable sites for hydropower plant with higher power potential. The proposed approach can be further utilized to assess an overall hydropower potential of the country.

Keywords: Hydropower, Hydropower sites, Hydrological assessment, Geoprocessing, ASTER, TRI, model, Madi watershed