

The Potential and Economic Viability Analysis of Grid-Connected Solar PV Power in Kenya

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Abstract : This present study is aimed at minimizing the dependence on fossil fuels thus reducing greenhouse gas (GHG) emissions and also to curb for the rising energy demands in Kenya. In this analysis, 35 locations were each considered for their techno-economic potential of installation of a 10MW grid-connected PV plant. The sites are scattered across the country but are mostly concentrated in the eastern region and were selected based on their accessibility to the national grid and availability of their meteorological parameters from NASA Solar Energy Dataset. RETScreen software 4.0 version will be employed for the analysis in this present paper. The capacity factor, simple payback, equity payback, the net present value (NPV), annual life cycle savings, energy production cost, net annual greenhouse gas emission reduction and the equivalent barrels of crude oil not consumed are outlined. Energy accounting is performed and compared to the existing grid tariff for an effective feasibility argument of this 10MW grid-connected PV power system.

Keywords : photovoltaics, project viability analysis, PV module, renewable energy

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