



The potentials of Oyan dam/reservoir: A spatio-temporal assessment

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The study assesses the potential and spatio-temporal dynamics of Oyan dam between 1980 and 2016. The data used include water level and discharge records of the dam between 2007 and 2016, Landsat imageries of 1984 and 2016 and socio-economic data for the period. A comparison analysis of the dam potentials (water supply, agriculture and hydropower) and socio-economic impacts of the dam were carried with the used of statistical tools, land use change model and Participatory Learning Approach involving the communities around the dam. The results revealed that commercial water supply varied significantly between 2010 and 2016 while irrigation scheme is grossly under-utilized from the 1983 and 2016. The result shows that about 8,000ha and 9,000ha were under-utilized at Oyan upper section and Makoloki lower section respectively. Furthermore, the water level storage height of Oyan dam remained relatively constant between the year 2007 and 2008 but had a significant reduction of about 2% between 2009 and 2010. Thus, in the subsequent years, there were variations in the water level height. This shows that the water resource of Oyan dam has non-stationarity pattern of water abstraction and production. The landuse patterns in the two scenarios identified show that cultivated landuse was the most dominant and active landuse that increased from 70860.42ha (72.42%) in 1984 to 90320.40ha (92.31%) in 2016. It was therefore discovered that floodplain diminished significantly among other landuses from 14847.57ha (15.18%) to 2191.14ha (2.24%) in 2016. This shows that between 1984 and 2016 about 13% of floodplain was lost to cultivated landuse. Socio-economic impacts show that few people are actually benefiting or deriving their sources of their livelihood from this dam and invariably, about 69.4% of the respondents admit that their standard of living is a little above average.