Title of Article: Effect Of Reservoir Outflow of Hydropower Dams on The Downstream River Flood Regime: Nigeria's Experience

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Abstract: Over more than five decades, the energy sector in Nigeria, particularly the rural energy sector, is characterized by lack of access, low purchasing power and over-dependence on traditional fuels for meeting basic energy needs. In an attempt by the government to solving this challenge, the hydropower scheme came on stream as the forerunner in 1968, 1986 and 1990 at Kainji, Jebba and Shiroro respectively. The objective was to improve access to reliable, secure, affordable, climate friendly and sustainable energy services and to boost investment in energy in Nigeria. Hydro Electric Power (HEP) is one of the few sources of energy that has assumed great significance since the beginning of the twentieth century. Electric power supply in Nigeria is government controlled and operated by the Power Holding Company of Nigeria (PHCN). PHCN has five thermal stations located at Afam, Delta, Egbin, Ijora and Sapele power stations and three hydropower plants located at Kainji, Jebba, and Shiroro hydropower power stations. They have installed capacities of 760 MW, 560 MW and 600 MW respectively and a total output of 1900 MW. The choice of hydro systems to generate peaking power carries a higher economic value of the water resource used and resulting in a substantial increase in the benefits realized. However, this solution seems to be characterized with some challenges at the downstream sector of the hydropower dams.

The communities in the flood plains experience annual flooding when the authorities of Power Holding Company of Nigeria (PHCN) open the gates of the dams to let off water at the peak of the rains. The floods have caused damages and untold hardships to lives and property. The occurrence of flood has great effect on communities and farming activities downstream of Jebba and Shiroro dams. This paper presents an hydrological assessment, overview on reservoir effect of reservoir outflow of Kainji, Jebba and Shiroro Dam on the environment and the mitigation measures (Non-Structural and structural measures) would be reviewed..