

STATUS OF SOLAR HOME SYSTEM IN RURAL COMMUNITY:

A Case Study of Phoimahadev VDC, Kalikot, Nepal

A Thesis Submitted to
The Central Department of Rural Development
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In partial fulfillment of the requirements for the
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DECLARATION

I hereby declare that the thesis entitled “**Status of Solar Home System in Rural Community: A Case Study of Phoimahadev VDC, Kalikot, Nepal**” submitted to the Central Department of Rural Development, Tribhuvan University, is entirely my original work prepared under the guidance and supervision of my supervisor. I have made due acknowledgements to all ideas and information borrowed from different sources in the course of preparing this thesis. The results of this thesis have not been presented or submitted anywhere else for the award of any degree or for any other purposes. I assure that no part of the content of this thesis has been published in any form before.

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RECOMMENDATION LETTER

The thesis entitled “**Status of Solar Home System in Rural Community: A Case Study of Phoimahadev VDC, Kalikot, Nepal**” has been prepared by **Lokendra Prasad Pandey** under my guidance and supervision. I hereby forward this to the evaluation committee for final evaluation and approval.

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- Lokendra Prasad Pandey

ABSTRACT

Due to the remoteness and lack of adequate infrastructure development, most places of Karnali zone and adjoining districts have poor access to electricity. Moreover, extension of grid electricity in those areas is very expensive. Besides, the people living in these areas have very low income. Therefore, they could not afford for Solar Home System (SHS) and Micro-Hydro Power (MHP) making them bound mainly to rely on the kerosene lamp, "Jharo" (Pine wood rich in latex) and dry cell for lighting. Those traditional lighting systems affect environment surrounding them as well as their health adversely. Some organizations have been involved in disseminating different kinds of "Tuki" (Tuki in Nepali means lamp) running from the dry cell which were not tested and not guaranteed to run. Also, there is no assurance of the after sales services.

This present research has made an attempt to find out the status of SHS in Phoimahadev VDC, interest of people to install SHS, types of benefits that they are gaining their socio-economic status and operational status of SHS. Likewise, annual income of SHS users and non-users, income sources of SHS users and non-users, various uses of SHS and energy consumption analysis of Phoimahadev VDC has also been studied. The data for the research have been collected from primary sources and secondary sources. There are 617 Households in Phoimahadev VDC and 149 households in ward no. 8 & 9. In the study area, 102 households have been benefited from solar energy. Among them fifty households were selected from users and 10 households from non-users as a sample using simple random sampling method. Altogether 60 respondents were selected for the study purpose. Structured questionnaires, semi-structured interview, observation and focus group discussion methods were used as tools for the data collection. On the basis of the collected qualitative and quantitative data, the analysis and interpretation is done.

The finding shows that larger proportions of the respondents are male Brahman, Chhetri Thakuri and Dalit (users and non-users of SHS). Agriculture is predominant occupation of respondents but not the sufficient one in terms of income. Besides agriculture, labor, government job, small industry, business, service are the other occupation followed by the respondents. Almost half of the respondents could not meet the SHS cost from their annual savings. This indicates financial support package should be launched with SHS extension programs. Children are the main beneficiaries and improvement in study environment is the major gain. Better lighting has provided longer study time and facilitated guardians in

coaching their school going children at night. SHS has also increased female members' ability to accomplish more household chores because of better lighting and longer working hours. SHS has created the rural employment opportunity to the local community in repairing and maintaining SHS sets. Around half of the respondents perceive that local people are capable to run SHS repairing workshop in the village. "Jharo" and "Tuki" were commonly used lighting devices before installation of SHS. The study revealed that majority of the respondents have installed SHS for the sake of better lighting followed by kerosene expenditure saving and social prestige. Access to information is another important impact of SHS. Easy access to audio visual devices such as radio/cassettes, mobiles and TV have made the households better informed and enhanced their knowledge and skills. Installation of SHS has also improved indoor environment for most of the respondents. Smoke free environment has brought better health condition especially by reducing respiratory and eye related problems. However, few incidences of acid burning has emerged causing minor problems to family members, properties and their belongings.

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ABBREVIATIONS

AEPC	Alternative Energy Promotion Center
CRT	Center for Rural Technology
CBS	Central Bureau of Statistics
CRE	Center for Renewable Energy
CPR	Contraceptive Prevalence Rate
DTICC	Defense Technological and Industrial Cooperation Committee
DRCN	District Road Core Network
DDC	District Development Committee
ESSP	Energy Sector Service Program
ESAP	Energy Solar Assistance Programme
FY	Fiscal Year
FGD	Focus Group Discussion
GoN	Government of Nepal
GJ	Giga Joule
GDP	Gross Domestic Product
HMIS	Health Management Information System
HRD	Human Resource Development
HDI	Human Development Index
HH	Household
ICS	Improved Cooking Stove
ISPS	Institutional Solar Photovoltaic System
IGA	Income Generating Activities
IREF	Interim Rural Energy Fund

IUCD	Intra Uterine Contraceptive Device
INGO	International Non-Government Organization
KWh	Kilo Watt Hour
KUP	Karnali Ujjyalo Programme
LDC	Least Developed Country
MWDR	Mid-Western Development Region
MW	Mega Watt
MSME	Micro, Small and Medium Enterprise
MJ	Mega Joule
NGO	Non-Government Organization
NEA	Nepal Electricity Authority
NRREP	National Rural and Renewable Energy Programme
NPC	National Planning Commission
NA	Not Applicable
NHDR	Nepal Human Development Report
PCRW	Production Credit for Rural Women
PV	Photovoltaic
PVPS	Photovoltaic Pumping System
PHCC	Primary Health Care Canter
RET	Renewable Energy Technology
RE	Renewable Energy
REF	Renewable Energy Fund
REP	Rural Energy Policy
SSHS	Small Solar Home System
SHS	Solar Home System

ST	Solar Tuki
SELF	Solar Electric Light Fund
SFDP	Small Farmers Development Programme
SPRE	Subsidy Policy for Renewable Energy
TRUST	Technology and Rural Urban Upliftment Service Team
USD	United States Dollar
VDC	Village Development Committee
WECS	Water and Energy Commission Secretariat