

The Impact Of Access To Renewable Energy Technologies On Economic Development Of Remote Rural Areas In Developing Countries

A Case Study Approach.

Ivan Manyonga

Department of Development Studies
University of Vienna
Vienna, Austria
ivanjune3@gmail.com

Abstract—Access to modern energy in rural areas of developing countries is critically low. This explains the associated poor levels of socio-economic development and extreme poverty conditions prevailing in some areas. Economic emancipation of these areas can be catalyzed by enhancing uptake of modern energy. Nonetheless, electrification through grid extension is not feasible due to isolated nature of most areas and financial constraints knocking at the door steps of their governments. This scenario has paved way for renewable energy technologies as the feasible option to decentralize energy. Chipendeke rural community in Zimbabwe is a classic example of most rural areas in developing countries which, since time immemorial had lacked access to modern energy. A major milestone was witnessed in 2010 in this community when a micro hydro power plant broke the long vicious cycles of seemingly perpetual dependency on traditional biomass energy. This paper interrogates the impact of renewable energy technologies on economic development under the null hypothesis that, “access to renewable energy makes a difference”. Chipendeke community case study is presented where peasant farming is the main economic activity. Difference in Difference (DID) methodology had been employed to analyze agriculture output for two time periods, before and after electrification. This was done by dividing Chipendeke farmers into two groups which are, the treatment group comprised of 38 farmers with access to electricity and control group comprised of 77 randomly selected farmers without access to electricity. The product of the variables Time and Access was processed from the dataset to generate a new variable named “TAP”. This variable is instrumental to the DID methodology because it shows the effect of treatment on the treatment group and compares it to control group for the two time periods. Results based on econometric modelling of crop harvests and income levels failed to reject the null hypothesis as farmers were found better off regarding harvest quantities and income levels in the second time point.

Keywords— *Renewable Energy Technologies, Difference in Difference Methodology, Econometrics Models*