

The Metabolism of Built Environment: Energy Flow and Greenhouse Gas Emissions in Nigeria

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Abstract : It is becoming increasingly clear that the consumption of resources now enjoyed in the developed nations will be impossible to be sustained worldwide. While developing countries still have the advantage of low consumption and a smaller ecological footprint per person, they cannot simply develop in the same way as other western cities have developed in the past. The severe reality of population and consumption inequalities makes it contentious whether studies done in developed countries can be translated and applied to developing countries. Additional to this disparities, there are few or no metabolism of energy studies in Nigeria. Rather more contentious majority of energy metabolism studies have been done only in developed countries. While researches in Nigeria concentrate on other aspects/principles of sustainability such as water supply, sewage disposal, energy supply, energy efficiency, waste disposal, etc., which will not accurately capture the environmental impact of energy flow in Nigeria, this research will set itself apart by examining the flow of energy in Nigeria and the impact that the flow will have on the environment. The aim of the study is to examine and quantify the metabolic flows of energy in Nigeria and its corresponding environmental impact. The study will quantify the level and pattern of energy inflow and the outflow of greenhouse emissions in Nigeria. This study will describe measures to address the impact of existing energy sources and suggest alternative renewable energy sources in Nigeria that will lower the emission of greenhouse gas emissions. This study will investigate the metabolism of energy in Nigeria through a three-part methodology. The first step involved selecting and defining the study area and some variables that would affect the output of the energy (time of the year, stability of the country, income level, literacy rate and population). The second step involves analyzing, categorizing and quantifying the amount of energy generated by the various energy sources in the country. The third step involves analyzing what effect the variables would have on the environment. To ensure a representative sample of the study area, Africa's most populous country, with economy that is the second biggest and that is among the top largest oil producing countries in the world is selected. This is due to the understanding that countries with large economy and dense populations are ideal places to examine sustainability strategies; hence, the choice of Nigeria for the study. National data will be utilized unless where such data cannot be found, then local data will be employed which will be aggregated to reflect the national situation. The outcome of the study will help policy-makers better target energy conservation and efficiency programs and enables early identification and mitigation of any negative effects in the environment.

Keywords : built environment, energy metabolism, environmental impact, greenhouse gas emissions and sustainability

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