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Techno-Economic Evaluation of Rooftop Solar PV for University of Turbat

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***Abstract*—Energy is an important sector for economy and plays a vital role in the country's economic development. Global market is moving on to increase energy efficiency and its generation from various sources especially in renewable field. Pakistan has a large potential of sources like hydro, coal, gas, wind, solar energy etc, which are being used for power generation. As Solar Photovoltaic (PV) technology has matured technically and a kind of renewable source. This research paper mainly focuses on rooftop solar PV for the university of Turbat to generate electricity which is critical for utility planning, accommodating grid capacity, deploying financing schemes and formulating future adaptive energy policies. In Balochistan the Makran Circle is facing much energy crisis due to electricity theft, hard recovery, unreliable materials and inaccessible to national grid. For this purpose, it illustrates different techniques and steps to find out the total rooftop area of Turbat University. Google earth and Arc GIS is used to locate and find the actual area which is calculated as 12321.7sq-m after eliminating shadowing effect and covered area. Now by using Pvsyst software and different formulas obtained from various research papers were used for the generation of total power. Total annual electrical energy generates from rooftop solar PV is 809 MWh annually. This electrical power will reduce CO_2 emission by 344 tons/year. Its initial cost is Rs. 19.99 crores and payback period is about 10 years and 8 months.**

***Keywords* —Techno-Economic, Energy, Rooftop, Solar PV, Turbat**