

**SOCIO-ECONOMIC IMPACT OF CELICHAMA MICRO-  
HYDROPOWER PROJECT  
(A Case Study of Bhagwati VDC of Darchula)**

**A Thesis**

**Submitted to the Central Department of Rural Development  
Faculty of Humanities & Social Sciences  
in Partial Fulfillment of the Requirements  
for the Degree of Master of Arts in  
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**Submitted by**

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## RECOMMENDATION LETTER

This thesis entitled *Socio-economic Impact of Celichama Micro-hydropower Project: A Case Study of Bhagwati VDC of Darchula* is prepared by Mr. Sunil Awasthi under my guidance and supervision for the partial fulfillment of the requirement of Master's Degree in Rural Development. Therefore, this thesis is recommended to the evaluation committee for its final evaluation and approval.

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## APPROVAL SHEET

This is to certify that the thesis entitled *Socio-economic Impact of Celichama Micro-hydropower Project: A Case Study of Bhagwati VDC of Darchula* written and submitted by Sunil Awasthi has been examined. It has been declared successful for the fulfillment of the academic requirements toward the completion of Master of Arts in Rural Development.

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## **ABSTRACT**

*Energy plays a vital role in national development because it is essential not only for meeting necessities like cooking and lighting but is also vital for productive sector of the economy. The total energy consumption in Nepal was 8.205 million TOE hi 2002 (about 15 GJ per capita) of which traditional energy provided 85.27 percent, commercial energy provided about 14.24 percent and renewable energy provided only 0.48 percent of the total energy consumption. About 48.5 percent of the total population has benefited from electricity.*

*It is estimated that in Nepal more than 6,000 rivers flows, whose total length is about 45000 km. The theoretical and commercial potential of hydropower in Nepal are about 83.00 MW and 42000 MW respectively. However, only about 560 MW has been generated by the various hydropower stations. Micro-hydropower is the ideal answer tot he present energy crisis of Nepal. It is the most proven, most reliable and potentially cost effective. The present study is focused in the socio-economic impact of Celichama MHP in Bhagwati VDC of Darchula. It was conducted with following objectives:*

- To identify the role of MHP in rural electrification.*
- To assess the present energy situation in Bhagwati VDC of Darchula district.*
- To find out the people's participation for the development and promotion of MHP in Bhagwati VDC.*

*Bhagwati VDC of Darchula district was selected as the study area. For the fulfillment of the above objectives, the study guided by sample frame from where the sample population 20 percent and the total sample is to be 46 households. Structured, unstructured questionnaire and focused interview techniques are used*

*for data collection. Survey found that more than 42 percent of the total households benefited from MHP in the study area. After the installation of MHP, more than 36 percent of the sample households utilized their surplus time on household activities. Literacy class was introduced and students could study one hour more every day during evening by using electric bulbs. Only about 21.74 percent of sample households were involved in productive work by using MHP and the income level was increased considerably. It was recommended that, simple and transparent procedures for loan sanctioning should be developed and institutionalized. Capabilities should be built up at village level for operation, maintenance and repairing. There is a need to integrate MHP system promotion with income generating and social development activities in order to justify the subsidy scheme. Community owned and managed micro-hydropower plants should be promoted.*

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## **ABBREVIATIONS/ACRONYMS**

ACAP/KMTNC	:	Annapurna Conservation Area Project/King
ADB/N	:	Mahendra Trust for Nature Conservation
	:	Agriculture Development Bank/Nepal
AEPC	:	Alternative Energy Promotion Centre
AETs	:	Alternative Energy Technologies
AIT	:	Asian Institute of Technology
CBOs	:	Community Based Organizations
CBS	:	Central Bureau of Statistics
CCO	:	Canadian Cooperation Office
CRT/N	:	Centre for Rural Technology/Nepal
DCS	:	Development Consultancy Services
DDC	:	Development Consultancy Services
DGO	:	Director General's Office
EIA	:	Energy Information Administration
ESAP	:	Energy Support Assistance Program
FY	:	Fiscal year
GDP	:	Gross Domestic Product
GHG	:	Green House Gas
GJ	:	Giga joule
GoN	:	Government of Nepal
Ha	:	Hectare
HHs	:	Households
HKH	:	Hindu Kush Himalayan
Hrs.	:	Hours
ICIMOD	:	International Centre for Integrated Mountain

Development

ICS	:	Improved Cooking Stove
INGOs	:	International Non-Government Organization
IOC	:	Inter-Organizational Communication
IOE	:	Institute of Engineering
IREF	:	Interim Rural Energy Fund
ITDG/N	:	Intermediate Technology Development

Group/Nepal

Km	:	Kilometer
Kw	:	Kilowatt
Ltrs.	:	Liters
M	:	Meter
MHFG	:	Micro-Hydro Functional Group
MHP	:	Micro-Hydro Power
MPPU	:	Multi Purpose Power Unit
MW	:	Megawatt
NEA	:	Nepal Electricity Authority
NGOs	:	Non Government Organizations
NPC	:	National Planning Commission
PHP	:	Pico-Hydro Power
PS	:	Peltric Set
PV	:	Photovoltaic
RADC	:	Remote Area Development Committee
REDP	:	Rural Energy Development Program
REDSM	:	Rural Energy Development Section Myagdi
RET	:	Renewable Energy Technology

RETRUD : Renewable Energy Technology of Rural  
Development

SATA : Swiss Association of Technical Assistance

SHS : Solar Home System

SIDA : Swedish International Development

Cooperation Agency

Sq. Km. : Square Kilometer

SSHP : Small Scale Hydro-power Solar Water Heater

TCE : Tons of Coal Equivalent

TSHPP : Tatopani Small Hydro Power Project

UN : United Nations

UNDP : United Nations Development Program

UNV : United Nations Volunteers

VDC : Village Development Committee

WECS : Water and Energy Commission Secretariat

WRA : Water Resources Act