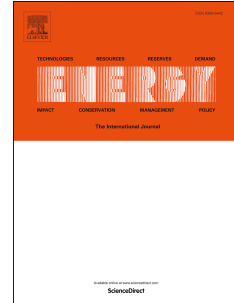


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Economic feasibility of developing grid-connected photovoltaic plants in the southern coast of Iran

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ABSTRACT

In this study, the potential of developing 5 MW grid-connected PV power plants in eight selected cities in the southern coast of Iran is evaluated from technical, financial and environmental viewpoints. Different sun-tracking modes including fixed tilt, 1-axis and 2-axis systems are investigated. A sensitivity analysis is conducted to examine the impact of different important parameters and identify when investment is more profitable. The results demonstrate that development of proposed PV plants is very promising in all cities and using 1-axis tracking system is the most economical option. Under current guaranteed feed-in-tariff (FIT) in Iran, the levelized cost of electricity for fixed tilt, 1-axis and 2-axis tracking modes PV plants for all cities are obtained in the range of 112.3-125.6 \$/MWh, 103.0-117.3 \$/MWh and 107.2-122.5 \$/MWh, respectively. The analysis shows that other financial incentives such as a bank loan and carbon credit substantially improve the economic attractiveness of the project. The calculated CO₂ emission abatement and external cost saving due to employment of the PV plants demonstrate that the proposed PV projects have appealing environmental benefits. This study shows that the southern coast of Iran has a huge potential and actual market opportunities for investors to develop grid-connected PV projects.

Keywords: PV power plants; Grid-connected; Economic viability; Environmental analysis; Sun-tracking systems; South coast of Iran.

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