

Geomatics Support View in Unlocking the Potentials for Multiple Utilization of Dams and Reservoirs in Nigeria

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SUMMARY

The Federal Government of Nigeria in March 2015 initiated plans to convert all the large dams and reservoirs in the country for multipurpose use.

In Nigeria, there is increasing need for potable water supply. Water demand for agriculture is on the increase as irrigation of land take up large volume of water from the reservoir that is meant for hydropower generation. As the demand for water use increases, there will be need to develop cross sectorial research that will address the problem and ensure that decision taken on water use in one sector does not adversely affect other sectors and the environment.

Geomatics represent a major tool for this cross sectorial research and decision support. With the advent of high speed computers and GNSS receiver, airborne and terrestrial laser scanners and other digital equipment, it has become feasible to generate all the geospatial data and models needed for the planning, design, upgrading measurement and monitoring of Dams and Reservoirs.

This paper examines the potentials for upgrading and maintenance scheduling of many of the large dams in Nigeria using Geoinformation technology along with some other engineering measurement parameters. This include establishment of Geodetic controls, topographical/ bathymetric survey of reservoir area, mapping of catchment basins for land use/ land cover analysis, generation of DEM for bed load and sedimentation studies in reservoirs, monitoring for deformation in embankment as well as generation of 3D model of the dams with associated infrastructure.

Based on the Geospatial information generated, along with hydraulics and hydrological data, Dams and Reservoirs can be upgraded for water supply, irrigation, hydropower development and

aquaculture.

Data generated can also be used for interstate and transboundary water governance as well as implementing the WEF nexus in transboundary river basins and watersheds.

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