Solar Energy Potential in Kathmandu Valley, Nepal

Santosh Regmi[1*] and Sunil Adhikary[2]

[1] *Nepal Hydrological and Meteorological Research Centre, Kathmandu, Nepal*

[2] *Department of Meteorology, Tri-Chandra Multiple Campus, Tribhuvan University, Kathmandu*

ABSTRACT

Meteorological data such as solar radiation (1975-1984, and 2002-2010) and sunshine duration (1968-2004) were analyzed to study temporal characteristics of solar energy and investigate solar energy potential in Kathmandu valley. Pre-monsoon and post monsoon seasons have higher mean monthly sunshine duration (about 8 hours/day) than summer (about 5 hours/day) and winter (about 7 hours/day) seasons over Kathmandu. Pre-monsoon and monsoon seasons receive solar energy of about 190 Wm^{-2} and 170 Wm^{-2} respectively. The winter season receives the least amount of solar radiation (135 Wm^{-2}). Approximately 220 MW of solar electricity can be produced in Kathmandu that will substantially fulfill current energy demand and reduce environmental pollution in the valley by replacing fossil fuels with clean solar electricity.

Keywords: *Renewable energy, Solar energy, Environmental pollution, Kathmandu*