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## Techno economic assessment of solar photovoltaic water pumping system

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Central for Rural Development and Technology, Indian Institute of Technology, NEW DELHI (INDIA) ■ ABSTRACT : This paper presents technical and economic analysis of solar photovoltaic water pumping system for irrigation of banana. The system was designed and installed in solar farm of Jain Irrigation System Limited (JISL), at Jalgaon (Maharashtra). The study area falls at 21° 05' N – latitude, 75° 40'E longitude and at an altitude of 209 m above mean sea level. The cost of solar photovoltaic water pumping systems was analyzed, solar technologies were compared economically with conventional diesel engine water pumping system considering present socio-economic environment to emphasize the need to supplement with and eventually replace existing water pumping systems in the remote areas of rural India with available, abundant and inexhaustible solar energy system. Life cycle cost (LCC) analysis was conducted to assess the economic viability of the system. Life cycle cost (LCC) of PV system was found to be ' 35,117.47/- while that of diesel engine was ' 8, 64,669.00/-. The results of the study encouraged the use of the PV systems for water pumping application to irrigate orchards in rural areas of India.

■ KEY WORDS : Life cycle cost, Photovoltaic/PV, Water pumping

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