

# Gender and Resources: Indicators and Interactions

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## Abstract

Gender issues are an integral component of the socioeconomic factors influencing the use and management of resources in the middle mountains of Nepal. In the Yarsha Khola watershed, women typically worked 13.5 hours per day compared to 9.7 for men. Women were largely responsible for domestic activities and livestock care, while decision making and farm management were controlled by men. Ninety-two percent of the adult women surveyed were illiterate, compared to 30 per cent of the adult men. Off-farm income increased with the education level of adult men, but women in these households had less decision-making powers. The Lamo Sangu Jiri road (constructed in the 1980s) has had an important impact in the watershed. Households with road access use more fertiliser and earn more from off-farm income, but women are left with greater responsibility. Households with poor access are more reliant on subsistence agriculture to meet their basic need requirements. On south-facing slopes near the road, lack of irrigation was identified by both men and women as the key constraint facing farm families, while across the watershed the unavailability of fertilisers was the primary concern. Issues raised by both men and women were similar, but women also identified labour shortages as a concern. Understanding the gender based division of labour, decision-making power, and access to and control over resources is key to implementing resource management programmes that will improve the situation for rural Nepalese women.

## Introduction

Despite an emphasis on 'Women in Development' and 'Gender and Development' initiatives, little data exists on the situation of mountain women in Nepal and few analyses have been made of gender relations. Women in the middle mountains of Nepal are largely responsible for the day-to-day tasks within the farming system such as fetching water, domestic activities, livestock care, fodder collection, and gathering fuelwood. As the major suppliers of basic food, water, and fuelwood resources, women are affected most by environmental degradation. Resource degradation affects how women allocate their time, and consequently affects households and communities in many regions. Numerous papers and discussions have focused on resource degradation in Nepal, but without knowledge of how changes affect the workload of rural women it is difficult to suggest management options that will improve the situation.

The main objectives of the research described here were to:

- identify women's perspectives of key issues in natural resource degradation within a watershed context;
- define the gender-specific division of tasks within the farming system;
- identify recent changes in the workload of women, specifically those related to the collection of forest products;
- relate indicators of socioeconomic well-being to the workload of women; and,
- identify and initiate community-based programmes to reduce the impact of resource degradation on women.

## **Sampling Design**

Resource use was evaluated at 337 sites within the Yarsha Khola watershed, Nepal. Management of irrigated and rainfed agriculture, and forest and rangeland were assessed through key informant interviews (Schonhuth and Kivelitz 1994) which included both men and women informants at all sites. The perspective of women farmers and forest user group members was targeted in order to understand better the issues faced by village women. Seventy-five detailed household surveys were conducted with female and male household heads and the results used to compile socioeconomic indicators that were then related to labour allocation and the workload of women. Simultaneous but separate male and female interviews were conducted to streamline data collection, provide a cross-check system, and to solicit open responses from women farmers. All sites were located on 1:5,000 and 1:20,000 scale aerial photographs to facilitate spatial analysis using geographic information system (GIS) techniques. Women's user groups in the watershed were identified and their input was used to develop community-based initiatives on topics of immediate concern to local women.

Indicators were used to identify poverty and gender inequity including labour, education, land holdings, off-farm employment, and agricultural production. Indicator interactions were then examined, and potential initiatives to overcome the 'gender gap' were documented.

The components of poverty and gender discussed in this paper are:

- a day in the life;
- labour allocation;
- socioeconomics; and
- agricultural constraints.

## **A Day in the Life**

Time allocation was evaluated using daily diaries compiled for men and women farmers (Buenavista and Flora 1994). Daily diaries were completed during the first week of November (winter activities). The sampling design followed the resource use survey (Schreier *et al.* this

volume): three elevation classes, two aspect classes, the central ridge, and three main ethnic groups (Brahmin, Chhetri, and Tamang). The activities of seven women and seven men farmers were documented for each combination of factors giving a total of 364 diaries.

A typical rural work day in the middle mountains of Nepal starts between 5:00 and 6:00 AM and involves the collection of water, fodder, and fuelwood; household tasks; crop production or off-farm employment (largely as labourers); cooking and cleaning; and bed between 8:30 and 9:30 PM. Women get up earlier, work longer, and spend a greater proportion of their day working (Table 8). Adult women typically work 3.8 hours per day longer than men.

**Table 8: Gender disparity in daily activities**

Activity	Women	Men
Wake up	4:57	5:39
Go to bed	21:19	20:41
Work (hrs/day)	13.5 hrs	9.7 hrs
% day working	82%	63%

Both men and women are active in crop production activities during harvesting and field preparation. In early November women were involved in harvesting millet grain, cutting millet straw, and manually digging fields in preparation for planting wheat. Men cut millet straw and ploughed fields for wheat. Even during this period when men were active in tasks related to crop production, women worked similar hours to men in the field in addition to their household-related activities.

Women living near the road spent significantly more time on household tasks and livestock care, worked longer days, and spent a greater proportion of their day working than women living on the non-road access side of the watershed. The longer work hours of women living near the road is likely to be related to the greater employment of men in this area, shifting the on-farm responsibility to the women.

## Labour Allocation

Labour allocation was evaluated through a checklist approach in which women farmers identified who was responsible for a variety of tasks within the farming system (Feldstein and Poats 1994). Involvement was ranked on a scale of dominantly (90-100%), mostly (approximately 75%), 50-50, or some (approximately 25%).

Domestic activities (cleaning, cooking, childcare, fetching water) were largely the responsibility of women, as were tasks related to livestock care (Figure 8). Crop production typically involved shared responsibility, with women more involved in planting, gathering manure, and applying compost, and men in ploughing, terrace repair, and irrigation system maintenance. Farm management was dominated by men in over 60 per cent of households.

Access and ethnicity were two factors that influenced labour allocation. Households with road access (south facing aspect) displayed greater shared responsibility in the allocation of tasks between men and women. No significant differences were found between Brahmin

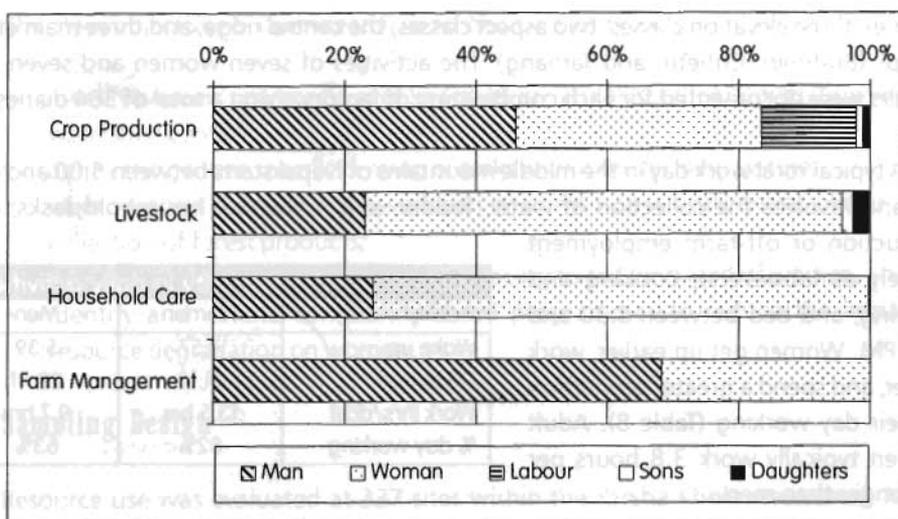


Figure 8: Labour Allocation by Major Categories

households and other ethnic groups, but males in Chhetri households appeared to take on more responsibility than Tamang men.

### Socioeconomic Indicators

A range of socioeconomic indicators were evaluated including education, land holdings, basic needs, agricultural products sold, and off-farm employment. The male and female decision makers within each household were interviewed (n=150).

Ninety-two per cent of the adult females surveyed were illiterate, compared to 30 per cent of the adult males. A typical adult male had completed three years of school; a typical adult female zero years. While government programmes strive to reduce the gender disparity in education, girls in the surveyed families completed four years less formal education on average than their brothers.

The median land holding was 0.8 ha per household, but holdings were unevenly distributed with 67 per cent of the households owning only 38 per cent of the privately owned land, and having holdings of <1 ha (Figure 9). Fifty-three percent of the surveyed households were not able to fulfil their basic needs from the land they farmed. Households near the road were generally more reliant on off-farm income, while households on north facing sites (poor access) were more self-reliant (Figure 10).

The main sources of cash income to farm families were the sale of agricultural products

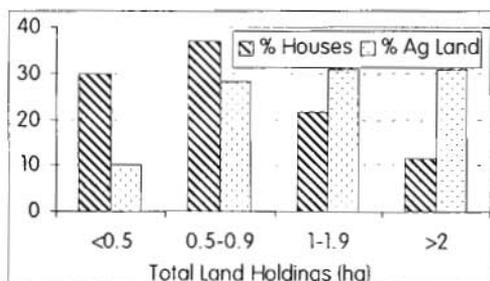


Figure 9: Disparity in Land Ownership

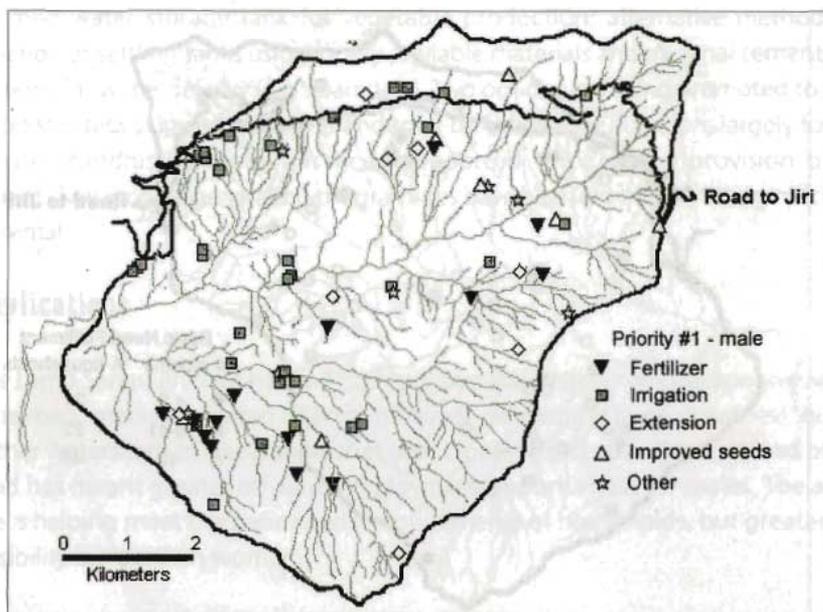


Figure 10: Fulfilment of Basic Needs from Farming (symbols represent locations of farm households)

and off-farm employment. Farmers sold a range of agricultural products, largely for local markets, but seed potatoes dominated both in amount sold and income earned. The average household earned CDN \$81 per year from the sale of agricultural goods. Sixty-two percent of male household heads worked off-farm, the majority as seasonal labourers. The households with males working full-time were concentrated near the road. The average off-farm income was CDN \$169 per year. Meeting household needs was seen overwhelmingly by female farmers as the biggest advantage of off-farm employment.

## Agricultural Constraints

Both male and female household heads identified lack of irrigation and non-availability of fertiliser as the main constraints faced by farming households. Men identified lack of extension (information and education) on high yielding varieties, fertiliser costs, and pesticide availability as additional concerns, and women crop damage by insects and a shortage of labour. While the top two issues, irrigation and fertilisers, were identified by both women and men farmers the spatial distribution varied (Figure 11). Availability of fertiliser was identified as a major constraint on north facing slopes where access was limited (no road access); lack of irrigation was the key issue on south facing slopes that had road access but were hotter and drier than the north facing sites.

## Interactions

The indicators of economic well-being, access, ethnicity, and labour allocation were inter-related. Poverty indicators (e.g., land ownership and total returns from agricultural

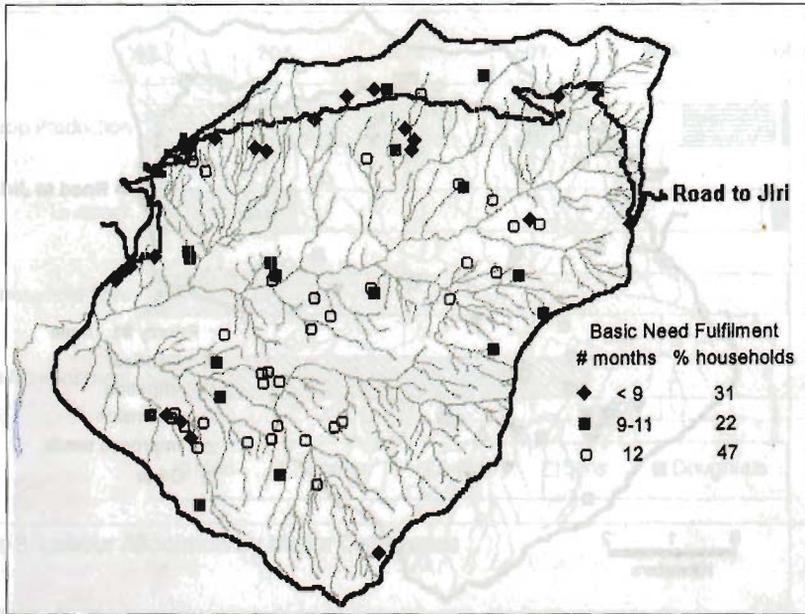


Figure 11: Factors Influencing Constraints in Agriculture

production) appeared to influence male education, that is the more affluent were better educated. Off-farm income increased with the education level of adult males but, interestingly, women in households with better educated males were less involved in decision making.

Land ownership was a key indicator of economic well-being. Households with greater land holdings produced more rice, maize, and millet, earned more from the sale of agricultural products, owned more livestock, and were better able to meet their families' basic need requirements.

The Lamo Sangu Jiri road has had a major impact on the Yarsha Khola watershed. Households with road access used more fertiliser and earned more from off-farm income. Households without road access were more reliant on subsistence agricultural production.

### Initiatives to Reduce Gender Inequality and Poverty

A number of community-based projects focusing on resource management concerns in the watershed were developed in conjunction with local women's user groups (WUG). Groups were approached regarding their existing programmes and future goals. Community programmes were initiated related to a) irrigation, b) fuel efficiency, and c) education, based on scientific knowledge of the resource situation and opportunities identified by the WUGs.

Four water-related programmes are being investigated: a demonstration site on water harvesting for irrigation on a south facing aspect where water shortages are prevalent; a

plastic-lined water storage tank for vegetable production; alternative methods for the construction of settling tanks using locally available materials and minimal cement; and low cost options for water delivery (e.g., bamboo). Two options are being promoted to help with fuelwood shortages: improved stoves and solar box cookers. Education, largely for Tamang (low caste, Buddhist) people, has been supported through the provision of science equipment. Two income generating programmes have been initiated: knitting machines and utensil rental.

## Implications

The Lamo Sangu Jiri road has had both positive and negative impacts on the watershed. With the road, market-oriented opportunities are developing (e.g., potatoes), but studies from other watersheds in Nepal show that cash cropping increases the workload of women. The road has meant greater off-farm employment opportunities for males. The additional income is helping meet the basic needs' requirements of households, but greater on-farm responsibility is placed on women.

Male education and affluence did not appear to influence the status of women in the watershed. Knowledge is power—and educating women is critical to their involvement in community programmes. Illiterate women are not able to make informed decisions about the agreements they are asked to sign (e.g., in community forestry).

Women typically worked 3.8 hours more per day than men, with household activities (including the collection of water) averaging five hours per day. Resource degradation will mean more time spent collecting animal fodder, fuelwood, and water, increasing the already arduous workload of these rural Nepali women.

To promote women and their concerns within the watershed, this project initiated community-based programmes on issues raised by women and incorporating the concerns of low caste groups. Programmes related to water availability, fuelwood shortages, animal fodder shortages, education, and income generation are being developed. Programmes to reduce the workload of women include: a) the introduction of fuelwood efficient stoves, which reduce the amount of fuelwood collection required; b) fodder grass and tree seed distribution for on-farm planting to reduce the time spent by women collecting fodder; and c) community water distribution, reducing the time women spend collecting water.

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