

CONCEPTUAL PERSPECTIVES ON WOMEN'S ROLE IN MOUNTAIN RESOURCE MANAGEMENT

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Summary

This paper is intended to promote productive discussion on conceptual issues concerning women's work in mountain resource management. Though it addresses the case of Nepal specifically, it raises issues that emerge from case studies in all parts of the region.

The paper argues that the environmental crisis that Nepal now faces is not simply one of supply and demand. The problem is not merely that forest and agricultural lands cannot sustain the growing number of people in the country. Rather, we contend that an **unequal distribution** of land and resources is an integral cause of resource depletion. Increasing numbers of smallholder farmers, for instance, are forced to survive on rapidly degrading tracts of communal land, while large landholders and business interests can freely benefit from large tracts of forest land.

If environmental management is considered to be a matter of resource distribution, as well as of supply and demand, then women become central to the equation. It is important to address the question of women in resource management because women are frequent users and manipulators of natural resources. Village women are disadvantaged from the perspective of distribution because of their position within the social, economic, political, and gender hierarchies that exist in Nepal. Yet without the commitment of women, no effort to protect the environment can succeed.

Not only must women be regarded as integral to an environmental management system, but their implication in the degradation of the environment may be seen in a new light. In their consumption of natural resources, village women respond to needs which exist because of insufficient supply and unequal resource distribution. Therefore, the very structure of a society which creates such inequalities must be implicated. Efforts to relieve pressures on the land should address the problem accordingly.

The first section of this paper identifies women as traditional managers of the environment. A model of the rural household in the ecosystem is presented to conceptualize many factors that compromise and influence the environment. Time allocation studies indicate that it is predominantly women who are engaged in extracting and using natural resources. Women in both the hills and *Terai* are involved in these activities; it is only the intensity of the labour that varies regionally. As frequent users of natural resources, women then have had to bear much of the burden of the current scarcity. Women's increased labour time in procuring resources has potential implications for their own lifestyle, as well as for the quality of life for the whole family. Furthermore, women are also shown to have potentially different priorities than men for the use of natural resources. Given these potential differences, it is imperative that "forest management" be inclusive of both male and female perspectives.

Secondly, the paper addresses ways in which women have responded to the depletion of resources. Women's exploitation of forest resources may, for instance, be combined with strategies to conserve remaining resources. Women have also been central in the development and implementation of successful communal management systems. The examples given indicate that effective resource management is contingent on women's cooperation and on appropriate distribution of resources.

Thirdly, the paper considers the impact of development policies and programmes on the ecosystem as elaborated in the model. Interventions are shown to have both positive and negative effects on the environment and the household; particularly within the household. Government policies for resource management are discussed from the perspective of resource distribution and the participation of women. From the eighteenth century to the present day, the Government has been motivated in part by commercial and political interests. These interests conflict with the rhetorical commitment to participatory management and promotion of women in forestry. As a result, the Ministry of Forestry has not been able to develop a cohesive strategy for forest management. Each of its policies and affiliated programmes has been ineffective in achieving resource conservation and is largely exclusive of local participation and women.

Development interventions have emerged from these policies to address the resource problem. Most are high-investment programmes that propose technical solutions to the resource crisis. Because they work within the government infrastructure, they suffer from inattention at the policy level to resource distribution. In addition, they marginalize women because of latent assumptions about women's household roles. These assumptions lead to difficulties in project implementation.

Projects that target women, however, are shown to have essentially ignored the resource crisis and other issues of national importance. They focus instead on extension of women's perceived household role, such as training in sewing and knitting and various cottage industries.

It is those projects which are small-scale but multi-sectoral that are identified as most effective at resource management, and most beneficial to women. Their area focus allows them to generate links among many development sectors and, therefore, many entry points to resource conservation. Under such conditions, women may emerge as local sources of knowledge concerning environmental management. This methodology ensures a degree of local understanding and participation that facilitates implementation and sustainability.

Finally, the paper recommends areas for future research based on information gaps identified by the authors. It also suggests criteria for involving a gender perspective in ICIMOD's five areas of research and an overall list of guidelines for evaluating the extent to which a development intervention does or does not include a gender perspective.

Introduction

The environmental crisis in Nepal has manifested itself in both local and regional contexts. Soil erosion, deforestation, and water scarcity have tremendously influenced the lives of individual villagers in all areas of the country. In addition, scientists have begun to identify long-term implications of such local changes for the ecology of the whole South Asian Region.

Scholars and planners differ in their assessment of the reasons for rapid environmental degradation. Overpopulation and the clearing of forest land for agricultural production have been cited by some as the fundamental sources of ecological collapse (Bajracharya 1983a; Pant

and Jain 1972). Others believe that high fuelwood demand underlies the overall shortage of natural resources. Another perspective suggests a history of unchecked exploitation of forest resources (Bajracharya 1983b). More scientific explanations elicit such variables as increased erodability of soil under crops (Chakrabarti 1971) and desertification.

These interpretations can fundamentally be simplified to a problem of demand for natural resources far exceeding supply. Efforts to address the crisis have accordingly focused on ways to decrease demand (for example, improved cookstoves, alternative fuel sources, and resettlement) and increase supply (plantations; high-yielding crop varieties). We suggest, however, that the environmental crisis in Nepal is not simply one of supply and demand. Rather, an integral cause of resource depletion also lies in the way resources are distributed.

Not only must women be regarded as integral to management systems, but their **implication** in the destruction of the environment must be seen in a new light. Foresters often identify a link between women as primary users of natural resources and the current scarcity. They then conclude that women are the cause for environmental degradation, so that local women's involvement in forestry often takes the form of "corrective" measures such as training and restrictions on women's exploitation of the land. But if one views poor rural women as responding to pressures, which exist because of unequal resource distribution, then the very structure of society and development interventions become implicated. Efforts to relieve pressures on land should therefore address the problem accordingly.

This is the theoretical framework which will guide our analysis of women's roles in mountain resource conservation. In the first section, a conceptual model locates the rural household in a dynamic system of relationships within the ecosystem, the migration sector, and related development interventions. In this context women are identified as traditional managers of the environment through the unique labor burdens they bear and the effects of resource depletion on women specifically. Following this is a discussion of women's independent responses to resource depletion, indicating how village women have responded and resisted the increasingly unequal distribution of resources.

Finally, the paper discusses a variety of development interventions, at the policy and programme level, concerning environment and women; the effectiveness of such interventions is evaluated according to the extent to which they address women in the distribution of resources and power in Nepal. Because these three areas of inquiry introduce so many unknowns concerning women's roles in resource management, the conclusion concerns itself primarily with information gaps that must be explored in further research. We also suggest criteria for including a gender perspective in ICIMOD's areas of research and an overall list of guidelines - or a checklist - for formulating policies and programmes that include the gender perspective upon which their successful implementation so much depends.

Research for the paper primarily involved a survey of secondary sources, that have addressed women in mountain resource management, and interviews with individuals involved in mountain development. In order to supplement the literature, brief field visits were made to Sharmatang and Haibung villages in Sindhupalchok District. Inquiries there led to visits to the central offices of the Shivapuri Watershed Management Project.

While many of the examples presented in the paper are drawn from the forestry sector, the intent is by no means to confine our ideas to forestry. We focus on forestry issues simply because we encountered a dearth of examples concerning other resources. The examples are intended to illustrate, rather than to limit, the concepts.

Women's Role in Mountain Resource Management

The village household is an integral part of the rural economy and ecosystem. Household members operate within constraints imposed by the environment and seek to maximize benefits derived from it. However, within the household, the distribution of benefits and constraints may be subject to gender hierarchies. Men and women may have distinctly different relationships with the ecosystem: different work burdens, different priorities, and different benefits. This section presents a conceptual model of the rural household economy as it interacts with distinct spheres of the ecosystem and is influenced by external interventions. Time allocation data is used to indicate the extent to which women interact with the environment and hence to illustrate their roles as resource managers.

Women, the Rural Household, and the Ecosystem

Rural farm households interact with four sectors of the ecosystem, henceforth referred to as "eco-sectors." The sectors are as follows: land, water, forest, and pasture and livestock (see Figure 1). Land (for agricultural production) is the most fundamental source of household subsistence production. When land productivity diminishes, households often extend their agricultural activity to marginal and forest land. Water is crucial for irrigating the fields as well as for consumption by humans and livestock. Forests provide fuelwood, fodder, and materials for construction, as well as a reserve of land that can be brought under agricultural production. Finally, pasture and livestock provide manure for agricultural productivity, animal power for cultivation and transport, and often food for the family. Forest products, land, and livestock are also important potential sources of household income.

The household interacts with each of these eco-sectors to maximize farm production for subsistence and income. In the face of environmental crisis, families respond within the eco-sectors to tap reserve potentials. When productivity declines and reserve potential is insufficient, a household member may migrate in search of income to supplement agricultural subsistence. In this way migration acts as a release valve, reducing pressures on the environment and alleviating stress in the struggle to meet subsistence needs. Of course, the relationship between a household, the eco-sectors and migration is not static or closed. There may be any number of external forces that influence this system. Interventions may include development strategies, market forces, political forces, and many other factors that inevitably alter the rural economy and ecosystem as elaborated here. This paper focuses on analyzing the impacts, of development interventions, at the household level and in the various eco-sectors. The model itself reflects this focus in the paper, but is not intended to be a comprehensive representation of the ecosystem and related intervening forces. Though not comprehensive, it provides a framework for understanding women's relationship with the environment, as it both complements and conflicts with that of men. Time allocation studies, as well as household production and income data, have indicated the degree of participation by men and women in the four eco-sectors (Acharya and Bennett 1980 and CWD 1988). The data also reveals differences in the work burden of women in the hills and those in the *Terai* and highlights changes in the participation rates of men and women in the eco-sectors when families migrate to the *Terai*.

Time allocation data on daily labor activities and household production data clearly indicate that women actively participate in the eco-sectors at rates often greater than their male counterparts (Tables 1 and 2). Women have been shown to share agricultural responsibilities almost equally with men and to exclusively perform "expanded economic" activities such as food processing, water fetching, and fodder collection; in addition to their almost exclusive responsibility of domestic and child care activities (Acharya and Bennett 1980).

FIGURE 1:
CONCEPTUAL MODEL OF THE RURAL HOUSEHOLD IN THE ECOSYSTEM

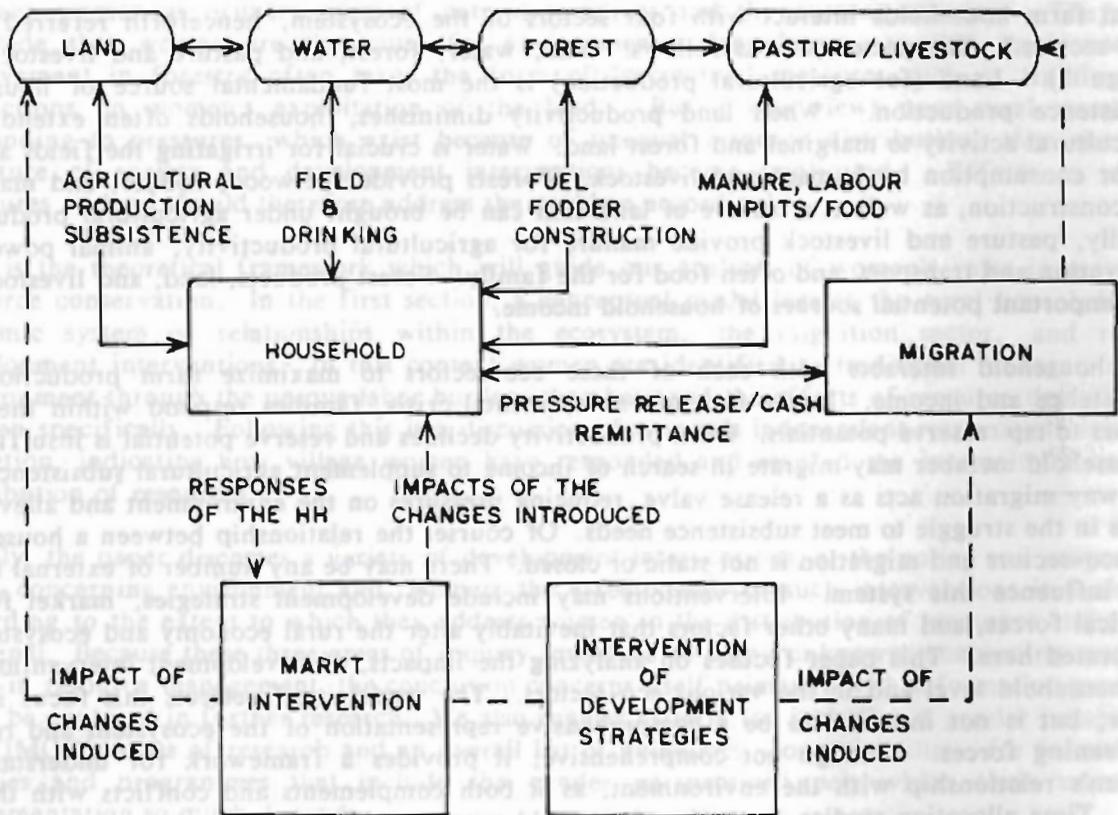


Table 1: Male and Female Participation in Different Sectors in Three Communities

Unit: Minutes/Day

Sectors	Terai Community: Ratnapur				Terai Resettlement Community: Jamuni				Hill Community: Mirdi			
	Male	Female	Both	% a	Male	Female	Both	% a	Male	Female	Both	% a
1. Pasture & Livestock	154	26	180	15	68	74	143	52	138	159	297	54
a) Herding of Animals	40	6	46	13	38	23	60	38	44	16	60	26
b) Care of Animals	29	9	38	24	13	10	23	43	26	19	45	43
c) Fooder Collection	84	11	95	12	11	39	51	77	53	119	172	69
d) Other (Animal Husbandry)	1	* b	2	18	6	3	9	30	16	5	21	24
2. Land/Agriculture	148	74	222	34	153	142	295	48	99	123	222	55
3. Forestry	7	6	14	46	5	9	14	63	5	11	15	70
a) Hunting & Gathering	4	3	7	37	2	1	4	35	1	1	2	28
b) Fuel Collection	3	4	7	56	3	7	10	72	3	10	14	75
4. Water	6	2	8	23	1	1	2	50	34	53	87	66
a) Water Collection	1	1	2	67	* b	1	1	65	18	51	69	74
b) Irrigation (Paddy/Wheat/Other)	5	* b	6	5	1	* b	1	27	16	1	11	9
Total	315	109	424	26	228	226	454	50	276	345	621	56

Notes:

- a. Percentage indicates the proportion of female participation in the specific activity.
- b. * indicates time less than 0.5 minutes

Source: CWD 1988.

Table 2: Intensity of Male/Female Participation in the Ecosystem in the Hill and Terai Areas (hrs/day)

	Male			Female		
	Hill	Terai	Diff.	Hill	Terai	Diff
Animal husbandry	1.4	1.5	+0.1	0.9	0.6	-0.3
Agriculture	2.4	3.4	+1.0	2.5	1.4	-1.1
Hunting and gathering	0.1	0.3	+0.2	0.0	0.1	+0.1
Fuel collection	0.3	0.2	-0.1	0.4	0.4	+0.0
Fetching water	0.1	0.0	-0.1	0.5	0.4	-0.1
Total	4.3	5.4		4.3	3.0	

Notes: 1. Sign of Walsh Value Hill/Terai for Male and Female are +ve.

2. The +ve Sign Indicates Significant Differences at 0.047 level of Significance.

Source: Status of Women in Nepal. Kathmandu: CEDA, Tribhuvan University, 1981.

In the study by the Centre for Women and Development (1988), data was collected in a *Terai* community, a hill community, and a *Terai* resettlement community whose residents had migrated from the hills. In both the hills and resettlement communities women participate at a far greater rate in the eco-sectors than men (Table 1). Their work burden in agricultural production, forest resource, water collection, and grazing is accordingly greater than that of men. Women and men contribute 56 per cent and 44 per cent respectively to agricultural production; women in the hill community contribute 54 per cent of the pasture and livestock related work (Acharya and Bennett 1980). Furthermore, Table 3 indicates that women are responsible for environmental management activities from a young age, while boys participate far less in agriculture, forest, and water sectors.

It is also interesting and important to compare participation rates in the four eco-sectors, for women in the hills, to that of women residing in the *Terai* (plains). Table 1 indicates that women in the hill community work longer hours in these eco-sectors than women in the *Terai* or resettlement communities. In pasture and livestock work, hill women contribute more than double the time of migrant women in the plains and more than six times the labor time of women indigenous to the *Terai*. Similarly, hill women are found to participate to a much greater extent in fuel collection and water fetching, than women living in the *Terai*.

Table 3: Male and Female Participation in Different Sectors by Gender and Age in Hill Communities
Unit: Minutes/Day

Sectors	Age (15 +)			Age (10-14)			Age (5-9)					
	Male	Female	Both	%a	Male	Female	Both	%a	Male	Female	Both	%a
1. Pasture & Livestock	138	160	297	54	166	141	307	46	59	51	110	47
a) Herding of Animals	44	16	60	27	75	23	99	24	44	13	57	22
b) Care of Animals	26	19	45	43	3	2	5	45	0	1	1	100
c) Fodder Collection	53	119	172	69	63	108	171	63	13	35	48	73
d) Other (Animal Husbandry)	16	5	21	24	25	7	33	22	2	3	5	62
2. Land/Agriculture	115	125	239	52	20	25	46	56	9	13	22	60
3. Forestry	5	11	15	70	3	7	11	67	6	4	10	43
a) Hunting & Gathering	1	1	2	28	0	0	0	0	0	0	0	0
b) Fuel Collection	3	10	13	75	3	7	11	67	6	4	10	43
4. Water	34	53	87	61	21	15	37	41	3	7	10	69
a) Water Collection	18	51	69	74	14	13	27	47	2	7	9	81
b) Irrigation (Paddy/Wheat/Other)	16	2	17	9	7	2	10	23	2	0	2	0
Total	291	347	638	54	212	189	400	47	77	76	152	50

Note:

a. Percentage indicates the proportion of female participation in the specific activity.

Source: CWD 1988.

Women of the hills thus face more severe resource scarcities and have accordingly extended their work hours in order to meet resource needs of the household. This becomes even more clear if we compare the work burden of women in the hill village to that of women resettled from the hills (Table 1). Migrant and hill women are of similar socioeconomic status because of their common background in the village of origin. The migrant women's work burden is 35 per cent less than that of women in the hills. The time input of migrant women in the sectors of forestry, livestock, and water is considerably lower than that of women in the hills. In water collection, women in the *Terai* spend only a fraction of the time they spend in the hills, where it averaged almost an hour daily. The agricultural labour input of women in the resettlement community, on the other hand, is significantly greater than that of the women in the hills, mainly because migrant women have more land to cultivate (this is land allotted to them under the resettlement programmes) and because of their adoption of cotton cultivation which is highly labour-intensive. The above evidence suggests that access to natural resources in the hills and mountains is hampered by relatively rapid depletion of natural resources. Women in the *Terai* confront the same problems of forest depletion and water scarcity, but their participation is less intense.

Women's participation rates also vary with the economic status of the household. Table 4, for instance, shows that women of poorer households in the hill community perform labour in the forest sector to the virtual exclusion of men (98% participation rate) and contribute 60 per cent of the labour in the eco-sectors combined. Their participation in livestock and agriculture is less (56% and 66% respectively) than that of women from a higher economic strata (64% and 67% respectively). This trend can be explained by the fact that richer households are endowed with more livestock and land. Women from poor households, on the other hand, must invest more time in the forest and water sectors, since they must rely on increasingly scarce and distant sources. It has been estimated that it requires three times the amount of effort to collect the same amount of wood from largely deforested land, on which poor farmers depend, as from private land (Fox n.d.). Poor households may also depend on forests for sale of wood to supplement their household income.

Thus, the comparative data show that women's labour input in the different sectors is greater than that of men. Deterioration in the productivity of the sectors and their reserve potential affect women most severely in the form of increased work burdens. It is also clear that the poorest women are the hardest hit. As the main users of resources within the eco-sectors, women must be regarded as environmental managers. By virtue of their work burden, women are compelled to make daily decisions regarding the management of land, water, forest, and livestock. This implies that women's activities and corresponding knowledge of the ecosystem must be instrumental in meeting national and project goals for environmental protection. Decisions, division of labour, and hierarchies within the household are directly relevant for national level policies and strategies as interventions.

We have shown that households cope with natural resource depletion, first by utilizing female labour. The increased time needed for fuelwood, fodder, water collection, agricultural labour, and grazing of livestock is provided by women. Women's increasing investment in the eco-sectors has implications for family welfare, as well as for environmental management. Increased labour burdens have obvious effects on the physical and psychological health of the women themselves. Women have less time to devote to household chores and child care which certainly influences child nutrition and health. Older siblings, particularly girls, are often entrusted with the care of younger siblings when their mothers are out at work, and hence are denied educational opportunities.

Table 4: Male and Female Participation in Different Sectors by Gender and Economic Strata in Hill Communities

Unit: Minutes/Day

Sectors	High Economic Strata			Middle Economic Strata			Low Economic Strata		
	Male	Female	Both % ^a	Male	Female	Both % ^a	Male	Female	Both % ^a
1. Pasture & Livestock	89	158	248	145	139	284	124	157	281
a) Herding of Animals	31	13	44	50	16	66	56	27	83
b) Care of Animals	14	23	37	22	12	35	21	23	44
c) Fodder Collection	32	118	151	55	105	160	44	104	148
d) Other (Animal Husbandry)	12	5	17	18	5	23	3	4	7
2. Land/Agriculture	67	137	204	88	92	180	38	75	114
3. Forestry	7	4	11	4	10	15	*b	15	15
a) Hunting & Gathering	0	0	0	1	*b	2	0	2	2
b) Fuel Collection	7	4	11	3	10	13	*b	13	13
4. Water	22	43	65	32	43	74	28	42	70
a) Water Collection	10	43	53	17	41	58	21	42	63
b) Irrigation (Paddy/Wheat/Other)	12	0	12	14	2	16	7	0	7
Total	186	342	528	269	284	553	190	290	480

Notes:

a. Percentage indicates the proportion of female participation in the specific activity.

b. * indicates time less than 0.5 minutes

Source: CWD 1988.

Migration as a Household Strategy

When any extension of household member's labour time cannot absorb the losses incurred from environmental degradation, even utilization of female labour is not sufficient to cope with resource scarcity and the resulting decline in productivity. In the absence of local alternatives, the survival strategy adopted is migration which acts as a pressure valve by providing additional income from outside the household. Table 5 supports this premise through migration rates for three communities. The hill village has the highest migration rate (20% of the total sample population), followed by the resettlement area (7%) and *Terai* villages (2%). It is usually the men who migrate first in search of better opportunities.

There are many other examples of people in the hills and mountains migrating as a strategy for survival, in response to depleting resources. One such example is given by Molnar (1981) in her study of the Kham Magars of Northwest Nepal. The bulk of the population leaves for extended periods of time, because the peasant economy cannot be sustained by existing natural resources. Furer-Haimendorf (1975) shows a similar situation among the Tibetan and Thakali communities who have depended on trading as a survival strategy. Schuler (1980), in her study of the women of Baragaon in the western high mountains (Mustang), records that 73 per cent of all men and 35 per cent of all women migrate because of the low productivity of land and depletion of natural resources.

Families may adapt in various other ways to meet household requirements. Other strategies include, but are not limited to, the clearing of marginal land for cultivation and substitution of dung and other animal waste for fuel. The latter practice has serious implications for soil fertility because, in most rural households, dung is used as fertilizer.

Table 5: Male and Female Out-migration in Three Villages

Village	Total Sample Pop.			Out-migration			Per Cent of Migrants
	Male	Female	Total	Male	Female	Total	
Ratnapur	354	298	652	9	2	11	1.7
Jamuni	235	235	470	24	9	33	7.0
Mirdi	100	91	191	31	7	38	19.9

Source: CWD 1988.

Intra-Household Dynamics

While the household interacts with the different sectors as a cohesive unit, individual members also have distinct relationships with these extra-household forces. Women and men within the farm family face distinct burdens, have distinct priorities, and offer distinct perspectives with respect to the environment. Similarly, strategies utilized by a family to cope with natural resource scarcities bear different consequences for men and women. We have already suggested that resource scarcity is borne first by women in the form of increased labour burden, whereas men contribute by finding employment outside the household. Women continue to support a primarily subsistence economy, while men tend to be the first to enter into an expanded cash economy. In situations where men have migrated, women not only single-handedly bear the increased work burden that results from resource crisis, but also assume responsibility for the entire household production system. Thus, the direct impact of resource depletion is squarely borne by women. Women may also have different priorities to men in the use of natural resources. These differences may manifest themselves in choices of tree seedlings. Women may prefer to cultivate trees that produce fuelwood or fodder, while men may choose timber bearing trees (Molnar 1987).

We identify these trends not to indicate that men and women necessarily have conflicting interests, or that one approach is better than the other. The point is rather that men and women may offer different perspectives to the issue of resource management. The rural household that is presented in the conceptual model is not a static unit, but is rather comprised of individuals who have both mutual and independent relationships with the environment. The expertise, experience, and priorities of **both** men and women must be considered, in order to understand the full reality of environmental degradation in the mountains.

Women's Responses to Resource Depletion

As traditional managers and users of natural resources, women are likely to be concerned about the implications of declining resources for themselves, their families, and their communities. Literature is replete with examples of women organizing to resist or counteract environmental degradation. Their responses, though not necessarily organized formally, provide important lessons for intervention intended to check destruction of the environment. This section briefly illustrates a few ways in which women have responded to resource scarcity independently of development infrastructure.

Research on the use of oak trees in Daman (Pradhan 1978) indicates that women in the region do have an understanding of resource scarcity. This consciousness is demonstrated by the fact that, when collecting wood for fodder, women lop branches in such a way as to allow for next year's growth. Though not a formally organized management strategy, this indicates that contrary to common perception, women's use of forest products may be integrated into a distinct concept of forest management. Similarly, women have independently planted seedlings or transplanted shrubs on to private land in response to increasing marginalization of community land (Kharel, personal communication).

Examples abound of women occupying central roles in community efforts to protect forest land. Pandey (1990) elaborates the case of the Hattisunde forest where four neighboring villages organized a protection scheme and were subsequently presented with the *Jara Juri* award, annually awarded to farmers who have shown innovation in farming systems at the village level. This successful management scheme was inspired by an individual woman's efforts to protect *sal* trees on her own land and on the adjoining land. Though women do not formally participate in

forest management meetings, their input is aired informally by those who happen to be present. According to Pandey, all the women in the community "fully support forest protection" and "understand the long-term benefits." They are expected to, and do, participate fully in the protection scheme by keeping livestock clear of the area, collecting fuelwood and fodder elsewhere, and reporting violators to the forest committee.

A similar arrangement exists in Haibung Village of Haibung *Panchayat* in Sindhupalchok District. Here, villagers from Ward No. 4 have organized cooperatively to protect land which they have identified as communal, in response to pressures encountered with the closing of neighbouring Shivapuri Forest. They have planted 2,500 trees and developed codes for protection and use of the forest. Again, although men formally represent local meetings and are members of the management core, women replace male members who cannot attend and cooperate fully with agreements to prohibit local use of forest products. When asked about forest boundaries, protection policies, and reforestation efforts, women in the community were as knowledgeable as men.

Personal interviews by the authors, and relevant literature, consistently offer other examples of women in communities independently leading and motivating resource management. An FAO report refers to women in a stressed hill area having joined together to limit fuel and fodder collection. These women had formed a group rotation for collecting in distant areas (FAO 1983). Engineers installing a tap in a UMN (United Mission to Nepal) targetted village, reported that women were far more knowledgeable and helpful than men in the technical aspects of local water supply (Neupane and White, personal communication).

The above examples illustrate several lessons to be learned from academic and development community efforts in understanding local resource management systems. First, any sustained community effort at resource protection is contingent on women's participation and cooperation. While women may or may not assume public leadership in organized efforts, as frequent users of forest products, they must understand its principles and laws. Otherwise, women's daily collection and grazing activities, for instance, will undermine the goals of a forest management system. Second, leadership must be local and spontaneous, and endorsed out of a commonly perceived need. Third, the management system must result in distribution of resources that is acceptable to the whole community. The success of both the Hattisunde and Haibung examples is due to equal access to mutually desired resources, within the entire communities. In the Hattisunde case, when equitable distribution of resources was threatened by the village headman's personal use of the *Jara Juri* Prize money, a formal committee was established to restore a balance in distribution. Finally, successful management does not necessarily require outside technical advice or the participation of literate and schooled individuals.

The *Jara Juri* Award is one system of recognizing local management systems which might otherwise dissolve or be disrupted by central management interventions. Other means, however, must be devised for sustaining spontaneous responses, particularly of women, lest they become obsolete with the imposition of development interventions. Such responses must **inform**, rather than be replaced by formal development management systems.

Development Interventions

This section discusses the indirect impact of development policies and programs on the environment and particularly within the household. Just as men and women have been shown to have mutual and independent relationships with different sectors, the distribution of benefits and constraints imposed by development interventions may also follow and intensify gender

hierarchies. Policies and programmes are determined effective to the extent that they address rural poverty and gender hierarchies in their solutions to the management of forest resources.

Government Policies

The particular style of intervention programs that predominates in Nepal currently indicates a distinct history of government policy on forest management. The present management system has evolved from an inherited pattern of inconsistency that ultimately accelerates resource degradation and rural poverty.

Forest Land as Revenue: A Precedent of Exploitation. Prior to the formation of a National Forest Policy, government planners overtly regarded forest land as a readily available source of revenue. As identified by Bajracharya (1983b), the practice of forest exploitation for revenue generation originated in the mid-nineteenth century with the Rana take-over. Under a land-reclamation policy, large tracts of forests were cleared in the *Terai*. The market for the growing network of railway lines in Northern India also contributed to government exploitation of forest resources. According to Bajracharya, 40 per cent of the national income in the 19th century resulted from forest revenues. Prior to this perceived shortage of forest resources, a precedent in unequal distribution was already being set wherein profits were unquestionably accrued to the ruling family. The exploitive interests of the Government would thus continue to influence government policy, even after an impending resource crisis had been identified.

Nationalization: Institutional Control. After the overthrow of the Rana regime, the first cohesive national forest policy emerged as the 1957 **Forests Nationalization Act** which stated that all forested land would officially come under state ownership and control. Despite Government claims "to manage, conserve, and protect forest resources of the country for the general welfare of its citizens" (MOF 1988), planners no doubt anticipated potential economic gains from commercially exploitable timber resources in the *Terai* (UNDP/World Bank 1983).

Seeking to prevent the government from assuming ownership of forests that they had once used freely, villagers cleared substantial amounts of these areas for agricultural use. In the absence of a forest survey or demarcation of forest boundaries, they could simply claim the land as private property. According to the first forest survey, conducted in 1964, Nepal contained 6.4 million hectares of forest land. The next survey indicated a reduction in forest area to 4.3 million ha by 1978/1979. Thus, the decline in forest area between 1964 and 1979 was 2.1 million ha which is nearly 33 per cent of the original forest area. Accordingly, the area under agricultural cultivation increased from 1.7 to 3.1 million ha and most of this originated from forest land (UNDP/World Bank 1983).

The villagers' response in clearing what collectively amounted to massive tracts of land was in fact an act of strong local resistance to government policy. By clearing land for agricultural cultivation, they fostered a zero sum situation. If villagers were to be denied forest ownership, they would not easily release it to the Government. Even though these individual acts of defiance did not evolve into an organized movement, collectively they amounted to significant public protest in Government policy. That this resistance did not manifest itself actively as in the case of the Indian Chipko movement is an interesting topic for further inquiry.

The Nationalization Act thus resulted in drastically **increased** degradation of forest land, precisely because it was insensitive to prevailing socioeconomic conditions. Communal management systems, which were reported to have been sufficient to ensure sustainability of forest resources (UNDP/World Bank 1983), were rendered utterly obsolete. The remaining forest land was considered by villagers to be strictly the responsibility of the Government.

Shortly following the nationalization of forest land, the Ministry of Forestry was established with a corresponding Institute in Hetauda to produce mid-level forestry technicians. The Ministry, like the Nationalization Act which preceded it, has been hampered by conflicting motives. On the one hand, its role has been to manage dwindling forest resources. On the other hand, it maintains policies and practices that propagate the exploitative interests of the Government. The Timber Corporation, Fuelwood Corporation, and Forest Products Development Board, for instance, exist within the Ministry to facilitate systematic harvesting of forest resources; they have a virtual monopoly on urban timber and fuelwood demand. But these agencies do not have significant planting programmes and cutting is not coordinated with reforestation efforts of the Ministry's Forestry Department (UNDP/World Bank 1983).

Similarly, the Ministry has sanctioned continued deforestation in the *Terai* to gain political and economic support from strategic individuals and, particularly in 1980, to rally support for the political referendum (The Commoner 1980, The Rising Nepal 1988). Such lack of coordination within the Ministry is certainly a symptom of an underlying apathy regarding environmental issues, and this continues into the present day.

Resettlement. Following the eradication of malaria in the 1950's the Government undertook a massive programme of clearing the *Terai* forest and resettling a large portion of the hill population. The professed intent at the policy level was to relieve environmental pressures resulting from an increasing population in the hills, as well as to alleviate conditions of the poorest and landless. From the 1950's to the early 1980's, a total of 103,968 ha of forests in the *Terai* and dun valleys were cleared for resettlement (MOF 1988). The fact that this land was cleared by the Timber Corporation indicates that there were direct profits to be gained by the Government (UNDP/World Bank 1983).

The resettlement scheme provided that *Pradhan Panchas* in hill *panchayats* would identify families most afflicted by environmental disaster and most needy of government assistance. Those families would in turn be selected to take advantage of the resettlement program. As documented by a study on women's work and household strategies (CWD 1988), what in fact happened in many *panchayats* was that the *Pradhan Pancha* recommended personal friends and family who then maintained land and houses, both in the village of origin and in the resettled areas of the *Terai*. The study found that male household heads often kept wives and families in both locations, travelling freely between them and reaping profits from agricultural production in both. Clearly, in areas where such a pattern developed, the original areas experienced no relief from environmental pressure, and the gap in wealth and standard of living between the rich and the poor only widened. Again, a government policy theoretically committed to relieving environmental crisis failed because of practical neglect in redistributing resources amongst a varied economic strata and because of conflicting interests at the policy level.

National Forestry Plan: People's Forestry? HMG instituted the current National Forestry Plan in 1976, and this professed to combine forest management with meeting the basic needs of the rural population and increasing people's participation in forest management. The Plan commented - "protection, maintenance and development of forests is neither possible nor even practical through Government alone" (MOF 1988). Accordingly, forest land, except that classified as national park, was divided into four classifications, allowing for ownership and control by communities, individuals, and religious institutions (*Panchayat*, Protected, Leased, and Religious forests respectively). A Community Forestry and Afforestation Division was established within the Ministry of Forests to implement this strategy.

The process of transferring government forest land to *Panchayat Forest* (PF) or Protected *Panchayat Forest* (PPF) is extremely complicated. It involves coordination among the villages, the *Pradhan Pancha*, the Forestry Department Rangers (who cover five Panchayats each), and the District Forest Officer (DFO). Since both Rangers, and particularly DFOs, tend to concentrate their work near the District Headquarters, villagers in the outlying areas of the District are usually unaware of this procedure. In Haibung, for instance, the entire village had cooperated to create a cohesive and effective forest management policy on land they referred to as "community land". When questioned about legal ownership of the land, they were ignorant of PF and PPF policy and claimed that such legalities were the responsibilities of the *Pradhan Pancha*. They were shocked to learn that the trees they had planted could ultimately be harvested and used by HMG. Furthermore, the Forestry Advisor for Action Aid, an NGO working in the area, commented that the Rangers are transferred frequently (Denholm, personal communication). Even if individual Rangers demonstrate genuine commitment to help villagers, they never occupy a single post long enough to establish rapport with the people.

Similarly, in the case of the Hattisunde forest, described by Pandey (1987), the community has actually **refused** intervention by the government system. The Forest Department had approached the Committee (upon its receiving the *Jara Juri* Award) to assist in the forest protection scheme by proposing to erect a fence and assign a forest guard. The Committee voted on the proposal for fear that they would be sacrificing their rights to decisions concerning the resources of the forest. The cases of Haibung and Hattisunde thus demonstrate that even though the Community Forestry System decentralizes control, the *Pradhan Pancha* and DFO remain as integral components of a bureaucratic structure that continues to breed distrust and suspicion and to disempower local people. Neither Hattisunde nor Haibung forests are legally community land. The current procedure for legalizing community forest, rather than facilitating the legalization of communal ownership, seems only to alienate local efforts.

In reality PF and PPF land is simply identified by a Forest Department Ranger, rather than by the local community. He travels to an area, identifies forest land, and legalizes it as PF or PPF through the bureaucratic procedure. The Community Forestry Programme then orchestrates the formation of Forest Committees intended to manage the land demarcated by the Ranger; this is dependent upon the commitment of the Ranger, the DFC, and the Committees' decision-making (Prasai 1987). In cases where Committees are experimentally comprised entirely of women, they are reported to have no control over men's use of forest resources.

Finally, the Community Forestry programme lacks the flexibility to incorporate local female leadership. A female resident of Ilam *Panchayat*, for instance, having become interested in forestry after attending a public meeting, independently explained the advantages of private tree planting to village members and encouraged households to take seedlings from the community forestry nursery. Such inspiring local leadership, however, was not utilized by the Community Forestry Programme because there were no funds to pay the woman as nursery manager or forest watcher. In another instance, members of a women's organization in Dandeldhura District actually approached the District Office for support in carrying out extension work with women. The Community Forestry Project was unable to hire the women because of inflexibility of budget categories for local workers (Molnar 1987).

Clear differences exist between Committees set up to manage PF and PPF land and those evolving spontaneously out of a perceived need among villagers themselves to protect community land. The former are established through an external infrastructure and members are often appointed by political leaders of the DFO. Often a Forest Committee does not even understand its own function (Prasai 1987). It is supposed to manage land identified by an outside force, while village residents themselves may have no consciousness about forest management or

resource depletion, or any commitment to sharing resources equally. Furthermore, the politically bureaucratic infrastructure, in which the Community Forestry Programme is embedded, serves to demotivate, rather than inspire, community action from men and women.

Locally created committees, on the other hand, evolve from internal dialogue in response to a problem identified by the community; the user group itself selects committee members; they are effective because all individuals in the community, men and women, understand the problem and have genuine interest in its resolution. Thus there is no need for physical demarcation or forest watchers to protect the forest.

National Forest Land: Continued Ambivalence. Meanwhile forest activities that continue to occur within the Ministry of Forestry are overtly antithetical to the principles of "Community Forestry." We have already noted the continuing exploitation of the Timber and Fuelwood Corporations concentrated in the *Terai*. In the hills and mountains, large tracts of forest land are also coming under government control. Under the current forestry policy, land identified as national park, wildlife, or watershed management fall permanently under national government jurisdiction. These tracts have been identified as severely threatened by local overuse and can never be absorbed as community land under the Community Forestry Programme. One example is the forestry land bordering Sharmatang village in northern Sindhupalchok District. According to village residents, the forest has recently been declared government land, use of its resources has been restricted, and the army is to physically occupy the area to protect it from village use. Household heads will be required to buy permits for collecting dead forest material up to 40 *bhari* year¹. Although the policy has not yet been enforced, villagers already anticipate a crisis as they estimate this figure to be about one third of their annual needs. Ironically, the army is currently clearing an area on top of the ridge for the construction of an army barracks with forest timber. The newly installed army captain, who demonstrated no understanding of local Sherpa culture or subsistence agriculture, claimed that he had arrived to save the forest from destruction by the local population.

Another example is the Shivapuri Watershed Management Project (SWMP) which administers the entire Shivapuri range, north of the Kathmandu Valley. The project, implemented by HMG with technical assistance from FAO, has demarcated the entire Shivapuri watershed as a wildlife and forest preserve, in order to protect the water source of the Kathmandu Valley. The project has accordingly built a 111 km wall around the forest, as well as an access road, and is currently constructing a barrack all across the ridge top. Villagers are prohibited from using forest resources because of a history of indiscriminate use of fuelwood and fodder, and the Royal Army has been charged with enforcing this policy. Violators are taken to the nearest barracks, where their tools are confiscated and they are briefed on "forest management". With the exception of the largest settlements, all households within the forest boundary have been or will be evicted. Residents are compensated for the value of their land and house (at rates set by the Shivapuri office) and are offered no further assistance in resettlement. This policy of outrightly prohibiting local access to forest resources violates proposals by both the funding agency and the local residents, to integrate project objectives with the local rural economy.

Meanwhile, villagers in surrounding areas are extremely conscious of an impending crisis. Residents of Haibung accordingly developed a community forest scheme to protect marginal forest land outside the wall. Many farmers have planted fuelwood and fodder trees on private land. Women in Simchaur Village are currently organizing to initiate a nursery to facilitate private planting. Distrust and a sense of betrayal by the Government is universal and people

1. One *bhari* = approx 30 kgs.

predict only increasing hardship in the coming years. When questioned about the specific policy of forest use, residents were inconsistent in their responses. Some said they would not be permitted even to walk through the forest en route to Kathmandu. Others claimed they would be issued permits for collecting designated amounts of forest products. Still others believed army occupation to be a five year experiment. Clearly, the Shivapuri office has made little effort to inform villagers of its decisions about the management of the land upon which local people have depended for their livelihood.

Nor has the project provided alternatives for fuel or fodder to help relieve the crisis. There has been no movement towards subsidizing kerosene or installing fuelwood depots in areas affected by the project. Nurseries and afforestation within the wall are strictly for project use. The Community Forestry Project, with Norwegian Trust Fund support, has initiated an afforestation project outside the Shivapuri Forest, in order to accommodate resource shortages. This programme, however, has not been sufficient to absorb the vacuum in forest resources created by the closing of forest land.

Despite an overall forestry policy that claims to be committed to local participation and basic needs, such outright violations of local needs continue to occur. No government policy to protect forest land will succeed - or should be condoned by the international community - if it so deprives local populations of their subsistence needs. The Shivapuri Watershed Management Project, the Nationalization Act, and even the Community Forestry Project, with its rhetorical commitment to local participation, comprise a history in Nepal of government mismanagement of natural resources. Their policies have only intensified the state of crisis between rural households and the eco-sectors. Their weakness lies in failure to confront the issue of resource distribution and to incorporate local management strategies. The source of this weakness lies in contradictions inherent in government planning and in the management of Nepal's forest. While, on the one hand, the exploitation of forest resources for commercial and political ends continues, on the other hand, government planning falls short of any responsibility to partake in a worldwide resource conservation movement.

Intervention Programmes

From the perspective of resource conservation, the fundamental weakness in the history of government forestry policy has been the lack of focus on resource distribution. Much of the problem still lies in increased use by poor farmers of rapidly degrading common land. This section examines the impact of development interventions - those in the forest sector and those targeting women in particular - on the environment in Nepal. Since we have established that women must be instrumental in planning and implementing conservation programmes, projects will also be evaluated on the basis of their involvement of women.

High-Investment Programmes. Many international donors have taken a keen interest in the resource issue. They have offered financial and technical assistance to government programmes at the national and regional levels. Because such capital intensive high-investment programmes have been integrated within government infrastructural development, they often suffer from the same inconsistencies in addressing the issues of resource depletion and distribution.

The Nepal-Australia Forestry Project (NAFP), for instance, has assumed the management of the Community Forestry Project within Sindhupalchok and Kavre Palanchok Districts. It has provided the infrastructural support for office buildings, vehicles, and staff housing; offered technical equipment and expertise for the development of nurseries, plantations, and protected forests; and arranged training for HMG Community forest staff in forestry, as well as scholarships for girls in local high schools.

Despite the degree of technical support that NAFP has been able to offer, it has experienced problems in effective implementation. The Project Document (1985) professes to encourage local participation by holding meetings with *Pradhan Panchas* and subsequently with usergroups. It proposes to develop socioeconomic databases to monitor the distribution of resources generated by the Project. In reality, however, project success is highlighted on the basis of millions of rupees spent and the number of trees planted, while evaluation of project activities takes no note of the distribution of its benefits. The NAFP Phase 3 is to reforest 6500 ha of forest land, distribute 500,000 seedlings, and start 32 more nurseries (NAFP 1985). But it does not address any strategy for distribution or for incorporating/knowledge from local management systems. Afforestation, then, becomes simply a matter of adding trees to the land. The experience of local management systems and government management strategies, however, has indicted that **effective** afforestation must involve a social element of equitable distribution. NAFP is also guilty of the same tokenism with regard to women as HMG. The project has appointed a woman coordinator, without a corresponding commitment to raise the consciousness of field staff on gender issues (Kharel, personal communication). An improved cooking stove programme is thus far the only component of the project in which women are formally involved (*ibid*).

Similarly, the Resource Conservation and Utilization Project (RCUP), which was a massive, capital-intensive programme to involve local people in retarding the degradation of Nepal's renewable natural resources, was funded and implemented by USAID through the Department of Soil Conservation and Watershed Management. Expatriate consultants, contracted by AID to evaluate the project, have consistently identified weaknesses resulting from maldistribution of benefits and inattention to local contexts. Cooper and Davidson (1983) found that project goals for local participation in general were not met because of lack of commitment among villagers to resource conservation. Women, in particular, were found to be unaware of any connection between their increased work burden and dwindling resources. Despite high seed distribution targets, women in the project area were not planting trees on their land because they did not know how to obtain seeds. Clearly extension agents were not committed to doing fieldwork with village women. This oversight meant not only that there were ultimately no changes in women's control over resources (Parker et al. 1988), but also that project goals were not met.

Despite the fact that women use the forest on a daily basis, Cooper and Davidson (1983) note that women's potential as information disseminators and sources of expertise and knowledge remain untapped. Parker et al. (1988) found that only in areas where the Women's Development Officer was incorporated into RCUP activities were there instances of plantations and cottage industries initiated by women.

RCUP and NAFP are examples of HMG-aligned programmes that have proposed technical solutions to the resource problem. However, because they are bound by government policy and bureaucracies, they have experienced difficulties in the diffusion of these innovations among local populations. Crippled by what Agarwal (1986) has described as a "direct transfer" mentality, whereby social relations are assumed to be constant, planners tend to think in terms of the number of trees planted or cooking stoves distributed, rather than in terms of people. Agarwal points out, however, that effective diffusion must also involve "structural transformation" of social and gender hierarchies. Such a reorganization must occur among and within the bureaucratic, scientific, and local groups.

Furthermore, NAFP and RCUP are representative of other high investment programmes that affect women. An assessment of the involvement of women in FAO projects (Pradhan 1983) also found that commitment to include women was consistently limited. At the planning stages efforts to address women have typically been along the lines of "raising women's consciousness" or "training" women through extension work. In practice, these ideas usually amount to marginalization of women in cooking stove distribution programmes or in cottage industries, both

of which are mere extensions of women's assumed "housewifely" role. Few projects have included women in project infrastructure, in such capacities as paid extension workers or nursery foremen. Some projects have included women merely as wage workers at discriminating wage rates. Women in project areas thus suffer from clear gender biases and discrepancies in their access to benefits. Such policies of exclusion not only disadvantage individual women, but as we have seen, hamper the effectiveness of projects themselves.

Women-Specific Programme. Such marginalization of women in high investment programmes occurs quite simply because women are still not understood to be an integral factor in national development issues. Despite extensive rhetoric to the contrary, planners still prefer to address women in specialized women-specific programmes. The host of small-scale women's projects in Nepal is a testament to this latent bias. Pradhan and Shrestha (1983), in a survey of ten such programmes, conclude that the projects are ineffectual due to poor training and infrastructure. While some laudably seek to assist women in income generation, the activities they promote are confined to commonly perceived housewifely activities, such as knitting, sewing, handicraft production, and kitchen gardening.

From the perspective of resource conservation, such projects may be accused of putting up blinkers to development issues that concern the whole country. Resources and personnel are channelled into poorly funded, peripheral programmes that themselves ignore women's "bigger" roles in issues of national and global concern. If the goal of women in development is to ultimately contribute to national development, then such programmes serve only to deter the movement.

Integrated Programmes. Some development programmes, however, have managed to avoid the peripheral vision of such women-specific programmes and the top-down approach of sectoral high-investment programmes. Though they vary from governmental to non-governmental programmes and from women-specific to general, they share a common commitment to forging links among various development activity sectors.

One women-specific programme is the Production Credit for Rural Women Project (PCRW) implemented by the Women's Development Section of the Ministry of Panchayat and Local Development. The project, which has been operating with UNICEF assistance since 1980, has combined an original goal of helping poor rural women acquire access to credit, with the concomitant need for community development programmes. Project experience has found that women's ability to participate in economic activity is enhanced when their unpaid labor is first reduced by community development activities, such as the installation of water taps, and the construction of paths and bridges. Such a two-pronged approach creates the uniquely flexible situation whereby community development creates possibility for credit group formation, and credit groups in turn provide entry points for community development ideas. (Church and Singh 1985).

That local women's credit groups may act as entry points for a broad spectrum of development efforts has important implications for PCRW's potential involvement in resource conservation. Project personnel have, for instance, recognized that loans for animal husbandry will result in a need for increased availability of fodder in areas that are likely to be already depleted of forest resources. Although this has been criticized in the particular case of livestock programmes that create extra burdens on the resources of the area (Devine 1987), the dynamic interaction between community development and credit allows the project to respond to such needs as they arise.

PCRW adult literacy classes in one area, where teachers have stressed the need to plant trees to prevent landslides, have provided an entry point to resource conservation. Thus, while PCRW

does not address resource conservation per se, its commitment to relieving women's work burden leads to a confrontation of natural resource issues. Since such needs are identified by women in the community themselves, implementation of resource-related development is facilitated by local interest and support. And since the fundamental aim of PCRW is to give poor women access to the national credit infrastructure, the programme redistributes wealth between men and women and also raises the resources of the very poor in relation to wealthier households.

A study by Gurung (1987) illustrates the potential for action research in raising women's consciousness for resource conservation. Gurung studied the case of Akrang village where, due to male migration, women had independently formed an informal income generation and community development group. Through this organization, women had already set a precedent for resolving community problems. Researchers in Akrang used this precedent of action to help women link problems they considered to be most debilitating to them in their daily lives, with the degradation of forest resources.

When asked to prioritize their problems, the women identified water as their most serious need. Whereas twenty years ago, water at the local source ran plentifully year round, it amounted to a mere trickle in winter. The researchers, through directed questioning, led the women to realize that water shortage was related to deforestation around the water source; the women accordingly planted 75 seedlings around the water source. Similarly a perceived need for a health post emerged gradually into a need for fodder trees to feed livestock; to produce meat in order to maintain a healthy diet. And a collective desire to raise goats for income generation transformed, through the researchers subtle guidance, into a prior need for fodder trees. Hence, the three most pressing needs identified by Akrang women led ultimately to their collective agreement to plant trees. Like the PCRW programme, this strategy has the advantage of community support grounded in a profound understanding of resource depletion and their daily life situations. The dialogue, from which the conclusion to plant trees emerged, may have required one to two months of "invisible labour" on the researchers part, but as a result the afforestation effort was effective and sustainable.

Action Aid is an example of an integrated community development programme that has begun to involve women in resource conservation. Though their programmes are divided into health, education, women, and agricultural sectors, the project has tried to make cohesive connections amongst them. For example, women in Simchaur Village of Haibung Panchayat, who were members of a literacy class which has now terminated, approached the Action Aid Office for assistance in starting a nursery. These women currently collect fuelwood and fodder from the Shivapuri forest, and anticipate scarcity of resources upon the closing of the forest. Their collective anxiety and desire to avert crisis has made them act. Action Aid accordingly has arranged for three young women in the community to attend nursery training.

Other organizations have used literacy classes directly to channel women's involvement in resource conservation. The United Mission to Nepal (UMN) literacy classes in Andhikhola include practical training. Class participants, for instance, work on landslide areas, planting, and building retaining walls. The literacy programme also distributes seeds for trees and asks students to grow them; 1,167 seedlings have been planted on private land and the project nurseries are now out of stock due to increasing demand (White and Neupane, personal communication).

World Neighbours, on the other hand, originally began its work with fodder tree planting through health and family planning. Health needs identified by the community inspired the programme to initiate home nurseries, where farmers grow for their own needs. The project is now recognized as one of the most effective afforestation programmes in Nepal. The project has adopted a "saturation approach" whereby it seeks to saturate one area with its work, before

expanding into outlying areas. Accordingly, in Majhi village, in the original small target area, 88 per cent of the families have planted fodder trees and one-third have more than 400 trees; one third of the families in the village are self-sufficient in fodder and fuelwood (Hamand 1987). That World Neighbours was able to achieve such a high degree of success in one of the most densely populated and heavily degraded areas of Nepal is a testament not only to its' committed staff, but also to programme responsiveness to locally-identified needs. Local interest and leadership has been accordingly sustained, even though project work in the area was completed eleven years ago.

PCRW, Action Aid, World Neighbours, and their action research experiment share several features that contribute to their effectiveness. They are small-scale programmes, with an area rather than a sectoral strategy. While these programmes may have an original sectoral focus, such as family planning, they also have flexibility to recognize needs that are particular to each area. They are focused on people, rather than trees, cooking stoves, or cement posts. Targetting an area, instead of addressing issues sector-wise throughout the country, allows women to emerge as sources of knowledge, rather than as unskilled individuals in need of training. Project staff work to elicit and develop information that women already possess, and to design programmes that resolve needs that they themselves articulate. This methodology ensures a degree of local understanding and participation that facilitates implementation and sustainability.

In practical terms, these programmes seek to reduce women's labour time and increase their control over resources. As illustrated above, these qualities are crucial for successful environmental management. Development interventions concerning women and resource management may fundamentally be divided into two types: high investment programmes that marginalize women, and women-specific programmes that are themselves marginalized. The former are often unable to accomplish sustainable resource management. They often aggravate the state of crisis between households and eco-sectors, by disrupting local management systems, and intensifying household inequalities. Women-specific programmes absolve themselves of any responsibility for such issues as resource management, and do not conceptualize women as a part of the rural household situated within the ecosystem, as has been conceptualized in this paper. As women are central to mountain resource management, a resolution in intervention strategies must be reached.

Programmes with an integrated approach must serve as a model to planners concerned with resource conservation. The issue is not to replicate particular programmes, but to adopt successful approaches and strategies on a national scale. The area strategy, combined with flexibility to respond to locally-identified concerns, can generate programmes uniquely tailored to each area. Such a strategy has implications not only for project effectiveness and sustainability, but also for the allocation of resources and diffusion of political power.

Conclusions

Issues and Further Research

Here we summarize some issues that emerge from our analysis of women and mountain development and suggest areas for further research.

Local Responses in the Midst of Scarcity. Since village women are frequent users of natural resources, the current scarcity has particular implications for their lifestyle and that of their families. In order to effectively address resource shortages, more information needs to be generated on the way village women respond. Are there changes in cropping patterns to produce

food that takes less time to cook? Are villagers eating fewer meals per day, or food that is raw, or partially cooked? What are the nutritional implications for families and for women in particular? Changes in women's labour burden with deforestation, water scarcity and erosion must be further documented. And research must evaluate how these patterns vary across caste, class, and ecological regions.

Distributional Benefits. An important cause of resource depletion is imbalance in resource distribution among castes, economic classes, ecological regions, and between men and women. This hypothesis must be tested by correlating fuelwood consumption, access to water, livestock ownership on the one hand, and economic status and political influence on the other.

Women's Participation and Feedback. Women are key actors in indigenous management systems. Other examples of women's participation must be revealed in order to develop ideas for incorporating women into formal management infrastructure. And strategies must be developed for sustaining spontaneous responses of women, lest they become obsolete with the imposition of development interventions. Women have been shown to interact with the eco-sectors and to manage natural resources to meet the basic needs of the household. The point therefore is not to "develop" women per se, but to incorporate women as sources of knowledge for the sake of effective environmental management. Without women's participation, no management scheme can ultimately succeed.

Programme Evaluation. The national strategy for decreasing demand and increasing supply of forest resources has done little to correct Nepal's environmental crisis. The ineffectiveness is due in large part to ulterior motives of exploitation, and a consequent ambivalence with regard to resource scarcity. Therefore, development programmes must be evaluated not only in terms of innovations diffused, but also in terms of the distribution of these innovations. Who benefits from development programmes? To what extent have villagers, and women in particular, been approached as sources of knowledge? Do programmes address social as well as technical solutions? What are the impacts of programmes at the household level?

Area Specific Focus for Local Initiative. Development interventions that are area-specific and incorporate local initiatives are more effective in addressing the resource issue, than high-investment, sector-oriented programmes on a national scale. How can strategies of integrated area programmes be adapted to develop more effective national level programmes? In the development debate, the issue is one of area versus sector targetting.

Assessment of Capital Intensive Programmes. We have suggested that commercial exploitation, high-investment strategies, and government programmes have increased the magnitude of the resource problem. Research must assess the extent of this increase.

Re-orientation of Women-specific Programmes. Women-specific programmes are guilty of a certain denial of national development issues, because they are confined to promoting women in their traditional "household roles". Women's programmes which theoretically locate women as key figures in the resolution of national development concerns must be identified and developed.

Recommendations

Based on the above observations, recommendations are made for resource conservation strategies with particular emphasis on gender perspectives. Recommendations are made at policy, programme design, and implementation levels. The intention is not to provide an exhaustive list, but to stimulate further discussion from the ideas presented.

Policy Level Recommendations.

- o The present supply/demand approach to environmental management is, in isolation, an inadequate policy. Equitable distribution of resources amongst socioeconomic groups and between men and women should be a priority concern for sustainable environmental management.
- o Resource management policy must address household level participation and responses to resource depletion.
- o Integration of women must be specified at the policy level in order to institutionalize women's traditional role as environmental managers.
- o Development of policy for alternative resources under restrictive conditions in the use of natural resources, should be developed. For example, alternative sources of fuel and fodder must be ensured before restrictions are imposed on villager's use of forest products. Prior to evacuation of residents from a protected area, villagers must be provided with alternative shelter and resettlement options, instead of a mere flat-rate compensation.
- o Resource management policy must evaluate the relative merits of area and sector targetting and apply appropriate strategies.
- o Locally-derived management strategies and integrated programme approaches are most effective in controlling environmental degradation. Such approaches should inform, and should be supported by government policy and programme design.

Programme Design Recommendations.

- o Project staff must be conscious of gender issues. Staff awareness is the most fundamental component to programme effectiveness and sustainability. Staff consciousness must involve an understanding of the social, religious, and agricultural systems that comprise local contexts, as well as a theoretical understanding of overall development issues.
- o Programmes must have the capacity to link activities in several development sectors in order to generate multiple entry points for resource conservation strategies.
- o Programmes must build in mechanisms for allowing local people to develop their own articulation of needs, and to draw connections between their work burden and resource depletion issues.
- o Programmes should target a specified area and fully exhaust potential linkages with other sectoral and environmental issues, including the involvement of women, before expanding activities into outlying areas.
- o Programmes must reinforce local management systems that are already intact, rather than discourage their efforts. In particular, local female leadership must be incorporated into programme infrastructure.

Implementation.

- o Project staff must have adequate time to interact informally in local contexts, before accomplishing any visible results. During this period, mutual trust between staff and villagers may be established, and staff may become acquainted with the community on its own terms; including power structures, family feuds, gender role breakdown, and the history of previous development interventions.
- o Staff should take an objective role in interacting with villagers, so as to elicit knowledge and leadership that already exists.
- o The implementation of programme design must take the form of continuous dialogue between staff and the local population.
- o Women's actual labour burden must be reduced and labour responsibilities must not simply be passed on to their daughters.
- o Women must at least understand and cooperate with, and preferably help develop, resource conservation strategies.
- o Women must gain control over resources through project activities.
- o Project benefits and resources must be distributed between men and women and among castes and economic classes, in a way that is deemed appropriate by the community.
- o Villagers must be able to evaluate their own programmes, and ultimately project management must be handed over to villagers themselves, particularly to women. An ultimate goal for sustainability has obvious implications for technical and financial inputs that the programmes should offer.

ICIMOD's Work Programmes

Finally, recommendations are made for including a gender perspective in ICIMOD's programme areas. ICIMOD's recognition of the role of women in mountain development and its "fundamental intention" to give central emphasis to the gender perspective, needs now to be translated into active policy directives and programme strategies. This commitment must be expressed consistently in staffing decisions and in programming and sub-programming.

Mountain Farming Systems.

- o Long-term strategies must emphasize women's roles in mountain agriculture, with concomitant research on gender roles and work responsibilities.
- o Any programme to evaluate "farmers' strategies and responses" must acknowledge both male and female responses to resource depletion. The use of the general term, "farmer," often leads to an outright neglect of women's important farming responsibilities.

Mountain Environmental Management.

- o Programmes in this area should address women as they interact with different eco-sectors, in order to achieve a holistic perspective of environmental management. At the same time, the impacts of management programmes on men and women at the household level should be assessed.
- o Forest management training, design, and evaluation must include women's perspective on resource management-not simply by incorporating individual women, but also by generating common consciousness among all staff.

Mountain Infrastructure and Development.

- o Especially in this technical sector, it is important to evaluate the impact of technology on both men and women, as these inputs typically favour male participation. Scientists and social scientists must therefore work cooperatively, to ensure that technologies developed for mountain infrastructural development are accessible to both men and women.

Mountain Population and Off-farm Employment

- o It is crucial that women and their perspectives are incorporated into integrated mountain development at all stages, from planning, programme design, to implementation.
- o ICIMOD should develop strategies for advocating a gender perspective in mountain development amongst government officials and donor representatives. This should promote practices that address women as environmental managers within ICIMOD itself, and in government and non-government agencies.
- o In developing integrated rural development systems, there must be systematic coordination with women-specific programs, so that IRDS (Integrated Rural Development Systems) can benefit from working with women. Local women's groups and NGOs with women's perspectives should be made focal points of contact, for both diffusion of benefits and feedback on women's responses. IRDS should then use these points of cooperation to continually improve management systems.
- o The integration of women should be of concern in ICIMOD programmes, and annual plans should be monitored accordingly.
- o ICIMOD should include, amongst its staff, women with experience in Women in Development, so that they may be instrumental in generating policies and programmes with a clear gender focus.

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