

Do Renewable Energy Technologies Affect Livelihood Assets of Households in Rural Areas? A SEM Analysis

Mohammad Masukujjaman^a (P73066), Chamhuri Siwar^a,
Sharina Abdul Halim^a and Syed Shah Alam^b

^aInstitute for Environment and Development (LESTARI),
Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor, Malaysia

^bFaculty of Economics and Management,
Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor, Malaysia

Email: masuknub@gmail.com

Problem Statement: Energy sector is one of the culprits of ongoing global warming worldwide. The power sector in Bangladesh is mostly mono-fuel based and this sector alone is responsible for the 40% to the total CO₂ emissions in Bangladesh. Using renewable energy technology is a sustainable solution and accordingly Bangladesh has given it as a priority among the abundance of problems. Hence, the country cannot afford such a huge investment for limited dimension solution, unless it also caters for poverty alleviation impacts along with its development-environment nexus.

Objective: The purpose of the study is to diagnose the impacts of small scale renewable energy technology usage on livelihood assets of rural households. **Methodology:** This is an empirical and quantitative study to test prior developed hypothesis and impact assessment based on 335-sample respondents collected in two phases through stratified random sampling method in Rajshahi division, Bangladesh. A structured questionnaire with a 7-point likert scale was utilized as the research instruments for interviewing the rural households and analysed using SPSS. AMOS 20 software was used for structural modeling and confirmatory factor analysis (CFA). **Results:** The exploratory study results provide a 19 items initial model out of 32 items, whereas the confirmatory factor analysis confirms a 14-item model under the constructs with required reliability and validity. The structural modeling with path coefficient shows that renewable energy technology has significant impact on enhancing livelihood assets of rural households in terms of social, human, financial, natural and cultural assets. All the factors are significant where the social asset is the most dominating factor while the human asset is the least in the well fit model based on goodness-of-fit index. **Conclusion:** The study concluded that renewable energy technology should incorporate poverty alleviation tool as a one stop solution embodied with multidimensional features for development.