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| **Title:** | Integration of Multiple Simulation Tools for Photovoltaic System Design and Analysis | | |
| **Author(s) Name:** | Gour Chand Mazumder1,\*, Sanjay Kumar Sarker1, Tamim Hossain1, Md. Shahariar Parvez2, Md. Rifat Hazari1 , Chowdhury Akram Hossain2, Md. Saniat Rahman Zishan1, Nowshad Amin1 | | |
| **Contact Email(s):** | dr.mazumder@aiub.edu | | |
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| **Abstract:** |  |
| This research aims to develop a photovoltaic (PV) project assessment method by integrating four simulation tools to maximize potential benefits from multidimensional scopes of projects. The proposed method combines output parameters and the cost databases of selected tools to overcome individual limitations by facilitating complementary strengths. Most simulations require more analytical results while using single or multiple tools separately. Also, it combines HelioScope, RETScreen, HOMER, and PVsyst software to simulate entire generation export, self-consumption, and impact of load shedding with sensitivity analysis. The method employs the capability of HelioScope to find maximum installation capacity based on available space, the carbon-trading feature of RETScreen, HOMER’s optimization, and PVsyst’s viability analysis. The results demonstrate that carbon trading shortens the project’s payback period while maximizing installation capacity and performance improvement by energy export with a stable capacity factor and performance ratio. The method proffers a promising technique for PV system assessment. | |