

## **Sustainable usage of solar energy through solar panel systems and implementation of an energy saving method in University of Kelaniya.**

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Sun's energy is one of the renewable energy sources that falls on earth surface and solar energy can be used as an alternative to electricity produced by burning fossil fuel. This case study was carried out to analyze the amount of energy that can be saved through solar panel systems and to evaluate the perceptions of people about energy saving by solar panel system. Attempts were also made to assess the possibility of reducing cost of electricity in the University of Kelaniya through solar panel systems. This study was conducted in Gampaha district and information was collected by interviewing people through a structured questionnaire. The households with solar panel installations were chosen from the client list of a company providing net-metering solar panel systems and accordingly ten household premises where solar energy is used were included in the sample. Forty other households that are not having solar systems were also selected randomly. The data were analyzed using Microsoft Excel. Besides comparison of cost of electricity bill before and after using solar panel in 10 households with net-metering solar systems, degree of awareness of people about the option of solar panel system was determined in relation to education level and economic status. Awareness of household heads with energy saving methods and the percentage saving of electricity bill through installation of net-metering solar system were analyzed. Results indicated that 77% of household heads interviewed were aware of saving energy by solar panel systems and the remaining 23% was not aware. In the households where net-metering solar systems installed, 31.4% - 98.2% of electricity consumption cost was saved. Using gathered data, the potential saving of electricity consumption cost in selected buildings of University of Kelaniya was calculated, and was found that 97.35% of cost of electricity consumption could be saved by installing a net-metering solar energy system. Among general public, moving towards the option of energy saving by solar panel systems would be dependent on educational levels and economic status of household members.

**Keywords:** Solar energy, solar panel systems, electricity consumption, energy saving