Hydrokinetic energy resource estimates of River ERO at Lafiagi, Kwara State, North-Central Nigeria

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Abstract
Exploiting the kinetic energy of water currents is considered a smart and cost-effective renewable energy solution without requiring the construction of a dam or of large civil works. Field studies were performed at a selected site along the Ero River, one of the tributaries of River Niger, North-central Nigeria to assess the hydrokinetic energy conversion potentials of the river reach. Relevant data and tools dealing with the hydrology, topography, bathymetry and digital elevation models were used together with year round on-site measurements for the determination of the hydraulic and hydrological parameters. These were used to obtain the instantaneous stream velocities and to compute the power estimates. Preliminary results show that monthly averaged hydrokinetic power of the range 0.034kW-2.3MW can be obtained with the highest values being generated between July and November, with stream velocities above 0.7ms\textsuperscript{-1}. The highest energy value obtainable was 14.76MW while the lowest was 0.11715W. The values also compare well with estimates gleaned from a previous study.

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