Chapter 6

COMPARATIVE ANALYSIS OF THE TWO SITES

Basis of Analysis

Based on the above findings, the two study sites were compared in terms of the following aspects: a) Forest Resource Conditions; b) Social Dynamics; c) FUG Effectiveness; d) Gender and Equity Considerations; and e) FUG Sustainability in Resource Management.

Forest Resource Conditions

Although the Palpa users were better off in terms of the per capita forest area availability than Phewa (0.28ha per capita versus 0.19ha), the average density of trees with a DBH of 2.5cm and above was better in the latter. The tree density and the estimated average biomass reserve were 1,744 and 71.2MT/ha in Palpa and 2,170 trees/ha and 79.6MT/ha in Phewa respectively. In terms of quality, however, forests in Palpa district were better because of the greater number of *sal* species. In the Phewa Watershed, the forest resources protected by the Government (Rani *Ban*) were not included in the comparative analysis as they were not accessible to the people, both legally and practically. In Palpa also, the Siwalik Hill forests were not taken into account as they were being currently managed without community participation.

Social System Dynamics

Both areas were found to be vibrant and dynamic. In terms of self-organisation, as far as being able to face natural calamities, social crises, and economic hardships was concerned, FUG members in Palpa were generally more active,

knowledgeable, and innovative than those in Phewa. Although the general literacy rates among the user households were comparable (49% and 48% respectively), the female literacy rate, however, was much lower in the Phewa area (17%) than in Palpa (32%). Perhaps due to the adoption of different forest and related resource development strategies, the socio-psychological effects and impacts differed between the two sites. The specific variables that were compared are given below.

The projects - the Tinau Watershed or Palpa Development Project in Palpa and the Phewa Tal Watershed Development Project in Kaski - supplied inputs, carried out activities, and produced outputs in the study areas. Although the effects were partially biophysical in nature, a large proportion of the project-generated effects and impacts were socio-psychological. The second part of the findings attempts to describe them.

Characteristics of the Target Beneficiaries

The characteristics of respondents are critical for judging the effect and impact of any project. For example, if the respondents in the distantly located Palpa and Phewa sites share virtually the same characteristics, any significant difference in their knowledge, awareness, participation, and attitude levels is most likely to be the result of the different levels, nature, and quality of the project activities, inputs, and outputs. The evaluation detected the following differences in these attributes.

Causes, Indicators, Effects, and Impact

As mentioned earlier, the main thrust of this study was to discover the effect of the project inputs on the knowledge, awareness, attitude, and perception levels of the common people. The evaluation of their skills and participation measured the impact of the project on the rural people of the two study areas. Awareness was measured in terms of several aspects, namely i) awareness of the UGF provisions; ii) knowledge of the project objectives; iii) knowledge of forest protection rules; iv) awareness of community forestry/watershed management objectives; v) awareness of the role the people needed to play to meet these objectives; and vi) awareness of the assistance provided by the project.

The data revealed that a consistently high number of respondents from both the Palpa and Phewa areas were aware of the different dimensions of the project as well as UGF activities (65% and 54% respectively). Palpa's respondents were not aware of the nature of the forestry-related work carried out by the Palpa Development Project (30%). Similarly, Pokhara's respondents revealed a poor awareness of DOF activities (43%), perhaps because the PTWDP was mainly responsible for carrying out watershed management activities. However, they did not critically affect the community forestry projects as these agencies were supplementary in nature. The findings suggest that the Project's effectiveness in generating awareness among the target beneficiaries was satisfactory (76%).

Training courses and observation of successful demonstration sites were found to be among the most effective tools in creating awareness of the different dimensions of UG forestry among the users. In both the study areas, a large number of those who had received training and had participated in the observation tours were aware of the community forestry projects, their objectives, and the most recent policy and legislative decisions (such as the Community Forestry [CF] provisions under which forests were handed over to FUGs) taken by the Government to attain the objectives.

Gender Issues

Gender was not a reliable indicator of awareness of UG forestry. Compared to women, men showed greater awareness of community forestry activities, the name of the FUG of their village, its chairman, and its functioning. However, women were more aware of the appropriate species for different uses; the time that the forests were open to users; the amount of fodder and fuelwood allowed to be harvested; the prices of the products; and the penalty structure for different types of offences and offenders.

Participation Factors

Maximum participation of the people in planting trees on farmlands along with the development, protection, and management of forests were among the intermediate objectives of CF as well as watershed management projects in Palpa and Phewa respectively. Participation was directly related to skill-

oriented training, observation visits, and a number of other factors. The majority of those who had participated in tree planting and forest protection had also participated in training programmes organised by the DFO. Gender and educational status were good indicators of participation in tree planting programmes. Visuals were the most effective training aids, followed by lectures and method demonstration by the field. Whereas it was found that more people in Phewa had participated in tree planting activities than in Palpa, their respective rates were still low (37% and 24% of the total participation potential in the two districts). More men than women, and more literates than illiterates, had participated in the training programmes.

Suitable Planting Sites. Tree planting programmes in the study areas had four components, including plantation. i) around homesteads; ii) on poorly-used barren commons; iii) under agroforestry schemes; and iv) in understocked UG-managed forests. Tree planting on poorly-used barren commons was the most popular (66%), followed by planting around homesteads. About 70 per cent of the respondents in Palpa and 56 per cent in Phewa indicated their interest in continued participation in this activity.

Training and Visits. Training in basic forestry practices was one of the factors leading to increased participation in the user group forest committees. In fact, one of the criteria for being elected on to the committee was prior participation in training programmes and comprehensive knowledge of forest management as well as skills.

The most commonly given reasons for participation in user group forestry were that the "*forest belongs to us*" (*hamro ban*); "*we will have more fuelwood in future*"; and "*improved forest management will control floods and erosion*".

Motivation. In order to improve the farmers' socio-psychological literacy level, more emphasis was placed on awareness-raising, better communication, and motivation schemes. The evaluation examined the impact of these activities on the target beneficiaries. The most effective method of training, according to the majority of Palpa's and Phewa's respondents, was the 'on-site practical exercise' in which the training participants carried out skill-oriented activities. The most popular exercises were making holes

in plastic bags; filling the bags with soil; seed planting in the bags; preparing root/shoot cuttings; and planting seedlings.

One of the primary objectives of training and motivation programmes in community forestry was to establish and/or strengthen rapport between the forestry staff and target beneficiaries. Whether or not this objective was achieved can be measured by studying the knowledge, attitude, perception, awareness, skill, and participation of the people.

Participation. Group participation was preferred by the majority of the respondents. Nine out of ten beneficiaries in Palpa and eight out of ten in Phewa favoured participation through user groups. The main reason was that group participation was 'more practical for forest protection'; 'encouraged greater cooperation'; and 'made better use of the meagre resources'. Only 12 per cent of the total respondents had participated in training programmes and observation tours organised by the DFO in Palpa. In Phewa, the percentage was higher (14%) because of the longer duration of the Project.

Causes and Indicators of Perceived Impact

While the actual impact of UGF may not be felt in a short period of less than five years, its perceived impact among the target beneficiaries can be measured. This perception is indicative of the people's expectations from UGF projects and their participation in them.

Giving due importance to the impact of the project as perceived by the people, the respondents in Palpa and Phewa were asked to describe the present and future trends under the following topics: i) the number of UGs in which they participated; ii) areas on their farms and common lands in which trees were planted; iii) supply of fodder, fuelwood, and timber; iv) the number of trees planted; and v) the number of trees in the production stage.

Perception. The Palpa respondents' perceptions were more encouraging than those of their counterparts in Phewa, suggesting a more favourable project impact on the former than on the latter site. On an average, each respondent in Palpa participated in three UGs, whereas in Pokhara it was only two. Seventy-six per

cent of the users participated in the general UG meetings in Palpa as opposed to only 56 per cent in Phewa. Asked about their perception of the changes in forest cover, almost all the respondents said that the forest cover had increased. However, on the question of forest products' supply, only 46 per cent in Palpa and 35 per cent in Phewa said that the supply had increased at present, although around 90 per cent thought that it would increase in the future.

Problems, Needs, and Aspirations. A development project is usually successful in achieving true people's participation among the target beneficiaries if it meaningfully addresses their problems, needs, and aspirations as well as the benefits that may accrue to them.

Perceived Benefits. A high percentage (93%) of the respondents in Palpa indicated that they were benefitting from the trees they had planted or protected on their farmlands. Similar feelings were echoed by users in Turung village in Kaski. However, a section of the users in Dopahare village, Phewa Watershed, were sceptical about the benefits from the forest their UG was managing. Here, only 52 per cent stated that they were benefitting from the forest.

In general, fodder, fuelwood, and the future prospects of timber represented the benefits which the UGF target beneficiaries either obtained or expected to obtain. In the Phewa Watershed, the people also referred to tourism as a potential source of benefit, although they lamented that most of the benefits did not accrue to them.

Knowledge of Important Variables. Respondents in both Palpa and Phewa knew the topic of the training they had participated in and the places they had visited. However, six out of ten respondents did not know the name of the trainer from outside the district. The trained farmers were also knowledgeable about the specific management prescriptions on which they had received training.

The respondents in Palpa and Phewa differed in their perceptions about the objectives for the Project, in that the majority in Palpa stated that the objective was to "*popularise community forestry*" and the majority in Phewa mentioned that the objective was to control siltation and erosion.

Knowledge of Prerequisites for the Project's Success. The two groups did not differ in the perceived prerequisites for the success of the project. Eighty per cent of Palpa and 85 per cent of Phewa respondents stated that 'awareness among the people' about the projects' goals and objectives was a prerequisite for success. Another prerequisite mentioned by almost all the respondents was "training"of both the farmers and the staff.

Knowledge of Constraints. Two types of constraint to the project's success were reported. The first was that the lack of awareness' on the part of the people was posing problems to their full participation. The socioeconomic conditions of the farmers, i.e., 'limited cultivated land', 'lack of concern for the community', 'mass poverty', and 'illiteracy' were reported under the second type of constraint. The managerial level staff also mentioned staff shortage; the recent government decision regarding early retirement and freeze on hiring; lack of vehicles; budget cuts, especially in travel; and non-cooperation by the funding agencies as other constraints.

Knowledge of the Benefits of CF Projects. The two groups of respondents gave identical responses regarding the perceived benefits of the community forestry project, i.e., that they will check deforestation and improve the environment. Their perception of the benefits of UGF was negative, i.e., unequal distribution of the forest wealth among the communities.

Importance of Monitoring and Evaluation (M&E) in UGF

All the FUG committee members, as well as the professional staff in both Palpa and Phewa, considered M&E important to local forestry. They also indicated that at present their training lacked this aspect. They also felt that the current staffing situation at the district level did not permit the functioning of good M&E mechanisms.

Employers' Attributes

All the staff in Palpa belonged to the Department of Forests and those in Phewa to the Soil Conservation and Watershed

Management Depart-ment. All the professional staff in Palpa were men and in Phewa only one staff member of the "Improved Cookstove Scheme" was a woman.

Attitude towards the Technical Capabilities of the User Group. A generally favourable opinion of the target beneficiaries' capabilities was expressed by the majority of professional staff. Asked for the basis of their assessment, most of the staff said that the farmers were "willing to learn" and they had been "managing trees on their homesteads and farms for generations". However, some professionals felt that the users might need help in applying management prescriptions.

Attitude towards Free Distribution of Seedlings. About 80 per cent of the Palpa and 70 per cent of the Phewa staff said that the free distribution of seedlings' scheme followed by the community forestry (CF) project was 'good'. The reason given by them was that it was a 'traditional' incentive and must not be stopped now. In addition, they also felt that the scheme 'encouraged' people to plant trees by showing the Government's 'commitment'. Those who were not in favour of free seedling distribution said that it "*discouraged protection*", "*people were already buying fodder trees*", and that the Government should give other "*incentives such as secure tenure*".

Evaluation of Professional Staff

Professional staff play a key role in bringing about the desired socio-psychological changes in the knowledge and awareness levels of the respondents. Surveys on the professional staff were conducted to find out their knowledge, skill, attitude, and perception levels. It was found that the staff at both the sites generally possessed adequate knowledge of the technical aspects required of the job and were optimistic regarding the potential for success of FUG management. However, they clearly lacked skills in planning, organising groups, and communication. There was no marked difference between the two groups of staff.

FUG Effectiveness

The effectiveness of the user group was evaluated on the basis of how successfully the group carried out its designated functions, how effective the members were in mobilising people's

participation, and how good the quality of the outcome therefrom was. The basic requirement for any user group's effectiveness was that the group should function and implement its activities; in particular the functions related to proper identification of the users, effective protection of the forests, implementing an equitable distribution system, and a transparent decision-making process. In Table 11, the findings regarding the nine FUGs under study are presented.

Table 11: Evaluation Criteria for Forest User Groups within the Palpa and Phewa Areas

User Group Name	Proper User Identification	Effective Protection	Afforestation Work	Dry Products' Utilisation	Green Products' Utilisation	Decision-making Rules	Effectiveness Rating
PALPA DISTRICT							
Mulgaira, Madanpokhara	Yes	Yes	No	Yes	Yes	Unsatisfactory	5
Shikhar*danda*, Madanpokhara	Yes	Yes	Reported	Partially	Yes	Unsatisfactory	3
Bharkesh, Telgha	No	No	None	N/A	N/A	Unsatisfactory	1
Mahajir Salleri, Ghykul*danda*	Yes	Yes	Reported	Yes	Yes	Satisfactory	4
Khum*danda*, Chhidipani	Yes	Yes	None	Yes	Yes	Satisfactory	4
Ramche, Rampur	No	Yes	None	Some	Yes	Satisfactory	3
Hungi, Majuwa	Yes	Yes	None	Yes	Yes	Satisfactory	4
PHEWA WATERSHED							
Turung	Yes	Yes	None	Yes	Yes	Satisfactory	4
Dopahare	No	No	Yes	N/A	N/A	Unsatisfactory	2

Source: Survey Team
Note: Effectiveness rating code: 1. Poor; 2. Fair; 3. Good; 4. Very Good; and 5. Excellent

One of the additional factors not shown in the above-mentioned table was the role of conflict - both internal and external. For a UG to be highly effective, absence of both types of conflict was necessary. From Table 11, it can be observed that only one UG,

Mulgaira in Palpa, out of nine could be rated excellent in terms of its effectiveness. Bharkesh FUG in Palpa was rated poor because of the complete lack of any structure and function. The rest of the FUGs either had a weak structure or were plagued by conflicts; they were ranked mediocre in effectiveness.

Gender Analysis

Based on the information collected from key informants, mostly women, on important questions related to women's role in forestry, the major findings and analyses are presented as follows.

Women's Role in UG Formation

In all the nine UGs, the initiative to form the UGs was taken by the DFO or the PDP staff. In Madanpokhara, Mahajir Salleri, Turung, and Ramche, women were involved from the very beginning. Spontaneous participation by women was noticed when the rangers organised group meetings, neighbourhood gatherings, and individual contacts. These 'accidental contacts' also included women as they did not shy away from admitting to rangers that "*only male members knew what was involved*".

Naturally, in these villages, the percentage of women members in the UGC was higher. Women members who were among the first to show interest and were involved in UG formation and OP development had retained their membership in the UGC (Table 12).

Mulgaira and Mahajir Salleri UGs were found to have around 30 per cent of women on their committees. However, the reasons were slightly different. In Mulgaira, the higher level of education had motivated women to use their rights and, thus, they had been able to muster strength and recognition. However, in Mahajir, due to a higher propor-tion of men being employed outside, women were motivated because they were compelled to protect the forest. They had thus willingly occupied important positions in the UGC. In these UGs, the women had been early starters, willing and active participants, and equal partners in development of the UGF. In Bharkesh and Khum*danda*, due to the low education level and lack of proper motivating factors, women were found to be late starters, passive participants, and unequal partners. In the remaining UGs, the situation was somewhere in between these two extremes.

Table 12: Women's Participation in UGC in the Study Areas

User Group	Yr. of handing over to the UG	Total No. of User HH	No. of Members in the UGC	No. of Female Members	Duration of Membership
PALPA					
Mulgaira	1989	79	15	5	2 yrs.
Shikhar	1988	140	11	2	3 *
Bharkesh	1988	331	31/11*	3/2	1
Mahajir	1990	111	19	6	1
Khum*danda*	1989	133	11/12*	0/2	2
Ramche	1988	212	13	2	2
Hungi	1990	53	9/6	2/2	1
PHEWA					
Turung	1990	122	12	0	-
Dopahare	1990	106	9	2	2

* Existence of general and executive committees

Attributes of Women Members

Caste. Generally *Brahmin* and *Chhetri* women dominated the UGCs in all the villages, except in Khum*danda* where *Magar* women were in the majority. Women were poorly represented in all the FUGs. However, lower caste women were included on the committees more frequently, mostly because the village leaders felt that it looked 'nice' rather than because they thought it was 'necessary'.

Marital Status. Almost all the committee members were married. The society generally preferred the inclusion of married women on the committee because of their acceptability, maturity, and stability.

Age Group. More than 80 per cent of the committee members were 35 years or older. Those over 40 were reported to be more

mature, self-confident, and to have made meaningful contributions to committee work.

Education. Most of the UGC members were found to be literate. Some members had a high school diploma. However, the literacy factor did not hinder participation in that most of the rules and management prescriptions were discussed thoroughly at the meetings.

Economic Status. Relatively well-off women participated, more because of the freedom from household chores. Most of the poor women were too busy to even attend the general meeting, let alone participate in the managing committee's affairs.

Mode of Functioning of Women in the UGC

Women were generally encouraged by their husbands to attend the meetings regularly. They collected the information and materials for setting the agenda through interactions with other women at work places, water springs, and casual meetings. The degree of women's participation depended on the type of meeting as well as on their socioeconomic status, e.g., educational level and family background.

Motivating Factors

Women were motivated by several factors. Usually, the men in the HH played a vital role in disseminating relevant information, e.g., in Mulgaira. However, in Mahajir Salleri FUG, women were motivated because of the absence of men from the village as well as by listening to the rangers and the DFO. Training and observation tours were found to be good motivating factors for women. Most of the women also reported themselves to have been motivated simply by experiencing the gradual decline in forest harvests and by their desire for better management in the future. In fact, women were more willing to and active in protecting forests than men, because they were the ones who needed the forests the most. In Rampur, women were motivated by the dedicated protection work of the women *heralo* (Table 13).

Table 13: The Motivations for User Group Forestry amongst Sampled Women Farmers

Item	*Brahmin*	*Chhetri*	*Magar/ Gurung*	*Sarki/ Kami*	Others	Total	
- Self-interest	30	2	0	0	2	34	(38)
- Husband's advice	1	2	7	1	2	13	(14)
- Training/Workshop	4	8	2	2	0	16	(18)
- Demonstration	0	0	0	0	1	1	(1)
- Radio programmes	2	2	0	0	0	4	(5)
- Villagers' request	1	1	1	1	0	4	(4)
- Govt. officials' advice	2	2	5	1	2	12	(13)
- Absence of men	0	3	0	3	0	6	(7)
	40	20	15	8	7	90	(100)

Decision-making Process

The number of men and women attending the meetings was usually equal. Since they were the main users, they often expressed the view that they had a larger stake in forest management than men. In addition, they were very sensitive to the decisions made by the FUGs regarding the time and duration of forest opening, inclusion of new members in the UGs, the type of penalty and the amount of fine to be borne by the defaulters, and the price of forest products. They also had better communications with users because of regular contacts with them. It was, therefore, observed that women at both sites significantly participated in and contributed to the decision-making process, and this factor played a major role in enhancing FUG effectiveness.

Project Implementation

Women committee members in all the FUGs were heavily involved in implementing the project and enforcing the rules. In Mulgaira, the women members also took part in briefing outsiders

about forest management activities. In Mahajir, women were exclusively involved in protecting the forest and carrying out management activities. In Bharkesh, women were the main collectors of fuelwood and fodder. Many of them illegally marketed fuelwood also. They were also the ones who indicated their concern regarding the need to protect the forests.

Monitoring

Monitoring of the FUG-managed forests involves checking on the *heralo*, follow-up of thinning/harvesting schedules, supervising silvicultural operations, and record-keeping. In Khum*danda*, a register was maintained to log the daily duty records of the group members. A women member monitored the records. In Mahajir, women reported any incidence of theft, violation of rules, and encroachment. In Mulgaira, women members collected information on grievances and reported to the committee. In Hungi, women were involved in the disciplinary committee.

Perceptions and Attitudes of Women

Women's perceptions and attitudes were assessed by interviewing committee members in a group. The approach was to compare the responses across the UGs. Table 14 provides a summary of the responses. The table indicates that most of the women interviewed had positive attitudes and perceptions. In Telgha VDC, the responses were opposite to those obtained elsewhere. This was due to the complete failure of the system existing there. The women were quite knowledgeable about the problems since they often pointed them out to the chairman of the committee who was not performing his duty well and was involved in illegal activities.

Women's Typical Perceptions. Before user group control, fodder and fuelwood collection was easy. However, free access led to forest destruction and control through the UGC was established to regulate misuse. Therefore, relatively speaking, women's work is easier today than in the past as more durable practices are followed. Some of the often repeated views are given below.

Table 14: Perceptions and Attitudes of Women User Group Members in Palpa

FUG Name	Quality of the forests			Time taken for collection			Future of the forests			Quality of women's life			Men's attitude to wards women		
	B	W	N	B	W	N	B	W	N	B	W	N	B	W	N
PALPA															
Mulgaira	9	1	-	2	8	-	10	-	-	5	4	1	8	-	2
Shikhar*danda*	10	-	-	4	6	-	9	-	1	2	5	3	7	2	1
Telgha	-	10	-	8	-	2	-	7	3	8	1	1	2	8	-
Mahajir	8	-	2	-	9	1	7	3	-	4	5	1	8	-	2
Khum*danda*	10	-	-	8	2	-	8	-	2	6	4	-	6	-	4
Ramche	10	-	-	7	3	-	9	-	1	5	5	-	6	3	1
Hungi	8	-	2	6	3	1	6	-	4	4	2	4	6	4	-
POKHARA															
Turung	10	-	0	2	6	2	6	-	4	5	0	5	6	1	3
Dopahare	9	-	1	1	5	4	5	1	4	4	4	2	2	5	3
Total	74	11	5	38	42	10	60	11	19	43	30	17	51	23	16

Notations: B - Better; W - Worse; N - Neutral

* Women's issues are raised by women themselves, and some of the issues are resolved but not all.
* Fodder and fuelwood collection was easier in the past, but forest protection is needed.
* Women feel more inclined to protect forests as they are the ones who need fuelwood.
* Women and children are more involved in fodder/fuelwood (F&F) collection, but, in farming, both men and women are equally involved.
* Under economic stress, both boys and girls suffer from poor schooling or lack of schooling.
* Women prefer *Ficus semicordata*, *Litsea monopetala*, and *Ficus hispida*. In addition, mangoes and litchis are also preferred.
* Both husbands and wives collect fuelwood but more often it is the women who perform this task.
* The main reason for felling trees is the very lucrative returns from the sale of fuelwood in Palpa.
* The committee is not very active - it has recently been organised, and maybe they will do something now.

* Since most of the men go out of the village to work, women have to take full responsibility for protecting and managing the forest.
* Women voice more strongly the need to protect forests, but illegal activities still continue due to the greed of some persons.
* It was easier to collect fodder in the past, but, due to the expectation that in the future the same if not a better situation will prevail, people are undergoing hardship and protecting the forest.

Women's Issues and Problems

1. Most UG forests do not have adequate fodder, fuelwood, and bedding materials. Therefore, women have to go to distant places from where they manage to bring only one *bhari* a day.
2. Daughters (including children) and mothers are the ones who collect the fuelwood and fodder. One woman (Jethi Subedi of Telgha) said that both herself and her daughter had to be fully engaged in collection as her husband was living with his second wife.
3. In general, the poor, illiterate, and disadvantaged women are ignorant of the UGF activities and, therefore, have a poor opinion of forest management. Such women attend the meetings but exchange no opinions.
4. Although the state of the forests is somewhat better at present than a few years ago, it is not as easy to collect forest products as in the past as the forest quality has decreased.
5. Forest products are stolen mainly by the village toughs who sell fuelwood and timber in the nearby Tansen and Butwal markets. If caught, they either challenge the informer, more so if the informer is a woman, or make a ayment for their release if sent to the VDC.
6. As such, there is no discrimination between men and women. However, due to the poor economic conditions, women whose husbands have left them fear that their children, especially daughters, will have to drop out after primary school education.
7. Asked why they had not become members of the UGC, a typical reply was "when there are men, why do women

need to become members". Most of the women do not attend the meetings as they do not believe that their problems will be attended to.

8. Women's lives were better in the past as the forest cover was dense. Even today, if illegal use of forest products can be controlled, the situation in the forestry sector could be improved.

Equity Considerations

Community forestry projects in Palpa and Phewa have been planned primarily to address the shortage of basic necessities, soil erosion, and deforestation-related problems. As such, there is no objective to reduce socioeconomic inequality and general impoverishment and achieve social justice. However, through its programmes for improving the development of local natural resources, infrastructure, and environmental quality, both monetary and consequential benefits have started reaching the common people. However, both the projects have targetted their programmes more on environmental needs than on socioeconomic ones. As a result, the opportunities created have reached only those sections of society who are educated, powerful, and enterprising. In general, people from the lower castes (*Magar*, *Kami*, *Sarki*, and *Damai*) and women have benefitted less than those belonging to the elite classes (*Brahmin*, *Chhetri*, and *Newar*). In recent years, programmes such as road construction, women's training, bee-keeping, and other income-generating activities have been launched to address the equity issue. Nevertheless, in the context of the on-going activities and the present flow of goods and services, it can be concluded that the community forestry projects have the potential to reduce the hitherto existing gaps in resource accessibility and benefit-sharing among the different socioeconomic groups. However, the goal of creating an equitable system of resource distribution may be possible only within a group and not across the groups. The unequal distribution of forest resources has created 'haves' and 'have nots' in terms of forest resource endowment, and this may be the biggest challenge to achieving equity. A typical example is the existence of forest product surplus and deficit villages adjoining each other - Khum*danda* FUG in Palpa and Turung in Phewa. In both these cases, the per capita forest area was among the highest in the district. However, the district towns were net deficit in fuelwood and the major source of illicit users for these

forests. Yet, there was no possibility of equitable sharing of surplus fuelwood between the individual UGF and the outside community. This, of course, created friction between the communities concerned.

User Group Sustainability

Sustainability was assessed by analysing the following variables: i) demography; ii) forest biomass availability; iii) patterns of energy use and demand; and iv) traditional supply and demand analysis. Sustainable forestry is both an ecological and economical concept. While ecological sustainability was examined through the traditional demand and supply analyis of forest products, socioeconomic sustainability was examined by analysing the users' attitudes, perceptions, and practices.

Characteristics of Sustainable User Groups

Sustainable FUGs in Palpa and Phewa, according to our findings, have attributes that can be grouped under a) socioeconomic indicators; b) biophysical indicators; and c) equity indicators (Table 15).

Table 15: Biostock and Community Attributes of the Successful and Unsuccessful Forest User Groups in Palpa and Phewa

FUG Name	Rule conformance	Adequacy of Boundary Rules	Acceptance of Allocation Rules	Resource Availability	Ethnic Homogeneity	Performance Rating
PALPA						
Mulgaira	High	Yes	High	Poor	High	Excellent
Shikhar	High	Yes	High	Poor	Medium	Good
Bharkesh	Low	No	Low	High	Low	Poor
Mahajir	Medium	Yes	Medium	High	High	Good
Khum*danda*	High	Yes	High	High	High	Good
Ramche	High	No	Medium	High	Medium	Fair
Hungi	High	Yes	High	Poor	Medium	Good
PHEWA						
Turung	High	Yes	High	Good	High	Good
Dopahare	Medium	No	Low	Poor	Low	Fair

Source: Survey Team

Socioeconomic Indicators. It was assumed that a successful UG can be defined as a group with a) well-protected and well-stocked forests; b) absence of disputes; c) self-sufficiency in forest products; d) non-dependence on common forests for fuelwood and fodder; e) existence of a common fund; e) an indigenous forest management system; f) sufficient provisions for achieving equity; g) a high degree of participation; and h) maximum user satisfaction. Based on these criteria, the successful UGs were listed as having the attributes mentioned below.

According to the above analysis, a successful FUG was found to have a high degree of rule conformance; adequate boundary rules; universally accepted allocation rules; and a high level of ethnic homogeneity. If these conditions were met even when the resource base was poor, the FUG was functioning effectively and could be termed sustainable. On the basis of these criteria, one UG forest in each study area was found to be unsustainable. Besides, the above-mentioned socioeconomic indicators, the successful FUGs also had a high rate of female literacy (around 40%); a high number of on-farm trees; a high percentage of college educated persons; a low livestock population; lower dependence on farming; lower dependence on fuelwood from forests; a smoothly functioning and structured UG; a high degree of participation by the users in developing the OP; and a high off-farm income. In terms of such criteria, Mulgaira, Shikhar*danda*, Mahajir, Khum*danda*, and Hungi in Palpa and Turung in Phewa were found to be successful FUGs although the degree of success varied. While all the criteria are important, two - acceptance of allocation rules and adequacy of resources - are crucial. In some forests (Ramche in Palpa), although most of the conditions were met, due to boundary disputes and refusal to accept the allocation rules, the UGs were termed unsuccessful.

Biophysical Indicators. Sustainability was also examined on the basis of the sustained-yield concept. Sustained yield is a deeply entrenched principle in the forest community. However, sustained yield is not the same as sustainable development. Sustained yield mainly concerns a perpetual or annual flow of timber, fuelwood, and fodder. But the concept of sustainable development of forests is much broader and is concerned with integrated forest management, maintaining the ecological integrity of the forest environment, and keeping future options open. The formulation of approaches to sustainable forest development requires

harmonisation of human activities with the biological and physical aspects of forest ecosystems. Sustainable forest development means recognising the limits of forest ecosystems to withstand environmental change, individually and collectively, and managing human activities to produce the maximum level of benefits obtainable within these limits. Sustainable harvesting practices require that extraction of forest products must not exceed the capacity of the system to regenerate itself. Based on the concept of sustained yield, the sustainability of the UGFs in Palpa and Phewa was analysed (Table 16).

Table 16: Sustainability Analysis of Fuelwood and Timber Supply from the UG Forests in Palpa and Phewa

Year	Population Estimate*	Demand		Supply (cubic metres)						
		Timber	Fuelwood	UG Forest		Shrubland		Pvt. Sources		
1992	284	23	304	98	(30.0)	26.0	(8.6)	156	(51.3)	(89.9)
1993	289	23	310	115	(34.5)	25.5	(8.2)	160	(51.6)	(94.3)
1994	295	24	316	131	(38.5)	25.0	(7.9)	165	(52.2)	(98.6)
1995	300	27	322	148	(42.4)	24.5	(7.6)	166	(51.6)	(101.6)
1996	305	27	327	164	(46.3)	23.8	(7.3)	172	(52.6)	(106.2)
1997	309	28	331	180	(50.1)	23.0	(7.0)	175	(52.9)	(110.0)
1998	314	28	337	188	(51.5)	22.4	(6.7)	180	(53.4)	(111.6)
1999	319	29	342	196	(52.8)	21.7	(6.4)	183	(53.5)	(112.7)
2000	324	33	347	204	(53.7)	21.0	(6.1)	187	(53.9)	(113.7)
2001	328	36	352	213	(54.9)	20.2	(5.7)	191	(54.3)	(114.9)
2002	331	36	355	221	(56.5)	19.4	(5.5)	194	(54.7)	(116.7)
2003	335	37	359	229	(57.8)	18.6	(5.2)	196	(54.6)	(117.6)
2004	339	37	363	237	(59.3)	17.9	(4.9)	200	(55.1)	(119.3)
2005	343	38	368	245	(60.3)	17.2	(4.7)	204	(55.4)	(120.4)

Assumptions:

* the population is projected to grow at 1.84 per cent annually till 1995; at 1.53 per cent till 2000; and at 1.2 per cent thereafter.

** The per capita fuelwood requirement is 1.072 cubic metres per annum; the total wood production is between 3 to 6.5cu.m./ha from 1992-2000; and 7.5 cubic metres thereafter. Production from private sources is kept at a constant ratio; production from shrubland is assumed to be 1.5 cu.m/ha and is projected to decrease by two to four per cent as a result of reforestation.

Source: Survey Team

Time-series projections of timber and fuelwood supply and demand in the study area are given in the table. Timber requirements were assumed to vary between 0.07 to 0.11 cubic metres per capita. Although the figures may not be exact, the concept of sustainability presented indicates that forests under user management are capable of providing a significantly higher wood output than that currently obtained at present under government 'management'.

Fodder production in the forests is assumed to grow five per cent, 2.5 per cent, and 1.25 per cent annually for each of the five-year periods till the year 2005 respectively under UG management. Since at present 70 per cent of the fodder comes from private sources, sustainable fodder production was projected to be feasible under UG forestry.

Community Attributes for Sustainability

* In most of the communities, the impetus for starting a local management system came from either an individual or a group with strong community leadership.
* Most of the leaders were either ex-political officials or ex-army personnel.
* While local leaders played an important role in initiating the project, people's eventual recognition of the benefits they could receive ensured their sustained participation.
* The type of forest was another factor in successful management. *Sal*, *katus*, and *chilaune* were considered to be more valuable than other species and their predominance aided protection.
* The existence of large private holdings, especially *khet*, which is invariably associated with the higher *Brahmin* and *Chhetri* castes, was found to lead to better forest protection and management.
* Proximity to local markets was found to deter effective enforcement of CF management rules.

Biophysical Characteristics

- The size of the forest as well as that of the user group was important for successful forest management. Large-sized forests were generally associated with lesser allocation

problems and conflicts. Similarly, smaller-sized UGs were generally found to exhibit a higher level of conformity to rules. They also had less serious conflicts.

- Inter-community relations had a strong bearing on the quality of forest management. Two VDCs/wards usually claimed user rights to the same patch of a national forest and this usually led to unsustainable forest management.
- The most effective system of forest management was one in which the forests were closed to grazing and animals were stall-fed.
- One important requirement for achieving community participation in forestry was identified as relatively easy access for the users to fuelwood and fodder. This usually motivated villagers to manage and rehabilitate forests until the trees were big enough for harvesting.
- The effectiveness of the forest guard depended upon the strength of the social sanctions against forest encroachment. Where social sanctions were not strong, the forest guard could not control livestock grazing and fuelwood/fodder collection.
- Women posed problems as well as provided solutions to the management of UG forests. Women, if mobilised, can protect and manage forests effectively. However, because of lack of proper education as well as sheer compulsion, they practice harmful and illicit uses of forests also.