

**IMPACTS OF CLIMATE CHANGE ON RURAL  
LIVELIHOOD AND ITS ADAPTATION PRACTICES  
A Case Study from Fulkharka VDC of Dhading District, Nepal**

**A Thesis Submitted to Faculty of Humanities and Social Sciences, Central  
Department of Rural Development for the Fulfillment of the Requirement for  
the Master Degree of Arts in Rural Development**

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## **RECOMMENDATION LETTER**

This Thesis entitled **“Impacts of Climate Change on Rural Livelihood and Its Adaptation Practices: A Case Study from Fulkharka VDC of Dhading District**, has been prepared by Soni Devi Adhikari under my supervision in partial fulfillment of the requirement for the Master Degree of Arts in Rural Development. I hereby recommended this thesis for final evaluation and approval.

.....

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**2011**

## **APPROVAL LETTER**

This Thesis entitled “**Impact of Climate Change on Rural Livelihood and Its adaptation Practices** ” A Case Study from Fulkharka VDC of Dhading District, has been prepared by Soni Devi Adhikari in partial fulfillment of the requirement for the Master Degree of Arts in Rural Development has been forwarded for its final evaluation and approval.

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## **ABBREVIATIONS/ACRONYMS**

ADB	Asian Development Bank
°C	Degree Centigrade
CBS	Central Bureau of Statistics
CDM	Clean Development Mechanism
CEN	Clean Energy Nepal
CFUG	Community Forest User Groups
CO <sub>2</sub>	Carbon Dioxide
DDC	District Development Committee
DFO	District Forest Office
DSCO	District Soil Conservation Office
DWIDP	Department of Water Induced Disaster Prevention
FAO	Food and Agriculture Organization
GHG	Green House Gas
HH	Household
HMGN	His Majesty Government of Nepal, Now Nepal Government
INC	Initial National Communication
IPCC	Intergovernmental Panel on Climate Change
LDC	Least Developed Country
LFP	Livelihood and Forestry Program
NAPA	National Adaptation Program of Action
NBCCAB	National Biodiversity Climate Change Action Plan
PRA	Participatory Rural Appraisals
SPSS	Statistical Package for Social Science
UNFCCC	United Nations Framework Convention on Climate Change
UNEP	United Nations Environment Program
UNESCO	United Nation Educational, Scientific and Cultural Organization
VDC	Village Development Committee
WHO	World Health Organization
WMO	World Meteorological Organization

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## ABSTRACT

*Climate change is one of the most serious challenges of this century for sustainable development whose impact is of great concern to humanity. Although Nepal has a negligible share in the global emissions of greenhouse gases, it is more vulnerable to climate change impact due to its fragile mountain ecosystems. A study entitled “**Impacts of Climate Change on Rural Livelihoods and its Adaptation Practices: A Case Study from Fulkharka VDC of Dhading District**” was carried out in Fulkharka VDC in Dhading district of Nepal, to assess people's understanding on climate change, explore its impacts on their livelihoods and document how they are coping with those impacts. Various PRA tools like household interview (n=51), group discussions (3), key informants survey (6) and trend analysis were used for collecting primary data. Meteorological data and different published & unpublished literatures were used for collecting secondary data. Data were analyzed using Ms-excel and SPSS-11.5 and presented using tables, graphs and diagrams.*

*The first research question was how people understand the climate change. The study revealed that 41% respondents were familiar with the concepts and remaining had no idea on climate change but they understood that their local climate is changing in some or other way. Their perception on the warming coincides with the local meteorological data which depicts that the mean annual temperature is increasing by 0.062°C. Various methods of research and 43% responses shows that the timing pattern of rainfall, intensity and amount of rainfall also changed from 5-6 years. Similarly 97% respondents have experienced that the time of drought, temperature and other climatic factors have changed due to*

*climate change. While assessing the **impacts of climate change experienced by the people**, results shows that the climate change had several impacts on the rural livelihoods. More than 97% people are agreed with the observed impacts were decreasing in agriculture production, loss in biodiversity. Only 2% respondents are not agreed with decreasing in water resources, and increase in health hazards. It has shifted the cropping pattern, changing the ripening time of various local fruits, different flora and fauna are going to endangered. The third research question was **how the people were adapting to the changing climate**. It was found that people applied some adaptation strategies such as changing cropping time, crop type and rain water harvesting, installing improved cooking stoves, plantation of plants, soil conservation. In the research area only 12% respondents have planted cash crops because of decreasing the productivity of traditional crops, Though they did not have enough knowledge about the mitigation measures, they were protecting forests, and maintaining home gardens that could reduce the rate and volume of greenhouse gas emissions.*

*There is an urgent need to formulate adaptive strategies for changing climate in the agricultural field, health, water resources and biodiversity sector from concerned authorities. Awareness, capacity building, and knowledge could be extended at local level. Policy has to be developed at national level for managing future risks and for integrating climate risk management into development strategies.*

**Key words:** *Climate change, Livelihood, Impact, Adaptation, Mitigation*

**APPENDICES**

**1. Household interview / Questionnaire survey**

Namaste!

I am soni Adhikari from the Tribhuvan Unniversity, Kirtipur ,Kathmandu. I am here going to conduct a research on Impact of climate change on rural livelihood and its Adaptation Practices on Fulkharka VDC of Dhading district . To get the purpose of the research I am going to ask some questions related to the research topic and objective. So please help me providing accurate information and I promise your identity will be kept secret.

**A. Socio-Economic information.**

1. Respondent’s name:
2. Sex:
3. Age:
4. Name of the VDC:
5. Ward number:
- 7 . Household head:
8. Occupation: i) Agriculture                      ii) Service            iii) Business
9. Household size and demographic information:
10. How much land do you possess?
 

(a) none	(b)less than 5 ropanis
(c ) more than 30 ropanis	(d) 16-30 ropanis
11. Food sufficiency:
 

(a) 9-12 months	(b) 6-9 months
(c ) 3-6 months	(d)less than 3months
12. Livestock population:
 

(a) Cow	(b) Buffalo
(c) Goat	(d)Others
13. Which system you apply for the management of the livestock?

Family size	Sex		Educational status			Marital Status		
	Male (m)	Female (F)	Illiterate(1)	Under SLC(2)	College (3)	Married(M)	Unmarried(u)	Widow(w)

- |                   |                           |
|-------------------|---------------------------|
| (a) Stall feeding | (b) Forest                |
| (c ) others       | (d) Grazing communal land |

**B. Understanding level of people on climate change and its impacts:**

1. Have you heard about climate change? if yes how did you know and what it is ?

2. Have you realized change in any climatic factors or weather conditions the last 30 years? If yes what it was/is ? Why do you think they are changing so? (Prompts: temperature, amount, distribution and timing of monsoon and winter rains)
3. What are the impacts of the changing phenomena (you mentioned above) you realized in your family ? (Prompts: in different sectors i. e. food and agriculture , livestock, health, water resources ,physical assets, human capital.)
4. Do you remember any disasters /stresses in the last 30 years where you incurred a huge loss? if yes ,
  - (a) What are they and when (approx)?
  - (b) Do you think climate change is responsible for those disasters ? (one by one from the list eg. Landslide, drought, flood,fire)
  - (c) How did you cope with each of them?
5. Have found any variation in coldness and hotness compared to previous years?
6. Have you felt any changes in rainfall seasons and durations?
7. Have you come up with any new diseases, that didn't exist before? What is is?
8. Is there sufficient irrigation facility? Is it perennial or annual? Have you realized any change in irrigation system?

**C. Knowledge on Adaptation measures:**

1. What do you think; will you have to face more severe climate change impacts in the future ?
2. |What do you think ; will you have more capacity to adapt to climate change in future?
3. Had there been any endeavor to cope with the changes?
4. Which sector (agriculture, health. Forest, etc.) do you think faces the consequences of climate change the most ? Which one of these needs to adapt to the situation, the most?
5. What is the adaptation measured carried out?
6. Are these measured helpful to solving the problem?
7. What do you think , are your family' strengths and limitations to adapt to climate change stresses in relation to other families in your community?

8. What do you think suffer most from the impacts of climate change?
9. What sort of support do you think you need to adapt to climate change in future?
10. Where do you get support from the time of disasters?
11. Who do you think is likely support you?
12. Do you think your community can contribute to global climate change? If yes how?
13. What do you think can be done more as adaptation option?
14. have there been any training program conducted on CC issues?
15. Thank you for the invaluable information, Would you like to add any thing else?

## **2. Seasonal Calendar**

1. What is your current seasonal calendar?
2. Are there any differences in the timing of seasons and events as compared to 30 years ago?
3. What are current strategies to cope during the difficult times? Are they working?
4. Have livelihoods /coping strategies changed based on the changing seasons or events?
5. How are decisions made on timing of events?

## **3. Timeline/ Time trend analysis**

1. Are there or changes in the frequency of events over time?
2. Have coping strategies changed based on the changing frequency of events?
3. What events do you expect will occur in the future ? When?
4. Does this perception of future events affect your plans for the future?

#### **4. Checklist for Group discussion**

1. Major GOs, NGOs, INGOs, and CBOs operating in village to carry out development and conservation activities.
2. Which is the highly concerned (working) sector from above listed organization?
3. Tangible benefit to local livelihood from the project implementation?
4. Are they (organization) telling about climate change ? Which organization ?Name?

#### **5. Checklist for direct observation**

1. Biophysical activities (deforestation, biodiversity conservation efforts made by local people like rules and traditional norms, productivity conservation ,size of stream)
2. Physical activities ,size of stream , forest condition , agricultural pattern etc.
3. The locations diversity of particular species like butterfly and other ,if possible.
4. The cropping pattern of local people /the condition of crop?
5. The suitable productive land? Land uses? And land condition?