

# Role of Gender on Agricultural Intensification and its contribution to Greenhouse Gases Emission with implication for Policy

## Technical Progress Report

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### 1. Introduction

In the situation where 61 % of farmers in Nepal lack food sufficiency (NARC, 2010) and the production of cereals has been growing only 2 % per annum, which is below the population growth rate (CIP, 2010), the food deficit is particularly severe in the hills and mountains as compared to Terai (a low-lying plain area and an ecological region of Nepal). Meantime, the average size of land holdings decreased from 0.96 ha in 1991/1992 to 0.79 ha in 2001/2002 mainly caused by the tradition of paternal property subdivision among male heirs, and gradually growing population (CBS, 2002; Thapa and Niroula, 2008). Such trend has seriously threatened the livelihood and food security of those who depend on agriculture (Thapa and Niroula, 2008). The situation is even worse in mid-hills since landholdings of farmers are small compared to Terai and the opportunities for them to have other sources of income from non-agricultural activities are also limited. Therefore, a majority of the Nepalese hill farmers have chosen crop intensification as an alternative approach for farming where they can have high levels of production on small plots of land.

The division of labour between men and women is slowly changing. (Dahal et al., 2009). However, unequal gender relations in Nepal create differences between men and women's access to information related to agricultural and climate change. Detailed understanding of gender roles on adopting of intensification, their involvement of different agricultural activities, gendered contribution of greenhouse gas emission due to intensification, and potential impacts of unmanaged use of chemical fertilizers on greenhouse gases emission will help to identify changing gender roles and how to integrate gender into the official discourse surrounding climate policies in Nepal. Therefore, the objectives of this study are:

1. To assess the role of gender on agricultural intensification process in mid-hills of Nepal;  
Research questions: What is the involvement of men and women in different agricultural activities? What are the differences between men and women on choices of crops, decisions on inputs, access to agricultural information, and participation in local institutions such as farmers' user group, cooperatives?

2. To determine the effects of agricultural intensification on the greenhouse gas emission differentiated by gender roles on farms;

Research hypothesis: Agricultural intensification leads to an increase in the emission of N<sub>2</sub>O and CH<sub>4</sub>. Women are more concerned with increasing the number of crops per year and applying higher amount of chemical fertilizers. Such activities will enhance the greenhouse gas emission.

## 2. Progress on setting up research

It was not difficult to set up the research, since I was familiar with the people in the study area. The study area comprises the *Ansikhola* sub watershed located in the *Kavre* district of central Nepal (Figure 1). I have been working in the area since 2009, and familiar with the farming activities. However, due to lack of time and being outside the country, I had made arrangements for my study before I reached the field through contact persons in the study area. I have known my contact persons since 2009 and they are well aware of setting up research. I informed them about my proposed visit and the objectives of my study. So, all in all, the people from the village development committee, local organization and few farmers already knew that I am coming for field work. There was no difficulty regarding logistics.

Most of the expenditures are within the budget. I underestimated the budget needed for data entry. The budget for transportation for field work was also not within the allocated budget. The topography of the study area is such that the local transportation is not available everywhere and walking is almost impossible in some of the cases where households are too far. Carrying the soil samples from field to the international airport to take them to University of Norway required private transportation. Therefore the budget allocated for transportation was not enough.

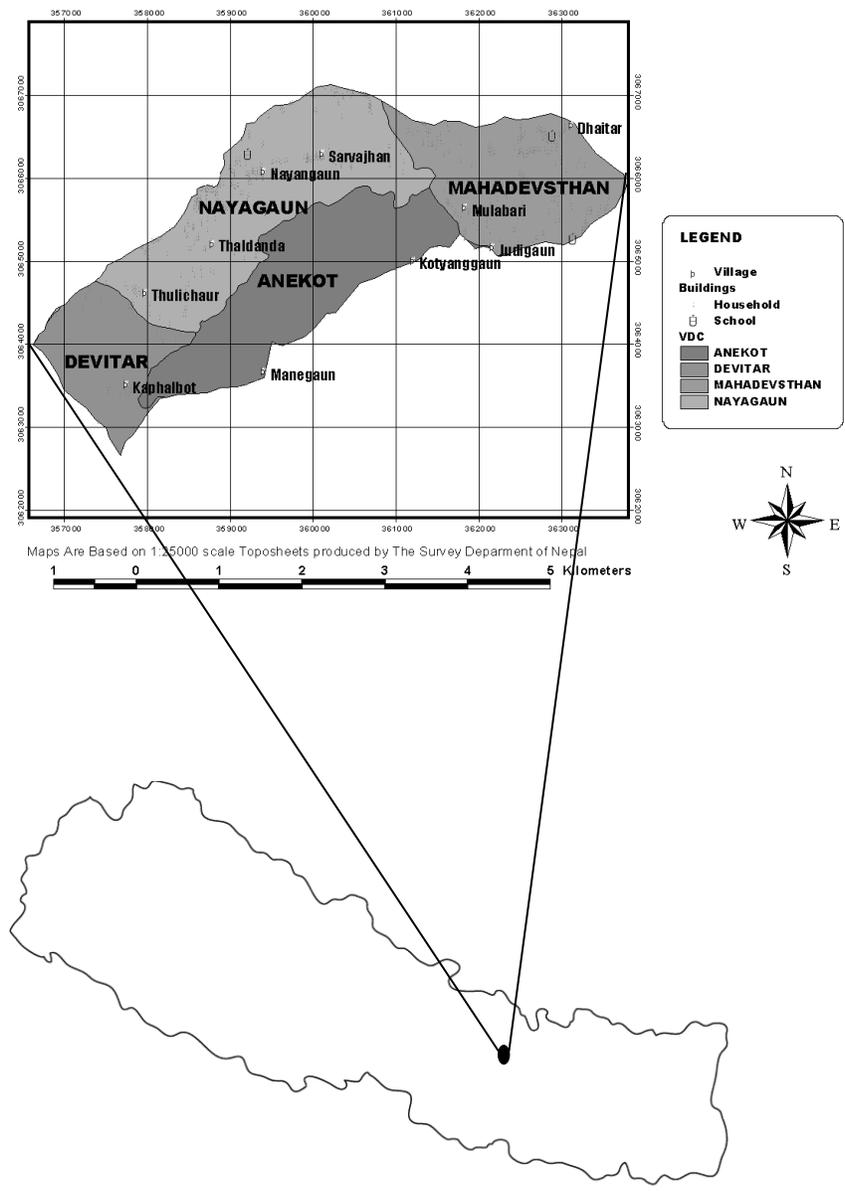


Figure 1. Location of the study area (Ansikhola watershed)

### 3. Research Methods

A mixed method approach was used where both quantitative and qualitative were used simultaneously for data collection to complement each other. Preliminary field visits were made in order to know the situation in the field. Experimental plots were also selected during this

period to collect soil samples. A quantitative research strategy was used in which soil samples were collected and household surveys were conducted. As a qualitative research strategy, group discussions and direct observations were made. The enumerators who helped in data collection from household survey have lived in an area adjacent to the study area for around 20 years. Therefore, there was no problem with translation and they are familiar with the context and practices in the study area. The two enumerators that worked together were trained properly before the start of the data collection. I conducted six group discussions and six key informant interviews. Group discussions were conducted based on high caste, middle caste and lower caste, with men and women from each caste. Women from higher caste are involved in agricultural activities and decision making activities than women from lower caste that will contribute on the decision making on fertilizer use which is an important factor for GHG emissions. Based on the preliminary survey, it has been found that women were more open when men were not around. All the members were enthusiastic and interested in talking about what they have been doing. Therefore, all the methods were informative to meet the objectives.

Since the study area is easily accessible and near from capital city, many projects in the past. Most of the projects were implemented by non-governmental organizations (NGOs), international non-governmental organizations (INGOs) and government organizations (GOs). In order to get farmers interested in projects, project managers created high expectations in terms of money, credits and vegetable seeds for free among farmers. Farmers had the same expectation from this research until it was explained that it was for research purposes for an academic institution and not related to any NGOs, INGOs and GOs. This was a big challenge in the beginning of the field survey.

#### 4. Analysis of Findings

I have completed the data collection at the end of April. I am now in the process of data entering and data cleaning from the household survey using a statistical software SPSS (version 16.0) in order to analyze them. The audios that have been recorded with the participants' permission during the group discussion are being transferred into the audible form. The soil samples that have been brought to Norway from study area are scheduled to be analyzed in August as lab facilities are not available until then.

#### 5. Conclusion

There have been no concrete results yet since I am in data processing and analysis stage. But from the experience of household surveys, group discussions and key informant interviews, I am confident that there are very interesting results. The involvement of men and women in the group discussion was very interesting. In general so far there have not been any unavoidable challenges that hampered meeting the objectives of this research.

## 6. References

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